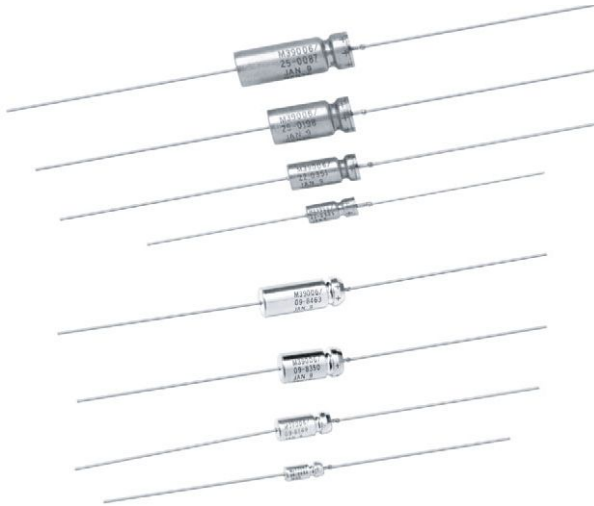




# Wet Tantalum Capacitors, Space Level, Established Reliability, DLA Land and Maritime Drawings 06013, 06014, 06015, 06016



### FEATURES

- Screened for space level applications
- Tantalum case, hermetically sealed, axial leaded
- Screened M39006/22/25/30/31 capacitors
  - “R” or 0.01 %/1000 h failure rate
  - “H” or high shock and vibration rated
  - Enhanced 100 % or group A testing
  - Enhanced production lot testing - group b prior to shipment
- Stability
- Thermal shock
- 1000 h life at +85 °C

### LINKS TO ADDITIONAL RESOURCES



| CROSS REFERENCE               |                   |       |
|-------------------------------|-------------------|-------|
| DLA LAND AND MARITIME DRAWING | MIL SPECIFICATION | STYLE |
| DLA 06013                     | M39006/22         | CLR79 |
| DLA 06014                     | M39006/25         | CLR81 |
| DLA 06015                     | M39006/30         | CLR90 |
| DLA 06016                     | M39006/31         | CLR91 |

### Established Reliability “Space Level” Wet Tantalum Capacitors

In accordance with the DLA land and maritime drawings, all parts are up-screened from “R” failure rate, “H” characteristic, MIL-PRF-39006/22/25/30/31 capacitors. Parts are marked with the appropriate DLA land and maritime drawing number and PIN (dash number). For information on the exact performance of these capacitors, please refer to the latest issue of the DLA land and maritime drawing and appropriate military specification.



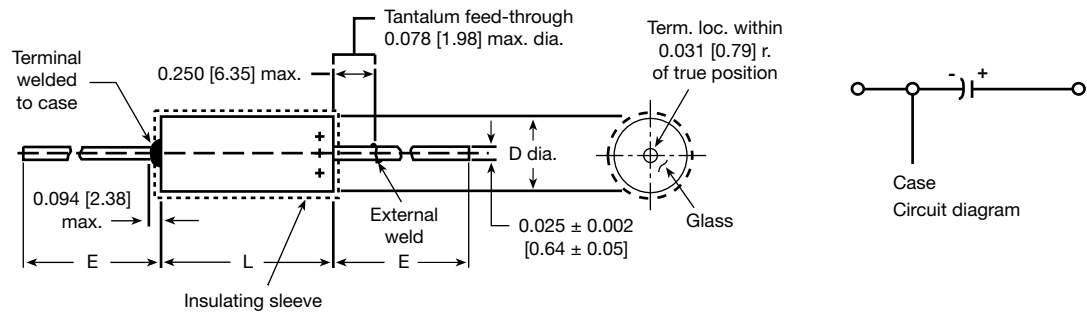
| ORDERING INFORMATION  |   |
|---|---|
| <b>0601X</b><br>DLA LAND AND MARITIME<br>DRAWING<br>Indicates the basic<br>specification; in this case<br>MIL-PRF-39006 | <b>XXXXH</b><br>PIN OR DASH NUMBER<br>(see Standard Ratings tables) |

**Note**

- Material in this section has been abstracted from DLA 06013, DLA 06014, DLA 06015, DLA 06016

**DIMENSIONS** in inches [millimeters]

DLA 06013 (CLR79 style)  
 DLA 06014 (CLR81 style)  
 DLA 06015 (CLR90 style)  
 DLA 06016 (CLR91 style)



| CASE CODE | BARE CASE                      |  | WITH INSULATING SLEEVE |                  | E LEAD LENGTH                   | WEIGHT (oz./g) (Max.) |
|-----------|--------------------------------|--|------------------------|------------------|---------------------------------|-----------------------|
|           | D                              | L  | D (Max.)               | L (Max.)         |                                 |                       |
| T1        | 0.188 ± 0.016<br>[4.78 ± 0.41] | 0.453 + 0.031 / - 0.016<br>[11.51 + 0.79 / - 0.41] | 0.219<br>[5.56]        | 0.515<br>[13.08] | 1.500 ± 0.250<br>[38.10 ± 6.35] | 0.09<br>[2.6]         |
| T2        | 0.281 ± 0.016<br>[7.14 ± 0.41] | 0.641 + 0.031 / - 0.016<br>[16.28 + 0.79 / - 0.41] | 0.312<br>[7.92]        | 0.704<br>[17.88] | 2.250 ± 0.250<br>[57.15 ± 6.35] | 0.22<br>[6.2]         |
| T3        | 0.375 ± 0.016<br>[9.53 ± 0.41] | 0.766 + 0.031 / - 0.016<br>[19.46 + 0.79 / - 0.41] | 0.406<br>[10.31]       | 0.828<br>[21.03] | 2.250 ± 0.250<br>[57.15 ± 6.35] | 0.41<br>[11.6]        |
| T4        | 0.375 ± 0.016<br>[9.53 ± 0.41] | 1.062 + 0.031 / - 0.016<br>[26.97 + 0.79 / - 0.41] | 0.406<br>[10.31]       | 1.126<br>[28.60] | 2.250 ± 0.250<br>[57.15 ± 6.35] | 0.62<br>[17.7]        |



| STANDARD RATINGS: DLA 06013                                     |              |                            |                                |                        |                   |                             |  |                                   |        |         |  |
|---|--------------|----------------------------|--------------------------------|------------------------|-------------------|-----------------------------|--|-----------------------------------|--------|---------|--|
| CAPACITANCE<br>( $\mu$ F)                                       | CASE<br>CODE | CAP.<br>TOL.<br>( $\pm$ %) | PIN<br>FOR<br>DLA<br>06013 (1) | MAX. DCL ( $\mu$ A) AT |                   | MAX. DF<br>AT +25 °C<br>(%) | MAX. IMP.<br>AT -55 °C<br>( $\Omega$ ) | MAX. CAPACITANCE<br>CHANGE (%) AT |        |         | MAX.<br>RIPPLE<br>CURRENT<br>AT +85 °C<br>40 kHz (2) |
|   |              |                            |                                | +25 °C                 | +85 °C<br>+125 °C |                             |  | -55 °C                            | +85 °C | +125 °C |  |
| <b>6 V<sub>DC</sub> AT +85 °C; 4 V<sub>DC</sub> AT +125 °C</b>  |              |                            |                                |                        |                   |                             |  |                                   |        |         |  |
| 30  | T1           | 20                         | 0441H                          | 1.0                    | 2.0               | 9                           | 100                                    | -40                               | +10.5  | +12     | 820  |
| 30  | T1           | 10                         | 0442H                          | 1.0                    | 2.0               | 9                           | 100                                    | -40                               | +10.5  | +12     | 820  |
| 30  | T1           | 5                          | 0443H                          | 1.0                    | 2.0               | 9                           | 100                                    | -40                               | +10.5  | +12     | 820  |
| 68  | T1           | 20                         | 0444H                          | 1.0                    | 2.0               | 15                          | 60                                     | -40                               | +14    | +16     | 960  |
| 68  | T1           | 10                         | 0445H                          | 1.0                    | 2.0               | 15                          | 60                                     | -40                               | +14    | +16     | 960  |
| 68  | T1           | 5                          | 0446H                          | 1.0                    | 2.0               | 15                          | 60                                     | -40                               | +14    | +16     | 960  |
| 140   | T2           | 20                         | 0447H                          | 1.0                    | 3.0               | 21                          | 40                                     | -40                               | +14    | +16     | 1200   |
| 140   | T2           | 10                         | 0448H                          | 1.0                    | 3.0               | 21                          | 40                                     | -40                               | +14    | +16     | 1200   |
| 140   | T2           | 5                          | 0449H                          | 1.0                    | 3.0               | 21                          | 40                                     | -40                               | +14    | +16     | 1200   |
| 270   | T2           | 20                         | 0450H                          | 1.0                    | 6.5               | 45                          | 25                                     | -44                               | +17.5  | +20     | 1375   |
| 270   | T2           | 10                         | 0451H                          | 1.0                    | 6.5               | 45                          | 25                                     | -44                               | +17.5  | +20     | 1375   |
| 270   | T2           | 5                          | 0452H                          | 1.0                    | 6.5               | 45                          | 25                                     | -44                               | +17.5  | +20     | 1375   |
| 330   | T3           | 20                         | 0453H                          | 2.0                    | 7.9               | 36                          | 20                                     | -44                               | +14    | +16     | 1800   |
| 330   | T3           | 10                         | 0454H                          | 2.0                    | 7.9               | 36                          | 20                                     | -44                               | +14    | +16     | 1800   |
| 330   | T3           | 5                          | 0455H                          | 2.0                    | 7.9               | 36                          | 20                                     | -44                               | +14    | +16     | 1800   |
| 560   | T3           | 20                         | 0456H                          | 2.0                    | 13.0              | 55                          | 25                                     | -64                               | +17.5  | +20     | 1900   |
| 560   | T3           | 10                         | 0457H                          | 2.0                    | 13.0              | 55                          | 25                                     | -64                               | +17.5  | +20     | 1900   |
| 560   | T3           | 5                          | 0458H                          | 2.0                    | 13.0              | 55                          | 25                                     | -64                               | +17.5  | +20     | 1900   |
| 1200  | T4           | 20                         | 0459H                          | 3.0                    | 14.0              | 90                          | 20                                     | -80                               | +25    | +25     | 2265   |
| 1200  | T4           | 10                         | 0460H                          | 3.0                    | 14.0              | 90                          | 20                                     | -80                               | +25    | +25     | 2265   |
| <b>8 V<sub>DC</sub> AT +85 °C; 5 V<sub>DC</sub> AT +125 °C</b>  |              |                            |                                |                        |                   |                             |  |                                   |        |         |  |
| 25  | T1           | 20                         | 0461H                          | 1.0                    | 2.0               | 7.5                         | 100                                    | -40                               | +10.5  | +12     | 820  |
| 25  | T1           | 10                         | 0462H                          | 1.0                    | 2.0               | 7.5                         | 100                                    | -40                               | +10.5  | +12     | 820  |
| 25  | T1           | 5                          | 0463H                          | 1.0                    | 2.0               | 7.5                         | 100                                    | -40                               | +10.5  | +12     | 820  |
| 56  | T1           | 20                         | 0464H                          | 1.0                    | 2.0               | 14                          | 59                                     | -40                               | +14    | +16     | 900  |
| 56  | T1           | 10                         | 0465H                          | 1.0                    | 2.0               | 14                          | 59                                     | -40                               | +14    | +16     | 900  |
| 56  | T1           | 5                          | 0466H                          | 1.0                    | 2.0               | 14                          | 59                                     | -40                               | +14    | +16     | 900  |
| 120   | T2           | 20                         | 0467H                          | 1.0                    | 2.0               | 20                          | 50                                     | -44                               | +17.5  | +20     | 1220   |
| 120   | T2           | 10                         | 0468H                          | 1.0                    | 2.0               | 20                          | 50                                     | -44                               | +17.5  | +20     | 1220   |
| 120   | T2           | 5                          | 0469H                          | 1.0                    | 2.0               | 20                          | 50                                     | -44                               | +17.5  | +20     | 1220   |
| 220   | T2           | 20                         | 0470H                          | 1.0                    | 7.0               | 37                          | 30                                     | -44                               | +17.5  | +20     | 1370   |
| 220   | T2           | 10                         | 0471H                          | 1.0                    | 7.0               | 37                          | 30                                     | -44                               | +17.5  | +20     | 1370   |
| 220   | T2           | 5                          | 0472H                          | 1.0                    | 7.0               | 37                          | 30                                     | -44                               | +17.5  | +20     | 1370   |
| 290   | T3           | 20                         | 0473H                          | 2.0                    | 6.0               | 34                          | 25                                     | -64                               | +17.5  | +20     | 1770   |
| 290   | T3           | 10                         | 0474H                          | 2.0                    | 6.0               | 34                          | 25                                     | -64                               | +17.5  | +20     | 1770   |
| 290   | T3           | 5                          | 0475H                          | 2.0                    | 6.0               | 34                          | 25                                     | -64                               | +17.5  | +20     | 1770   |
| 430   | T3           | 20                         | 0476H                          | 2.0                    | 14.0              | 46                          | 25                                     | -64                               | +17.5  | +20     | 1825   |
| 430   | T3           | 10                         | 0477H                          | 2.0                    | 14.0              | 46                          | 25                                     | -64                               | +17.5  | +20     | 1825   |
| 430   | T3           | 5                          | 0478H                          | 2.0                    | 14.0              | 46                          | 25                                     | -64                               | +17.5  | +20     | 1825   |
| 850   | T4           | 20                         | 0479H                          | 4.0                    | 16.0              | 60                          | 22                                     | -80                               | +25    | +25     | 2330   |
| 850   | T4           | 10                         | 0480H                          | 4.0                    | 16.0              | 60                          | 22                                     | -80                               | +25    | +25     | 2330   |
| <b>10 V<sub>DC</sub> AT +85 °C; 7 V<sub>DC</sub> AT +125 °C</b> |              |                            |                                |                        |                   |                             |  |                                   |        |         |  |
| 20  | T1           | 20                         | 0481H                          | 1.0                    | 2.0               | 6                           | 175                                    | -32                               | +10.5  | +12     | 820  |
| 20  | T1           | 10                         | 0482H                          | 1.0                    | 2.0               | 6                           | 175                                    | -32                               | +10.5  | +12     | 820  |
| 20  | T1           | 5                          | 0483H                          | 1.0                    | 2.0               | 6                           | 175                                    | -32                               | +10.5  | +12     | 820  |
| 47  | T1           | 20                         | 0484H                          | 1.0                    | 2.0               | 13                          | 100                                    | -36                               | +14    | +16     | 855  |
| 47  | T1           | 10                         | 0485H                          | 1.0                    | 2.0               | 13                          | 100                                    | -36                               | +14    | +16     | 855  |
| 47  | T1           | 5                          | 0486H                          | 1.0                    | 2.0               | 13                          | 100                                    | -36                               | +14    | +16     | 855  |
| 100   | T2           | 20                         | 0487H                          | 1.0                    | 4.0               | 15                          | 60                                     | -36                               | +14    | +16     | 1200   |
| 100   | T2           | 10                         | 0488H                          | 1.0                    | 4.0               | 15                          | 60                                     | -36                               | +14    | +16     | 1200   |
| 100   | T2           | 5                          | 0489H                          | 1.0                    | 4.0               | 15                          | 60                                     | -36                               | +14    | +16     | 1200   |
| 180   | T2           | 20                         | 0490H                          | 1.0                    | 7.0               | 30                          | 40                                     | -36                               | +14    | +16     | 1365   |

**Notes**

- (1) Dash number will include the letter "H" to indicate the vibration and shock requirements (i.e., 51 g random vibration, 80 g sinusoidal vibration and 500 g shock)
- (2) For ripple current limits at various temperatures, voltages and frequencies, see Ripple Current table



| STANDARD RATINGS: DLA 06013                                      |              |                            |                                |                        |                   |                             |  |                                   |        |         |  |
|--|--------------|----------------------------|--------------------------------|------------------------|-------------------|-----------------------------|--|-----------------------------------|--------|---------|--|
| CAPACITANCE<br>( $\mu$ F)  | CASE<br>CODE | CAP.<br>TOL.<br>( $\pm$ %) | PIN<br>FOR<br>DLA<br>06013 (1) | MAX. DCL ( $\mu$ A) AT |                   | MAX. DF<br>AT +25 °C<br>(%) | MAX. IMP.<br>AT -55 °C<br>( $\Omega$ ) | MAX. CAPACITANCE<br>CHANGE (%) AT |        |         | MAX.<br>RIPPLE<br>CURRENT<br>AT +85 °C<br>40 kHz (2) |
|  |              |                            |                                | +25 °C                 | +85 °C<br>+125 °C |                             |  | -55 °C                            | +85 °C | +125 °C |  |
| <b>10 V<sub>DC</sub> AT+85 °C; 7 V<sub>DC</sub> AT +125 °C</b>   |              |                            |                                |                        |                   |                             |  |                                   |        |         |  |
| 180  | T2           | 10                         | 0491H                          | 1.0                    | 7.0               | 30                          | 40                                     | -36                               | +14    | +16     | 1365   |
| 180  | T2           | 5                          | 0492H                          | 1.0                    | 7.0               | 30                          | 40                                     | -36                               | +14    | +16     | 1365   |
| 250  | T3           | 20                         | 0493H                          | 2.0                    | 10.0              | 30                          | 30                                     | -40                               | +14    | +16     | 1720   |
| 250  | T3           | 10                         | 0494H                          | 2.0                    | 10.0              | 30                          | 30                                     | -40                               | +14    | +16     | 1720   |
| 250  | T3           | 5                          | 0495H                          | 2.0                    | 10.0              | 30                          | 30                                     | -40                               | +14    | +16     | 1720   |
| 390  | T3           | 20                         | 0496H                          | 2.0                    | 16.0              | 44                          | 25                                     | -64                               | +17.5  | +20     | 1800   |
| 390  | T3           | 10                         | 0497H                          | 2.0                    | 16.0              | 44                          | 25                                     | -64                               | +17.5  | +20     | 1800   |
| 390  | T3           | 5                          | 0498H                          | 2.0                    | 16.0              | 44                          | 25                                     | -64                               | +17.5  | +20     | 1800   |
| 750  | T4           | 20                         | 0499H                          | 4.0                    | 16.0              | 50                          | 23                                     | -80                               | +25    | +25     | 2360   |
| 750  | T4           | 10                         | 0500H                          | 4.0                    | 16.0              | 50                          | 23                                     | -80                               | +25    | +25     | 2360   |
| <b>15 V<sub>DC</sub> AT +85 °C; 10 V<sub>DC</sub> AT +125 °C</b> |              |                            |                                |                        |                   |                             |  |                                   |        |         |  |
| 15   | T1           | 20                         | 0501H                          | 1.0                    | 2.0               | 5                           | 155                                    | -24                               | +10.5  | +12     | 780  |
| 15   | T1           | 10                         | 0502H                          | 1.0                    | 2.0               | 5                           | 155                                    | -24                               | +10.5  | +12     | 780  |
| 15   | T1           | 5                          | 0503H                          | 1.0                    | 2.0               | 5                           | 155                                    | -24                               | +10.5  | +12     | 780  |
| 33   | T1           | 20                         | 0504H                          | 1.0                    | 2.0               | 10                          | 90                                     | -28                               | +14    | +16     | 820  |
| 33   | T1           | 10                         | 0505H                          | 1.0                    | 2.0               | 10                          | 90                                     | -28                               | +14    | +16     | 820  |
| 33   | T1           | 5                          | 0506H                          | 1.0                    | 2.0               | 10                          | 90                                     | -28                               | +14    | +16     | 820  |
| 70   | T2           | 20                         | 0507H                          | 1.0                    | 4.0               | 13                          | 75                                     | -28                               | +14    | +16     | 1150   |
| 70   | T2           | 10                         | 0508H                          | 1.0                    | 4.0               | 13                          | 75                                     | -28                               | +14    | +16     | 1150   |
| 70   | T2           | 5                          | 0509H                          | 1.0                    | 4.0               | 13                          | 75                                     | -28                               | +14    | +16     | 1150   |
| 120  | T2           | 20                         | 0510H                          | 1.0                    | 7.0               | 18                          | 50                                     | -28                               | +17.5  | +20     | 1450   |
| 120  | T2           | 10                         | 0511H                          | 1.0                    | 7.0               | 18                          | 50                                     | -28                               | +17.5  | +20     | 1450   |
| 120  | T2           | 5                          | 0512H                          | 1.0                    | 7.0               | 18                          | 50                                     | -28                               | +17.5  | +20     | 1450   |
| 170  | T3           | 20                         | 0513H                          | 2.0                    | 10.0              | 25                          | 35                                     | -32                               | +14    | +16     | 1480   |
| 170  | T3           | 10                         | 0514H                          | 2.0                    | 10.0              | 25                          | 35                                     | -32                               | +14    | +16     | 1480   |
| 170  | T3           | 5                          | 0515H                          | 2.0                    | 10.0              | 25                          | 35                                     | -32                               | +14    | +16     | 1480   |
| 270  | T3           | 20                         | 0516H                          | 2.0                    | 16.0              | 32                          | 30                                     | -56                               | +17.5  | +20     | 1740   |
| 270  | T3           | 10                         | 0517H                          | 2.0                    | 16.0              | 32                          | 30                                     | -56                               | +17.5  | +20     | 1740   |
| 270  | T3           | 5                          | 0518H                          | 2.0                    | 16.0              | 32                          | 30                                     | -56                               | +17.5  | +20     | 1740   |
| 540  | T4           | 20                         | 0519H                          | 6.0                    | 24.0              | 40                          | 23                                     | -80                               | +25    | +25     | 2330   |
| 540  | T4           | 10                         | 0520H                          | 6.0                    | 24.0              | 40                          | 23                                     | -80                               | +25    | +25     | 2330   |
| <b>25 V<sub>DC</sub> AT +85 °C; 15 V<sub>DC</sub> AT +125 °C</b> |              |                            |                                |                        |                   |                             |  |                                   |        |         |  |
| 10   | T1           | 20                         | 0521H                          | 1.0                    | 2.0               | 4                           | 220                                    | -16                               | +8     | +9      | 715  |
| 10   | T1           | 10                         | 0522H                          | 1.0                    | 2.0               | 4                           | 220                                    | -16                               | +8     | +9      | 715  |
| 10   | T1           | 5                          | 0523H                          | 1.0                    | 2.0               | 4                           | 220                                    | -16                               | +8     | +9      | 715  |
| 22   | T1           | 20                         | 0524H                          | 1.0                    | 2.0               | 6.6                         | 140                                    | -20                               | +10.5  | +12     | 825  |
| 22   | T1           | 10                         | 0525H                          | 1.0                    | 2.0               | 6.6                         | 140                                    | -20                               | +10.5  | +12     | 825  |
| 22   | T1           | 5                          | 0526H                          | 1.0                    | 2.0               | 6.6                         | 140                                    | -20                               | +10.5  | +12     | 825  |
| 50   | T2           | 20                         | 0527H                          | 1.0                    | 2.0               | 11.0                        | 70                                     | -28                               | +13    | +15     | 1130   |
| 50   | T2           | 10                         | 0528H                          | 1.0                    | 2.0               | 11.0                        | 70                                     | -28                               | +13    | +15     | 1130   |
| 50   | T2           | 5                          | 0529H                          | 1.0                    | 2.0               | 11.0                        | 70                                     | -28                               | +13    | +15     | 1130   |
| 100  | T2           | 20                         | 0530H                          | 1.0                    | 10.0              | 15                          | 50                                     | -28                               | +13    | +15     | 1435   |
| 100  | T2           | 10                         | 0531H                          | 1.0                    | 10.0              | 15                          | 50                                     | -28                               | +13    | +15     | 1435   |
| 100  | T2           | 5                          | 0532H                          | 1.0                    | 10.0              | 15                          | 50                                     | -28                               | +13    | +15     | 1435   |
| 120  | T3           | 20                         | 0533H                          | 2.0                    | 6.0               | 21                          | 38                                     | -32                               | +13    | +15     | 1450   |
| 120  | T3           | 10                         | 0534H                          | 2.0                    | 6.0               | 21                          | 38                                     | -32                               | +13    | +15     | 1450   |
| 120  | T3           | 5                          | 0535H                          | 2.0                    | 6.0               | 21                          | 38                                     | -32                               | +13    | +15     | 1450   |
| 180  | T3           | 20                         | 0536H                          | 2.0                    | 18.0              | 26                          | 32                                     | -48                               | +13    | +15     | 1525   |
| 180  | T3           | 10                         | 0537H                          | 2.0                    | 18.0              | 26                          | 32                                     | -48                               | +13    | +15     | 1525   |
| 180  | T3           | 5                          | 0538H                          | 2.0                    | 18.0              | 26                          | 32                                     | -48                               | +13    | +15     | 1525   |
| 350  | T4           | 20                         | 0539H                          | 7.0                    | 28.0              | 35                          | 24                                     | -70                               | +25    | +25     | 1970   |
| 350  | T4           | 10                         | 0540H                          | 7.0                    | 28.0              | 35                          | 24                                     | -70                               | +25    | +25     | 1970   |

**Notes**

- (1) Dash number will include the letter "H" to indicate the vibration and shock requirements (i.e., 51 g random vibration, 80 g sinusoidal vibration and 500 g shock)
- (2) For ripple current limits at various temperatures, voltages and frequencies, see Ripple Current table



| STANDARD RATINGS: DLA 06013                                      |              |                            |                                |                        |                   |                             |  |                                   |        |         |  |
|--|--------------|----------------------------|--------------------------------|------------------------|-------------------|-----------------------------|--|-----------------------------------|--------|---------|--|
| CAPACITANCE<br>( $\mu$ F)  | CASE<br>CODE | CAP.<br>TOL.<br>( $\pm$ %) | PIN<br>FOR<br>DLA<br>06013 (1) | MAX. DCL ( $\mu$ A) AT |                   | MAX. DF<br>AT +25 °C<br>(%) | MAX. IMP.<br>AT -55 °C<br>( $\Omega$ ) | MAX. CAPACITANCE<br>CHANGE (%) AT |        |         | MAX.<br>RIPPLE<br>CURRENT<br>AT +85 °C<br>40 kHz (2) |
|  |              |                            |                                | +25 °C                 | +85 °C<br>+125 °C |                             |  | -55 °C                            | +85 °C | +125 °C |  |
| <b>30 V<sub>DC</sub> AT +85 °C; 20 V<sub>DC</sub> AT +125 °C</b> |              |                            |                                |                        |                   |                             |  |                                   |        |         |  |
| 8.0  | T1           | 20                         | 0541H                          | 1.0                    | 2.0               | 4                           | 275                                    | -16                               | +8     | +12     | 640  |
| 8.0  | T1           | 10                         | 0542H                          | 1.0                    | 2.0               | 4                           | 275                                    | -16                               | +8     | +12     | 640  |
| 8.0  | T1           | 5                          | 0543H                          | 1.0                    | 2.0               | 4                           | 275                                    | -16                               | +8     | +12     | 640  |
| 15   | T1           | 20                         | 0544H                          | 1.0                    | 2.0               | 5                           | 175                                    | -20                               | +10.5  | +12     | 780  |
| 15   | T1           | 10                         | 0545H                          | 1.0                    | 2.0               | 5                           | 175                                    | -20                               | +10.5  | +12     | 780  |
| 15   | T1           | 5                          | 0546H                          | 1.0                    | 2.0               | 5                           | 175                                    | -20                               | +10.5  | +12     | 780  |
| 40   | T2           | 20                         | 0547H                          | 1.0                    | 5.0               | 10                          | 65                                     | -24                               | +10.5  | +12     | 1120   |
| 40   | T2           | 10                         | 0548H                          | 1.0                    | 5.0               | 10                          | 65                                     | -24                               | +10.5  | +12     | 1120   |
| 40   | T2           | 5                          | 0549H                          | 1.0                    | 5.0               | 10                          | 65                                     | -24                               | +10.5  | +12     | 1120   |
| 68   | T2           | 20                         | 0550H                          | 1.0                    | 8.0               | 13                          | 60                                     | -24                               | +13    | +15     | 1285   |
| 68   | T2           | 10                         | 0551H                          | 1.0                    | 8.0               | 13                          | 60                                     | -24                               | +13    | +15     | 1285   |
| 68   | T2           | 5                          | 0552H                          | 1.0                    | 8.0               | 13                          | 60                                     | -24                               | +13    | +15     | 1285   |
| 100  | T3           | 20                         | 0553H                          | 2.0                    | 12.0              | 17                          | 40                                     | -28                               | +10.5  | +12     | 1450   |
| 100  | T3           | 10                         | 0554H                          | 2.0                    | 12.0              | 17                          | 40                                     | -28                               | +10.5  | +12     | 1450   |
| 100  | T3           | 5                          | 0555H                          | 2.0                    | 12.0              | 17                          | 40                                     | -28                               | +10.5  | +12     | 1450   |
| 150  | T3           | 20                         | 0556H                          | 2.0                    | 18.0              | 23                          | 35                                     | -48                               | +13    | +15     | 1525   |
| 150  | T3           | 10                         | 0557H                          | 2.0                    | 18.0              | 23                          | 35                                     | -48                               | +13    | +15     | 1525   |
| 150  | T3           | 5                          | 0558H                          | 2.0                    | 18.0              | 23                          | 35                                     | -48                               | +13    | +15     | 1525   |
| 300  | T4           | 20                         | 0559H                          | 8.0                    | 32.0              | 31                          | 25                                     | -60                               | +25    | +25     | 1950   |
| 300  | T4           | 10                         | 0560H                          | 8.0                    | 32.0              | 31                          | 25                                     | -60                               | +25    | +25     | 1950   |
| <b>50 V<sub>DC</sub> AT +85 °C; 30 V<sub>DC</sub> AT +125 °C</b> |              |                            |                                |                        |                   |                             |  |                                   |        |         |  |
| 5.0  | T1           | 20                         | 0561H                          | 1.0                    | 2.0               | 3                           | 400                                    | -16                               | +5     | +6      | 580  |
| 5.0  | T1           | 10                         | 0562H                          | 1.0                    | 2.0               | 3                           | 400                                    | -16                               | +5     | +6      | 580  |
| 5.0  | T1           | 5                          | 0563H                          | 1.0                    | 2.0               | 3                           | 400                                    | -16                               | +5     | +6      | 580  |
| 10   | T1           | 20                         | 0564H                          | 1.0                    | 2.0               | 4                           | 250                                    | -24                               | +8     | +9      | 715  |
| 10   | T1           | 10                         | 0565H                          | 1.0                    | 2.0               | 4                           | 250                                    | -24                               | +8     | +9      | 715  |
| 10   | T1           | 5                          | 0566H                          | 1.0                    | 2.0               | 4                           | 250                                    | -24                               | +8     | +9      | 715  |
| 25   | T2           | 20                         | 0567H                          | 1.0                    | 5.0               | 8                           | 95                                     | -20                               | +10.5  | +12     | 1005   |
| 25   | T2           | 10                         | 0568H                          | 1.0                    | 5.0               | 8                           | 95                                     | -20                               | +10.5  | +12     | 1005   |
| 25   | T2           | 5                          | 0569H                          | 1.0                    | 5.0               | 8                           | 95                                     | -20                               | +10.5  | +12     | 1005   |
| 47   | T2           | 20                         | 0570H                          | 1.0                    | 9.0               | 11                          | 70                                     | -28                               | +13    | +15     | 1155   |
| 47   | T2           | 10                         | 0571H                          | 1.0                    | 9.0               | 11                          | 70                                     | -28                               | +13    | +15     | 1155   |
| 47   | T2           | 5                          | 0572H                          | 1.0                    | 9.0               | 11                          | 70                                     | -28                               | +13    | +15     | 1155   |
| 60   | T3           | 20                         | 0573H                          | 2.0                    | 12.0              | 12                          | 45                                     | -16                               | +10.5  | +12     | 1335   |
| 60   | T3           | 10                         | 0574H                          | 2.0                    | 12.0              | 12                          | 45                                     | -16                               | +10.5  | +12     | 1335   |
| 60   | T3           | 5                          | 0575H                          | 2.0                    | 12.0              | 12                          | 45                                     | -16                               | +10.5  | +12     | 1335   |
| 82   | T3           | 20                         | 0576H                          | 2.0                    | 16.0              | 15                          | 45                                     | -32                               | +13    | +15     | 1400   |
| 82   | T3           | 10                         | 0577H                          | 2.0                    | 16.0              | 15                          | 45                                     | -32                               | +13    | +15     | 1400   |
| 82   | T3           | 5                          | 0578H                          | 2.0                    | 16.0              | 15                          | 45                                     | -32                               | +13    | +15     | 1400   |
| 160  | T4           | 20                         | 0579H                          | 8.0                    | 32.0              | 17                          | 27                                     | -50                               | +25    | +25     | 1900   |
| 160  | T4           | 10                         | 0580H                          | 8.0                    | 32.0              | 17                          | 27                                     | -50                               | +25    | +25     | 1900   |
| <b>60 V<sub>DC</sub> AT +85 °C; 40 V<sub>DC</sub> AT +125 °C</b> |              |                            |                                |                        |                   |                             |  |                                   |        |         |  |
| 4.0  | T1           | 20                         | 0581H                          | 1.0                    | 2.0               | 2.8                         | 550                                    | -16                               | +5     | +6      | 525  |
| 4.0  | T1           | 10                         | 0582H                          | 1.0                    | 2.0               | 2.8                         | 550                                    | -16                               | +5     | +6      | 525  |
| 4.0  | T1           | 5                          | 0583H                          | 1.0                    | 2.0               | 2.8                         | 550                                    | -16                               | +5     | +6      | 525  |
| 8.2  | T1           | 20                         | 0584H                          | 1.0                    | 2.0               | 4                           | 275                                    | -24                               | +8     | +9      | 625  |
| 8.2  | T1           | 10                         | 0585H                          | 1.0                    | 2.0               | 4                           | 275                                    | -24                               | +8     | +9      | 625  |
| 8.2  | T1           | 5                          | 0586H                          | 1.0                    | 2.0               | 4                           | 275                                    | -24                               | +8     | +9      | 625  |
| 20   | T2           | 20                         | 0587H                          | 1.0                    | 5.0               | 7                           | 105                                    | -16                               | +10.5  | +12     | 930  |
| 20   | T2           | 10                         | 0588H                          | 1.0                    | 5.0               | 7                           | 105                                    | -16                               | +10.5  | +12     | 930  |
| 20   | T2           | 5                          | 0589H                          | 1.0                    | 5.0               | 7                           | 105                                    | -16                               | +10.5  | +12     | 930  |
| 39   | T2           | 20                         | 0590H                          | 1.0                    | 9.0               | 10                          | 90                                     | -28                               | +10.5  | +12     | 1110   |

**Notes**

- (1) Dash number will include the letter "H" to indicate the vibration and shock requirements (i.e., 51 g random vibration, 80 g sinusoidal vibration and 500 g shock)
- (2) For ripple current limits at various temperatures, voltages and frequencies, see Ripple Current table



| STANDARD RATINGS: DLA 06013                                       |              |                            |                                |                        |                   |                             |  |                                   |        |         |  |
|---|--------------|----------------------------|--------------------------------|------------------------|-------------------|-----------------------------|--|-----------------------------------|--------|---------|--|
| CAPACITANCE<br>( $\mu$ F)   | CASE<br>CODE | CAP.<br>TOL.<br>( $\pm$ %) | PIN<br>FOR<br>DLA<br>06013 (1) | MAX. DCL ( $\mu$ A) AT |                   | MAX. DF<br>AT +25 °C<br>(%) | MAX. IMP.<br>AT -55 °C<br>( $\Omega$ ) | MAX. CAPACITANCE<br>CHANGE (%) AT |        |         | MAX.<br>RIPPLE<br>CURRENT<br>AT +85 °C<br>40 kHz (2) |
|   |              |                            |                                | +25 °C                 | +85 °C<br>+125 °C |                             |  | -55 °C                            | +85 °C | +125 °C |  |
| <b>60 V<sub>DC</sub> AT +85 °C; 40 V<sub>DC</sub> AT +125 °C</b>  |              |                            |                                |                        |                   |                             |  |                                   |        |         |  |
| 39  | T2           | 10                         | 0591H                          | 1.0                    | 9.0               | 10                          | 90                                     | -28                               | +10.5  | +12     | 1110   |
| 39  | T2           | 5                          | 0592H                          | 1.0                    | 9.0               | 10                          | 90                                     | -28                               | +10.5  | +12     | 1110   |
| 50  | T3           | 20                         | 0593H                          | 2.0                    | 12.0              | 10                          | 50                                     | -16                               | +10.5  | +12     | 1330   |
| 50  | T3           | 10                         | 0594H                          | 2.0                    | 12.0              | 10                          | 50                                     | -16                               | +10.5  | +12     | 1330   |
| 50  | T3           | 5                          | 0595H                          | 2.0                    | 12.0              | 10                          | 50                                     | -16                               | +10.5  | +12     | 1330   |
| 68  | T3           | 20                         | 0596H                          | 2.0                    | 16.0              | 13                          | 50                                     | -32                               | +10.5  | +12     | 1365   |
| 68  | T3           | 10                         | 0597H                          | 2.0                    | 16.0              | 13                          | 50                                     | -32                               | +10.5  | +12     | 1365   |
| 68  | T3           | 5                          | 0598H                          | 2.0                    | 16.0              | 13                          | 50                                     | -32                               | +10.5  | +12     | 1365   |
| 140   | T4           | 20                         | 0599H                          | 8.0                    | 32.0              | 16                          | 28                                     | -40                               | +20    | +20     | 1850   |
| 140   | T4           | 10                         | 0600H                          | 8.0                    | 32.0              | 16                          | 28                                     | -40                               | +20    | +20     | 1850   |
| <b>75 V<sub>DC</sub> AT +85 °C; 50 V<sub>DC</sub> AT +125 °C</b>  |              |                            |                                |                        |                   |                             |  |                                   |        |         |  |
| 3.5   | T1           | 20                         | 0601H                          | 1.0                    | 2.0               | 2.5                         | 650                                    | -16                               | +5     | +6      | 525  |
| 3.5   | T1           | 10                         | 0602H                          | 1.0                    | 2.0               | 2.5                         | 650                                    | -16                               | +5     | +6      | 525  |
| 3.5   | T1           | 5                          | 0603H                          | 1.0                    | 2.0               | 2.5                         | 650                                    | -16                               | +5     | +6      | 525  |
| 6.8   | T1           | 20                         | 0604H                          | 1.0                    | 2.0               | 3.5                         | 300                                    | -20                               | +8     | +9      | 610  |
| 6.8   | T1           | 10                         | 0605H                          | 1.0                    | 2.0               | 3.5                         | 300                                    | -20                               | +8     | +9      | 610  |
| 6.8   | T1           | 5                          | 0606H                          | 1.0                    | 2.0               | 3.5                         | 300                                    | -20                               | +8     | +9      | 610  |
| 15  | T2           | 20                         | 0607H                          | 1.0                    | 5.0               | 6                           | 150                                    | -16                               | +8     | +9      | 890  |
| 15  | T2           | 10                         | 0608H                          | 1.0                    | 5.0               | 6                           | 150                                    | -16                               | +8     | +9      | 890  |
| 15  | T2           | 5                          | 0609H                          | 1.0                    | 5.0               | 6                           | 150                                    | -16                               | +8     | +9      | 890  |
| 33  | T2           | 20                         | 0610H                          | 1.0                    | 10.0              | 10                          | 90                                     | -24                               | +10.5  | +15     | 1000   |
| 33  | T2           | 10                         | 0611H                          | 1.0                    | 10.0              | 10                          | 90                                     | -24                               | +10.5  | +15     | 1000   |
| 33  | T2           | 5                          | 0612H                          | 1.0                    | 10.0              | 10                          | 90                                     | -24                               | +10.5  | +15     | 1000   |
| 40  | T3           | 20                         | 0613H                          | 2.0                    | 12.0              | 9                           | 60                                     | -16                               | +10.5  | +12     | 1250   |
| 40  | T3           | 10                         | 0614H                          | 2.0                    | 12.0              | 9                           | 60                                     | -16                               | +10.5  | +12     | 1250   |
| 40  | T3           | 5                          | 0615H                          | 2.0                    | 12.0              | 9                           | 60                                     | -16                               | +10.5  | +12     | 1250   |
| 56  | T3           | 20                         | 0616H                          | 2.0                    | 17.0              | 11                          | 60                                     | -28                               | +10.5  | +15     | 1335   |
| 56  | T3           | 10                         | 0617H                          | 2.0                    | 17.0              | 11                          | 60                                     | -28                               | +10.5  | +15     | 1335   |
| 56  | T3           | 5                          | 0618H                          | 2.0                    | 17.0              | 11                          | 60                                     | -28                               | +10.5  | +15     | 1335   |
| 110   | T4           | 20                         | 0619H                          | 9.0                    | 36.0              | 12                          | 29                                     | -35                               | +20    | +20     | 1850   |
| 110   | T4           | 10                         | 0620H                          | 9.0                    | 36.0              | 12                          | 29                                     | -35                               | +20    | +20     | 1850   |
| <b>100 V<sub>DC</sub> AT +85 °C; 65 V<sub>DC</sub> AT +125 °C</b> |              |                            |                                |                        |                   |                             |  |                                   |        |         |  |
| 2.5   | T1           | 20                         | 0621H                          | 1.0                    | 2.0               | 2                           | 950                                    | -16                               | +7     | +8      | 505  |
| 2.5   | T1           | 10                         | 0622H                          | 1.0                    | 2.0               | 2                           | 950                                    | -16                               | +7     | +8      | 505  |
| 2.5   | T1           | 5                          | 0623H                          | 1.0                    | 2.0               | 2                           | 950                                    | -16                               | +7     | +8      | 505  |
| 4.7   | T1           | 20                         | 0624H                          | 1.0                    | 2.0               | 3                           | 500                                    | -16                               | +7     | +8      | 565  |
| 4.7   | T1           | 10                         | 0625H                          | 1.0                    | 2.0               | 3                           | 500                                    | -16                               | +7     | +8      | 565  |
| 4.7   | T1           | 5                          | 0626H                          | 1.0                    | 2.0               | 3                           | 500                                    | -16                               | +7     | +8      | 565  |
| 11  | T2           | 20                         | 0627H                          | 1.0                    | 4.0               | 5                           | 200                                    | -16                               | +8     | +8      | 835  |
| 11  | T2           | 10                         | 0628H                          | 1.0                    | 4.0               | 5                           | 200                                    | -16                               | +8     | +8      | 835  |
| 11  | T2           | 5                          | 0629H                          | 1.0                    | 4.0               | 5                           | 200                                    | -16                               | +8     | +8      | 835  |
| 22  | T2           | 20                         | 0630H                          | 1.0                    | 9.0               | 7.5                         | 100                                    | -16                               | +8     | +8      | 965  |
| 22  | T2           | 10                         | 0631H                          | 1.0                    | 9.0               | 7.5                         | 100                                    | -16                               | +8     | +8      | 965  |
| 22  | T2           | 5                          | 0632H                          | 1.0                    | 9.0               | 7.5                         | 100                                    | -16                               | +8     | +8      | 965  |
| 30  | T3           | 20                         | 0633H                          | 2.0                    | 12.0              | 7                           | 80                                     | -16                               | +8     | +8      | 1240   |
| 30  | T3           | 10                         | 0634H                          | 2.0                    | 12.0              | 7                           | 80                                     | -16                               | +8     | +8      | 1240   |
| 30  | T3           | 5                          | 0635H                          | 2.0                    | 12.0              | 7                           | 80                                     | -16                               | +8     | +8      | 1240   |
| 43  | T3           | 20                         | 0636H                          | 2.0                    | 17.0              | 8.5                         | 70                                     | -20                               | +8     | +8      | 1335   |
| 43  | T3           | 10                         | 0637H                          | 2.0                    | 17.0              | 8.5                         | 70                                     | -20                               | +8     | +8      | 1335   |
| 43  | T3           | 5                          | 0638H                          | 2.0                    | 17.0              | 8.5                         | 70                                     | -20                               | +8     | +8      | 1335   |
| 86  | T4           | 20                         | 0639H                          | 9.0                    | 36.0              | 10                          | 30                                     | -25                               | +15    | +15     | 1800   |
| 86  | T4           | 10                         | 0640H                          | 9.0                    | 36.0              | 10                          | 30                                     | -25                               | +15    | +15     | 1800   |

**Notes**

- (1) Dash number will include the letter "H" to indicate the vibration and shock requirements (i.e., 51 g random vibration, 80 g sinusoidal vibration and 500 g shock)
- (2) For ripple current limits at various temperatures, voltages and frequencies, see Ripple Current table



| STANDARD RATINGS: DLA 06013                                  |              |                            |                                |                               |                   |                             |  |                                   |        |         |  |
|--|--------------|----------------------------|--------------------------------|-------------------------------|-------------------|-----------------------------|--|-----------------------------------|--------|---------|--|
| CAPACITANCE<br>( $\mu\text{F}$ )                             | CASE<br>CODE | CAP.<br>TOL.<br>( $\pm$ %) | PIN<br>FOR<br>DLA<br>06013 (1) | MAX. DCL ( $\mu\text{A}$ ) AT |                   | MAX. DF<br>AT +25 °C<br>(%) | MAX. IMP.<br>AT -55 °C<br>( $\Omega$ ) | MAX. CAPACITANCE<br>CHANGE (%) AT |        |         | MAX.<br>RIPPLE<br>CURRENT<br>AT +85 °C<br>40 kHz<br>(mA) (2) |
|  |              |                            |                                | +25 °C                        | +85 °C<br>+125 °C |                             |  | -55 °C                            | +85 °C | +125 °C |  |
| 125 V <sub>DC</sub> AT +85 °C; 85 V <sub>DC</sub> AT +125 °C |              |                            |                                |                               |                   |                             |  |                                   |        |         |  |
| 1.7  | T1           | 20                         | 0641H                          | 1.0                           | 2.0               | 2                           | 1250                                   | -16                               | +7     | +8      | 415  |
| 1.7  | T1           | 10                         | 0642H                          | 1.0                           | 2.0               | 2                           | 1250                                   | -16                               | +7     | +8      | 415  |
| 1.7  | T1           | 5                          | 0643H                          | 1.0                           | 2.0               | 2                           | 1250                                   | -16                               | +7     | +8      | 415  |
| 3.6  | T1           | 20                         | 0644H                          | 1.0                           | 2.0               | 2.7                         | 600                                    | -16                               | +7     | +8      | 520  |
| 3.6  | T1           | 10                         | 0645H                          | 1.0                           | 2.0               | 2.7                         | 600                                    | -16                               | +7     | +8      | 520  |
| 3.6  | T1           | 5                          | 0646H                          | 1.0                           | 2.0               | 2.7                         | 600                                    | -16                               | +7     | +8      | 520  |
| 9.0  | T2           | 20                         | 0647H                          | 1.0                           | 5.0               | 5                           | 240                                    | -16                               | +7     | +8      | 755  |
| 9.0  | T2           | 10                         | 0648H                          | 1.0                           | 5.0               | 5                           | 240                                    | -16                               | +7     | +8      | 755  |
| 9.0  | T2           | 5                          | 0649H                          | 1.0                           | 5.0               | 5                           | 240                                    | -16                               | +7     | +8      | 755  |
| 14   | T2           | 20                         | 0650H                          | 1.0                           | 7.0               | 6                           | 167                                    | -16                               | +7     | +8      | 860  |
| 14   | T2           | 10                         | 0651H                          | 1.0                           | 7.0               | 6                           | 167                                    | -16                               | +7     | +8      | 860  |
| 14   | T2           | 5                          | 0652H                          | 1.0                           | 7.0               | 6                           | 167                                    | -16                               | +7     | +8      | 860  |
| 18   | T3           | 20                         | 0653H                          | 2.0                           | 9.0               | 5                           | 129                                    | -16                               | +7     | +8      | 1130   |
| 18   | T3           | 10                         | 0654H                          | 2.0                           | 9.0               | 5                           | 129                                    | -16                               | +7     | +8      | 1130   |
| 18   | T3           | 5                          | 0655H                          | 2.0                           | 9.0               | 5                           | 129                                    | -16                               | +7     | +8      | 1130   |
| 25   | T3           | 20                         | 0656H                          | 2.0                           | 13.0              | 6                           | 93                                     | -16                               | +7     | +8      | 1200   |
| 25   | T3           | 10                         | 0657H                          | 2.0                           | 13.0              | 6                           | 93                                     | -16                               | +7     | +8      | 1200   |
| 25   | T3           | 5                          | 0658H                          | 2.0                           | 13.0              | 6                           | 93                                     | -16                               | +7     | +8      | 1200   |
| 56   | T4           | 20                         | 0659H                          | 10.0                          | 40.0              | 6.5                         | 32                                     | -25                               | +15    | +15     | 1800   |
| 56   | T4           | 10                         | 0660H                          | 10.0                          | 40.0              | 6.5                         | 32                                     | -25                               | +15    | +15     | 1800   |

Notes

- (1) Dash number will include the letter "H" to indicate the vibration and shock requirements (i.e., 51 g random vibration, 80 g sinusoidal vibration and 500 g shock)
- (2) For ripple current limits at various temperatures, voltages and frequencies, see Ripple Current table

| STANDARD RATINGS: DLA 06014                               |              |                            |                                |                               |                   |                             |  |                                   |        |         |  |
|---|--------------|----------------------------|--------------------------------|-------------------------------|-------------------|-----------------------------|--|-----------------------------------|--------|---------|--|
| CAPACITANCE<br>( $\mu\text{F}$ )                          | CASE<br>CODE | CAP.<br>TOL.<br>( $\pm$ %) | PIN<br>FOR<br>DLA<br>06014 (1) | MAX. DCL ( $\mu\text{A}$ ) AT |                   | MAX. DF<br>AT +25 °C<br>(%) | MAX. IMP.<br>AT -55 °C<br>( $\Omega$ ) | MAX. CAPACITANCE<br>CHANGE (%) AT |        |         | MAX.<br>RIPPLE<br>CURRENT<br>AT +85 °C<br>40 kHz<br>(mA) (2) |
|   |              |                            |                                | +25 °C                        | +85 °C<br>+125 °C |                             |  | -55 °C                            | +85 °C | +125 °C |  |
| 6 V <sub>DC</sub> AT +85 °C; 4 V <sub>DC</sub> AT +125 °C |              |                            |                                |                               |                   |                             |  |                                   |        |         |  |
| 220   | T1           | 20                         | 0177H                          | 2.0                           | 9.0               | 50                          | 36                                     | -64                               | +13    | +16     | 1000   |
| 220   | T1           | 10                         | 0178H                          | 2.0                           | 9.0               | 50                          | 36                                     | -64                               | +13    | +16     | 1000   |
| 820   | T2           | 20                         | 0179H                          | 3.0                           | 14.0              | 155                         | 18                                     | -88                               | +16    | +20     | 1500   |
| 820   | T2           | 10                         | 0180H                          | 3.0                           | 14.0              | 155                         | 18                                     | -88                               | +16    | +20     | 1500   |
| 1500  | T3           | 20                         | 0181H                          | 5.0                           | 20.0              | 172                         | 18                                     | -90                               | +20    | +25     | 1900   |
| 1500  | T3           | 10                         | 0182H                          | 5.0                           | 20.0              | 172                         | 18                                     | -90                               | +20    | +25     | 1900   |
| 2200  | T4           | 20                         | 0183H                          | 6.0                           | 24.0              | 170                         | 13                                     | -90                               | +25    | +30     | 2300   |
| 2200  | T4           | 10                         | 0184H                          | 6.0                           | 24.0              | 170                         | 13                                     | -90                               | +25    | +30     | 2300   |
| 8 V <sub>DC</sub> AT +85 °C; 5 V <sub>DC</sub> AT +125 °C |              |                            |                                |                               |                   |                             |  |                                   |        |         |  |
| 180   | T1           | 20                         | 0185H                          | 2.0                           | 9.0               | 41                          | 45                                     | -60                               | +13    | +16     | 1000   |
| 180   | T1           | 10                         | 0186H                          | 2.0                           | 9.0               | 41                          | 45                                     | -60                               | +13    | +16     | 1000   |
| 680   | T2           | 20                         | 0187H                          | 3.0                           | 14.0              | 130                         | 22                                     | -83                               | +16    | +20     | 1500   |
| 680   | T2           | 10                         | 0188H                          | 3.0                           | 14.0              | 130                         | 22                                     | -83                               | +16    | +20     | 1500   |
| 1500  | T3           | 20                         | 0189H                          | 5.0                           | 20.0              | 170                         | 18                                     | -90                               | +20    | +25     | 1900   |
| 1500  | T3           | 10                         | 0190H                          | 5.0                           | 20.0              | 170                         | 18                                     | -90                               | +20    | +25     | 1900   |
| 1800  | T4           | 20                         | 0191H                          | 7.0                           | 25.0              | 138                         | 14                                     | -90                               | +25    | +30     | 2300   |
| 1800  | T4           | 10                         | 0192H                          | 7.0                           | 25.0              | 138                         | 14                                     | -90                               | +25    | +30     | 2300   |

Notes

- (1) Dash number will include the letter "H" to indicate the vibration and shock requirements (i.e., 51 g random vibration, 80 g sinusoidal vibration and 500 g shock)
- (2) For ripple current limits at various temperatures, voltages and frequencies, see Ripple Current table



| STANDARD RATINGS: DLA 06014                                      |              |                            |                                |                        |                   |                             |  |                                   |        |         |  |
|--|--------------|----------------------------|--------------------------------|------------------------|-------------------|-----------------------------|--|-----------------------------------|--------|---------|--|
| CAPACITANCE<br>( $\mu$ F)  | CASE<br>CODE | CAP.<br>TOL.<br>( $\pm$ %) | PIN<br>FOR<br>DLA<br>06014 (1) | MAX. DCL ( $\mu$ A) AT |                   | MAX. DF<br>AT +25 °C<br>(%) | MAX. IMP.<br>AT -55 °C<br>( $\Omega$ ) | MAX. CAPACITANCE<br>CHANGE (%) AT |        |         | MAX.<br>RIPPLE<br>CURRENT<br>AT +85 °C<br>40 kHz<br>(mA) (2) |
|  |              |                            |                                | +25 °C                 | +85 °C<br>+125 °C |                             |  | -55 °C                            | +85 °C | +125 °C |  |
| <b>10 V<sub>DC</sub> AT +85 °C; 7 V<sub>DC</sub> AT +125 °C</b>  |              |                            |                                |                        |                   |                             |  |                                   |        |         |  |
| 150  | T1           | 20                         | 0193H                          | 2.0                    | 9.0               | 34                          | 54                                     | -55                               | +13    | +16     | 900  |
| 150  | T1           | 10                         | 0194H                          | 2.0                    | 9.0               | 34                          | 54                                     | -55                               | +13    | +16     | 900  |
| 560  | T2           | 20                         | 0195H                          | 3.0                    | 16.0              | 106                         | 27                                     | -77                               | +16    | +20     | 1450   |
| 560  | T2           | 10                         | 0196H                          | 3.0                    | 16.0              | 106                         | 27                                     | -77                               | +16    | +20     | 1450   |
| 1200   | T3           | 20                         | 0197H                          | 5.0                    | 20.0              | 137                         | 18                                     | -88                               | +20    | +25     | 1850   |
| 1200   | T3           | 10                         | 0198H                          | 5.0                    | 20.0              | 137                         | 18                                     | -88                               | +20    | +25     | 1850   |
| 1500   | T4           | 20                         | 0199H                          | 7.0                    | 25.0              | 114                         | 15                                     | -88                               | +25    | +30     | 2300   |
| 1500   | T4           | 10                         | 0200H                          | 7.0                    | 25.0              | 114                         | 15                                     | -88                               | +25    | +30     | 2300   |
| <b>15 V<sub>DC</sub> AT +85 °C; 10 V<sub>DC</sub> AT +125 °C</b> |              |                            |                                |                        |                   |                             |  |                                   |        |         |  |
| 100  | T1           | 20                         | 0201H                          | 2.0                    | 9.0               | 30                          | 72                                     | -44                               | +13    | +16     | 900  |
| 100  | T1           | 10                         | 0202H                          | 2.0                    | 9.0               | 30                          | 72                                     | -44                               | +13    | +16     | 900  |
| 390  | T2           | 20                         | 0203H                          | 3.0                    | 16.0              | 74                          | 31                                     | -66                               | +16    | +20     | 1450   |
| 390  | T2           | 10                         | 0204H                          | 3.0                    | 16.0              | 74                          | 31                                     | -66                               | +16    | +20     | 1450   |
| 820  | T3           | 20                         | 0205H                          | 6.0                    | 24.0              | 111                         | 22                                     | -77                               | +20    | +25     | 1800   |
| 820  | T3           | 10                         | 0206H                          | 6.0                    | 24.0              | 111                         | 22                                     | -77                               | +20    | +25     | 1800   |
| 1000   | T4           | 20                         | 0207H                          | 8.0                    | 32.0              | 92                          | 17                                     | -77                               | +25    | +30     | 2300   |
| 1000   | T4           | 10                         | 0208H                          | 8.0                    | 32.0              | 92                          | 17                                     | -77                               | +25    | +30     | 2300   |
| <b>25 V<sub>DC</sub> AT +85 °C; 15 V<sub>DC</sub> AT +125 °C</b> |              |                            |                                |                        |                   |                             |  |                                   |        |         |  |
| 68   | T1           | 20                         | 0209H                          | 2.0                    | 9.0               | 22                          | 90                                     | -40                               | +12    | +15     | 850  |
| 68   | T1           | 10                         | 0210H                          | 2.0                    | 9.0               | 22                          | 90                                     | -40                               | +12    | +15     | 850  |
| 270  | T2           | 20                         | 0211H                          | 3.0                    | 16.0              | 55                          | 33                                     | -62                               | +13    | +16     | 1400   |
| 270  | T2           | 10                         | 0212H                          | 3.0                    | 16.0              | 55                          | 33                                     | -62                               | +13    | +16     | 1400   |
| 560  | T3           | 20                         | 0213H                          | 7.0                    | 28.0              | 76                          | 24                                     | -72                               | +20    | +25     | 1750   |
| 560  | T3           | 10                         | 0214H                          | 7.0                    | 28.0              | 76                          | 24                                     | -72                               | +20    | +25     | 1750   |
| 680  | T4           | 20                         | 0215H                          | 8.0                    | 32.0              | 63                          | 19                                     | -72                               | +25    | +30     | 2100   |
| 680  | T4           | 10                         | 0216H                          | 8.0                    | 32.0              | 63                          | 19                                     | -72                               | +25    | +30     | 2100   |
| <b>30 V<sub>DC</sub> AT +85 °C; 20 V<sub>DC</sub> AT +125 °C</b> |              |                            |                                |                        |                   |                             |  |                                   |        |         |  |
| 56   | T1           | 20                         | 0217H                          | 2.0                    | 9.0               | 22                          | 100                                    | -38                               | +12    | +15     | 800  |
| 56   | T1           | 10                         | 0218H                          | 2.0                    | 9.0               | 22                          | 100                                    | -38                               | +12    | +15     | 800  |
| 220  | T2           | 20                         | 0219H                          | 3.0                    | 16.0              | 42                          | 36                                     | -60                               | +13    | +16     | 1200   |
| 220  | T2           | 10                         | 0220H                          | 3.0                    | 16.0              | 42                          | 36                                     | -60                               | +13    | +16     | 1200   |
| 470  | T3           | 20                         | 0221H                          | 8.0                    | 32.0              | 64                          | 25                                     | -65                               | +20    | +25     | 1500   |
| 470  | T3           | 10                         | 0222H                          | 8.0                    | 32.0              | 64                          | 25                                     | -65                               | +20    | +25     | 1500   |
| 560  | T4           | 20                         | 0223H                          | 9.0                    | 36.0              | 55                          | 20                                     | -65                               | +25    | +30     | 2000   |
| 560  | T4           | 10                         | 0224H                          | 9.0                    | 36.0              | 55                          | 20                                     | -65                               | +25    | +30     | 2000   |
| <b>50 V<sub>DC</sub> AT +85 °C; 30 V<sub>DC</sub> AT +125 °C</b> |              |                            |                                |                        |                   |                             |  |                                   |        |         |  |
| 33   | T1           | 20                         | 0225H                          | 2.0                    | 9.0               | 12.3                        | 135                                    | -29                               | +10    | +12     | 700  |
| 33   | T1           | 10                         | 0226H                          | 2.0                    | 9.0               | 12.3                        | 135                                    | -29                               | +10    | +12     | 700  |
| 120  | T2           | 20                         | 0227H                          | 4.0                    | 24.0              | 22.5                        | 49                                     | -42                               | +12    | +15     | 1200   |
| 120  | T2           | 10                         | 0228H                          | 4.0                    | 24.0              | 22.5                        | 49                                     | -42                               | +12    | +15     | 1200   |
| 270  | T3           | 20                         | 0229H                          | 8.0                    | 32.0              | 37                          | 29                                     | -46                               | +20    | +25     | 1450   |
| 270  | T3           | 10                         | 0230H                          | 8.0                    | 32.0              | 37                          | 29                                     | -46                               | +20    | +25     | 1450   |
| 330  | T4           | 20                         | 0231H                          | 9.0                    | 36.0              | 38                          | 22                                     | -46                               | +25    | +30     | 1900   |
| 330  | T4           | 10                         | 0232H                          | 9.0                    | 36.0              | 38                          | 22                                     | -46                               | +25    | +30     | 1900   |
| <b>60 V<sub>DC</sub> AT +85 °C; 40 V<sub>DC</sub> AT +125 °C</b> |              |                            |                                |                        |                   |                             |  |                                   |        |         |  |
| 27   | T1           | 20                         | 0233H                          | 3.0                    | 12.0              | 10.2                        | 144                                    | -24                               | +10    | +12     | 700  |
| 27   | T1           | 10                         | 0234H                          | 3.0                    | 12.0              | 10.2                        | 144                                    | -24                               | +10    | +12     | 700  |
| 100  | T2           | 20                         | 0235H                          | 4.0                    | 20.0              | 19                          | 54                                     | -36                               | +12    | +15     | 1100   |
| 100  | T2           | 10                         | 0236H                          | 4.0                    | 20.0              | 19                          | 54                                     | -36                               | +12    | +15     | 1100   |
| 220  | T3           | 20                         | 0237H                          | 8.0                    | 32.0              | 30                          | 29                                     | -40                               | +16    | +20     | 1400   |
| 220  | T3           | 10                         | 0238H                          | 8.0                    | 32.0              | 30                          | 29                                     | -40                               | +16    | +20     | 1400   |
| 270  | T4           | 20                         | 0239H                          | 9.0                    | 36.0              | 27                          | 23                                     | -45                               | +20    | +25     | 1850   |
| 270  | T4           | 10                         | 0240H                          | 9.0                    | 36.0              | 27                          | 23                                     | -45                               | +20    | +25     | 1850   |

**Notes**

- (1) Dash number will include the letter "H" to indicate the vibration and shock requirements (i.e., 51 g random vibration, 80 g sinusoidal vibration and 500 g shock)
- (2) For ripple current limits at various temperatures, voltages and frequencies, see Ripple Current table





| STANDARD RATINGS: DLA 06014                                       |              |                            |                                |                        |                   |                             |  |                                   |        |         |  |
|---|--------------|----------------------------|--------------------------------|------------------------|-------------------|-----------------------------|--|-----------------------------------|--------|---------|--|
| CAPACITANCE<br>( $\mu$ F)   | CASE<br>CODE | CAP.<br>TOL.<br>( $\pm$ %) | PIN<br>FOR<br>DLA<br>06014 (1) | MAX. DCL ( $\mu$ A) AT |                   | MAX. DF<br>AT +25 °C<br>(%) | MAX. IMP.<br>AT -55 °C<br>( $\Omega$ ) | MAX. CAPACITANCE<br>CHANGE (%) AT |        |         | MAX.<br>RIPPLE<br>CURRENT<br>AT +85 °C<br>40 kHz<br>(mA) (2) |
|   |              |                            |                                | +25 °C                 | +85 °C<br>+125 °C |                             |  | -55 °C                            | +85 °C | +125 °C |  |
| <b>75 V<sub>DC</sub> AT +85 °C; 50 V<sub>DC</sub> AT +125 °C</b>  |              |                            |                                |                        |                   |                             |  |                                   |        |         |  |
| 22  | T1           | 20                         | 0241H                          | 3.0                    | 12.0              | 8.5                         | 157                                    | -19                               | +10    | +12     | 600  |
| 22  | T1           | 10                         | 0242H                          | 3.0                    | 12.0              | 8.5                         | 157                                    | -19                               | +10    | +12     | 600  |
| 82  | T2           | 20                         | 0243H                          | 4.0                    | 24.0              | 15.2                        | 63                                     | -30                               | +12    | +15     | 1000   |
| 82  | T2           | 10                         | 0244H                          | 4.0                    | 24.0              | 15.2                        | 63                                     | -30                               | +12    | +15     | 1000   |
| 180   | T3           | 20                         | 0245H                          | 9.0                    | 36.0              | 24.4                        | 30                                     | -35                               | +16    | +20     | 1300   |
| 180   | T3           | 10                         | 0246H                          | 9.0                    | 36.0              | 24.4                        | 30                                     | -35                               | +16    | +20     | 1300   |
| 220   | T4           | 20                         | 0247H                          | 10.0                   | 40.0              | 37.0                        | 24                                     | -40                               | +20    | +25     | 1800   |
| 220   | T4           | 10                         | 0248H                          | 10.0                   | 40.0              | 37.0                        | 24                                     | -40                               | +20    | +25     | 1800   |
| <b>100 V<sub>DC</sub> AT +85 °C; 65 V<sub>DC</sub> AT +125 °C</b> |              |                            |                                |                        |                   |                             |  |                                   |        |         |  |
| 10  | T1           | 20                         | 0249H                          | 3.0                    | 12.0              | 4.5                         | 200                                    | -17                               | +10    | +12     | 800  |
| 10  | T1           | 10                         | 0250H                          | 3.0                    | 12.0              | 4.5                         | 200                                    | -17                               | +10    | +12     | 800  |
| 39  | T2           | 20                         | 0251H                          | 5.0                    | 24.0              | 10.4                        | 80                                     | -20                               | +12    | +15     | 1300   |
| 39  | T2           | 10                         | 0252H                          | 5.0                    | 24.0              | 10.4                        | 80                                     | -20                               | +12    | +15     | 1300   |
| 68  | T3           | 20                         | 0253H                          | 10.0                   | 40.0              | 11.3                        | 40                                     | -30                               | +14    | +16     | 1600   |
| 68  | T3           | 10                         | 0254H                          | 10.0                   | 40.0              | 11.3                        | 40                                     | -30                               | +14    | +16     | 1600   |
| 120   | T4           | 20                         | 0255H                          | 12.0                   | 48.0              | 25                          | 30                                     | -35                               | +15    | +17     | 2000   |
| 120   | T4           | 10                         | 0256H                          | 12.0                   | 48.0              | 25                          | 30                                     | -35                               | +15    | +17     | 2000   |
| <b>125 V<sub>DC</sub> AT +85 °C; 85 V<sub>DC</sub> AT +125 °C</b> |              |                            |                                |                        |                   |                             |  |                                   |        |         |  |
| 6.8   | T1           | 20                         | 0257H                          | 3.0                    | 12.0              | 6.0                         | 300                                    | -14                               | +10    | +12     | 700  |
| 6.8   | T1           | 10                         | 0258H                          | 3.0                    | 12.0              | 6.0                         | 300                                    | -14                               | +10    | +12     | 700  |
| 27  | T2           | 20                         | 0259H                          | 5.0                    | 24.0              | 7.2                         | 90                                     | -18                               | +12    | +15     | 1200   |
| 27  | T2           | 10                         | 0260H                          | 5.0                    | 24.0              | 7.2                         | 90                                     | -18                               | +12    | +15     | 1200   |
| 47  | T3           | 20                         | 0261H                          | 10.0                   | 40.0              | 7.9                         | 50                                     | -26                               | +14    | +16     | 1500   |
| 47  | T3           | 10                         | 0262H                          | 10.0                   | 40.0              | 7.9                         | 50                                     | -26                               | +14    | +16     | 1500   |
| 82  | T4           | 20                         | 0263H                          | 12.0                   | 48.0              | 17.4                        | 32                                     | -30                               | +15    | +17     | 1900   |
| 82  | T4           | 10                         | 0264H                          | 12.0                   | 48.0              | 17.4                        | 32                                     | -30                               | +15    | +17     | 1900   |

**Notes**

- (1) Dash number will include the letter "H" to indicate the vibration and shock requirements (i.e., 51 g random vibration, 80 g sinusoidal vibration and 500 g shock)
- (2) For ripple current limits at various temperatures, voltages and frequencies, see Ripple Current table



| STANDARD RATINGS: DLA 06015                                    |              |                       |                                |                  |                   |                             |                               |                                   |        |         |  |  |
|--|--------------|-----------------------|--------------------------------|------------------|-------------------|-----------------------------|-------------------------------|-----------------------------------|--------|---------|--|--|
| CAPACITANCE<br>(μF)  | CASE<br>CODE | CAP.<br>TOL.<br>(± %) | PIN<br>FOR<br>DLA<br>06015 (1) | MAX. DCL (μA) AT |                   | MAX. DF<br>AT +25 °C<br>(%) | MAX. IMP.<br>AT -55 °C<br>(Ω) | MAX. CAPACITANCE<br>CHANGE (%) AT |        |         | MAX. ESR<br>AT +25 °C<br>120 Hz<br>(Ω) (2) | MAX.<br>RIPPLE<br>CURRENT<br>AT 85 °C<br>40 kHz<br>3 mA<br>RMS (3) |
|  |              |                       |                                | +25 °C           | +85 °C<br>+125 °C |                             |                               | -55 °C                            | +85 °C | +125 °C |  |  |
| <b>6 V<sub>DC</sub> AT +85 °C; 4 V<sub>DC</sub> AT +125 °C</b> |              |                       |                                |                  |                   |                             |                               |                                   |        |         |  |  |
| 30   | T1           | 20                    | 0441H                          | 1.0              | 2.0               | 4.5                         | 100                           | -40                               | +10.5  | +12     | 1.99                                       | 820  |
| 30   | T1           | 10                    | 0442H                          | 1.0              | 2.0               | 4.5                         | 100                           | -40                               | +10.5  | +12     | 1.99                                       | 820  |
| 30   | T1           | 5                     | 0443H                          | 1.0              | 2.0               | 4.5                         | 100                           | -40                               | +10.5  | +12     | 1.99                                       | 820  |
| 68   | T1           | 20                    | 0444H                          | 1.0              | 2.0               | 7.5                         | 60                            | -40                               | +14    | +16     | 1.58                                       | 960  |
| 68   | T1           | 10                    | 0445H                          | 1.0              | 2.0               | 7.5                         | 60                            | -40                               | +14    | +16     | 1.58                                       | 960  |
| 68   | T1           | 5                     | 0446H                          | 1.0              | 2.0               | 7.5                         | 60                            | -40                               | +14    | +16     | 1.58                                       | 960  |
| 140  | T2           | 20                    | 0447H                          | 1.0              | 3.0               | 10.5                        | 40                            | -40                               | +14    | +16     | 0.99                                       | 1200   |
| 140  | T2           | 10                    | 0448H                          | 1.0              | 3.0               | 10.5                        | 40                            | -40                               | +14    | +16     | 0.99                                       | 1200   |
| 140  | T2           | 5                     | 0449H                          | 1.0              | 3.0               | 10.5                        | 40                            | -40                               | +14    | +16     | 0.99                                       | 1200   |
| 270  | T2           | 20                    | 0450H                          | 1.0              | 6.5               | 22.5                        | 25                            | -44                               | +17.5  | +20     | 1.11                                       | 1375   |
| 270  | T2           | 10                    | 0451H                          | 1.0              | 6.5               | 22.5                        | 25                            | -44                               | +17.5  | +20     | 1.11                                       | 1375   |
| 270  | T2           | 5                     | 0452H                          | 1.0              | 6.5               | 22.5                        | 25                            | -44                               | +17.5  | +20     | 1.11                                       | 1375   |
| 330  | T3           | 20                    | 0453H                          | 2.0              | 7.9               | 18.0                        | 20                            | -44                               | +14    | +16     | 0.73                                       | 1800   |
| 330  | T3           | 10                    | 0454H                          | 2.0              | 7.9               | 18.0                        | 20                            | -44                               | +14    | +16     | 0.73                                       | 1800   |
| 330  | T3           | 5                     | 0455H                          | 2.0              | 7.9               | 18.0                        | 20                            | -44                               | +14    | +16     | 0.73                                       | 1800   |
| 560  | T3           | 20                    | 0456H                          | 2.0              | 13.0              | 27.5                        | 25                            | -64                               | +17.5  | +20     | 0.65                                       | 1900   |
| 560  | T3           | 10                    | 0457H                          | 2.0              | 13.0              | 27.5                        | 25                            | -64                               | +17.5  | +20     | 0.65                                       | 1900   |
| 560  | T3           | 5                     | 0458H                          | 2.0              | 13.0              | 27.5                        | 25                            | -64                               | +17.5  | +20     | 0.65                                       | 1900   |
| 1200   | T4           | 20                    | 0459H                          | 3.0              | 14.0              | 45.0                        | 20                            | -80                               | +25    | +25     | 0.50                                       | 2265   |
| 1200   | T4           | 10                    | 0460H                          | 3.0              | 14.0              | 45.0                        | 20                            | -80                               | +25    | +25     | 0.50                                       | 2265   |
| <b>8 V<sub>DC</sub> AT +85 °C; 5 V<sub>DC</sub> AT +125 °C</b> |              |                       |                                |                  |                   |                             |                               |                                   |        |         |  |  |
| 25   | T1           | 20                    | 0461H                          | 1.0              | 2.0               | 3.75                        | 100                           | -40                               | +10.5  | +12     | 1.99                                       | 820  |
| 25   | T1           | 10                    | 0462H                          | 1.0              | 2.0               | 3.75                        | 100                           | -40                               | +10.5  | +12     | 1.99                                       | 820  |
| 25   | T1           | 5                     | 0463H                          | 1.0              | 2.0               | 3.75                        | 100                           | -40                               | +10.5  | +12     | 1.99                                       | 820  |
| 56   | T1           | 20                    | 0464H                          | 1.0              | 2.0               | 7.0                         | 59                            | -40                               | +14    | +16     | 1.66                                       | 900  |
| 56   | T1           | 10                    | 0465H                          | 1.0              | 2.0               | 7.0                         | 59                            | -40                               | +14    | +16     | 1.66                                       | 900  |
| 56   | T1           | 5                     | 0466H                          | 1.0              | 2.0               | 7.0                         | 59                            | -40                               | +14    | +16     | 1.66                                       | 900  |
| 120  | T2           | 20                    | 0467H                          | 1.0              | 2.0               | 10.0                        | 50                            | -44                               | +17.5  | +20     | 1.11                                       | 1220   |
| 120  | T2           | 10                    | 0468H                          | 1.0              | 2.0               | 10.0                        | 50                            | -44                               | +17.5  | +20     | 1.11                                       | 1220   |
| 120  | T2           | 5                     | 0469H                          | 1.0              | 2.0               | 10.0                        | 50                            | -44                               | +17.5  | +20     | 1.11                                       | 1220   |
| 220  | T2           | 20                    | 0470H                          | 1.0              | 7.0               | 18.5                        | 30                            | -44                               | +17.5  | +20     | 1.12                                       | 1370   |
| 220  | T2           | 10                    | 0471H                          | 1.0              | 7.0               | 18.5                        | 30                            | -44                               | +17.5  | +20     | 1.12                                       | 1370   |
| 220  | T2           | 5                     | 0472H                          | 1.0              | 7.0               | 18.5                        | 30                            | -44                               | +17.5  | +20     | 1.12                                       | 1370   |
| 290  | T3           | 20                    | 0473H                          | 2.0              | 6.0               | 17.0                        | 25                            | -64                               | +17.5  | +20     | 0.78                                       | 1770   |
| 290  | T3           | 10                    | 0474H                          | 2.0              | 6.0               | 17.0                        | 25                            | -64                               | +17.5  | +20     | 0.78                                       | 1770   |
| 290  | T3           | 5                     | 0475H                          | 2.0              | 6.0               | 17.0                        | 25                            | -64                               | +17.5  | +20     | 0.78                                       | 1770   |
| 430  | T3           | 20                    | 0476H                          | 2.0              | 14.0              | 23.0                        | 25                            | -64                               | +17.5  | +20     | 0.71                                       | 1825   |
| 430  | T3           | 10                    | 0477H                          | 2.0              | 14.0              | 23.0                        | 25                            | -64                               | +17.5  | +20     | 0.71                                       | 1825   |
| 430  | T3           | 5                     | 0478H                          | 2.0              | 14.0              | 23.0                        | 25                            | -64                               | +17.5  | +20     | 0.71                                       | 1825   |
| 850  | T4           | 20                    | 0479H                          | 4.0              | 16.0              | 30.0                        | 22                            | -80                               | +25    | +25     | 0.47                                       | 2330   |
| 850  | T4           | 10                    | 0480H                          | 4.0              | 16.0              | 30.0                        | 22                            | -80                               | +25    | +25     | 0.47                                       | 2330   |

**Notes**

- (1) Dash number will include the letter "H" to indicate the vibration and shock requirements (i.e., 51 g random vibration, 80 g sinusoidal vibration and 500 g shock)
- (2) Maximum ESR is calculated by the following equation:  

$$ESR (max.) = \frac{DF}{2\pi fC}$$
 , where  
 DF = maximum dissipation factor from Standard Ratings table  
 f = 120 Hz  
 C = nominal capacitance
- (3) For ripple current limits at various temperatures, voltages, and frequencies, see Ripple Current table



| STANDARD RATINGS: DLA 06015                                      |              |                       |                                |                  |                   |                             |                               |                                   |        |         |  |  |
|--|--------------|-----------------------|--------------------------------|------------------|-------------------|-----------------------------|-------------------------------|-----------------------------------|--------|---------|--|--|
| CAPACITANCE<br>(μF)  | CASE<br>CODE | CAP.<br>TOL.<br>(± %) | PIN<br>FOR<br>DLA<br>06015 (1) | MAX. DCL (μA) AT |                   | MAX. DF<br>AT +25 °C<br>(%) | MAX. IMP.<br>AT -55 °C<br>(Ω) | MAX. CAPACITANCE<br>CHANGE (%) AT |        |         | MAX. ESR<br>AT +25 °C<br>120 Hz<br>(Ω) (2) | MAX.<br>RIPPLE<br>CURRENT<br>AT 85 °C<br>40 kHz<br>3 mA<br>RMS (3) |
|  |              |                       |                                | +25 °C           | +85 °C<br>+125 °C |                             |                               | -55 °C                            | +85 °C | +125 °C |  |  |
| <b>10 V<sub>DC</sub> AT +85 °C; 7 V<sub>DC</sub> AT +125 °C</b>  |              |                       |                                |                  |                   |                             |                               |                                   |        |         |  |  |
| 20   | T1           | 20                    | 0481H                          | 1.0              | 2.0               | 3.0                         | 175                           | -32                               | +10.5  | +12     | 1.99                                       | 820  |
| 20   | T1           | 10                    | 0482H                          | 1.0              | 2.0               | 3.0                         | 175                           | -32                               | +10.5  | +12     | 1.99                                       | 820  |
| 20   | T1           | 5                     | 0483H                          | 1.0              | 2.0               | 3.0                         | 175                           | -32                               | +10.5  | +12     | 1.99                                       | 820  |
| 47   | T1           | 20                    | 0484H                          | 1.0              | 2.0               | 6.5                         | 100                           | -36                               | +14    | +16     | 1.84                                       | 855  |
| 47   | T1           | 10                    | 0485H                          | 1.0              | 2.0               | 6.5                         | 100                           | -36                               | +14    | +16     | 1.84                                       | 855  |
| 47   | T1           | 5                     | 0486H                          | 1.0              | 2.0               | 6.5                         | 100                           | -36                               | +14    | +16     | 1.84                                       | 855  |
| 100  | T2           | 20                    | 0487H                          | 1.0              | 4.0               | 7.5                         | 60                            | -36                               | +14    | +16     | 0.99                                       | 1200   |
| 100  | T2           | 10                    | 0488H                          | 1.0              | 4.0               | 7.5                         | 60                            | -36                               | +14    | +16     | 0.99                                       | 1200   |
| 100  | T2           | 5                     | 0489H                          | 1.0              | 4.0               | 7.5                         | 60                            | -36                               | +14    | +16     | 0.99                                       | 1200   |
| 180  | T2           | 20                    | 0490H                          | 1.0              | 7.0               | 15.0                        | 40                            | -36                               | +14    | +16     | 1.11                                       | 1365   |
| 180  | T2           | 10                    | 0491H                          | 1.0              | 7.0               | 15.0                        | 40                            | -36                               | +14    | +16     | 1.11                                       | 1365   |
| 180  | T2           | 5                     | 0492H                          | 1.0              | 7.0               | 15.0                        | 40                            | -36                               | +14    | +16     | 1.11                                       | 1365   |
| 250  | T3           | 20                    | 0493H                          | 2.0              | 10.0              | 15.0                        | 30                            | -40                               | +14    | +16     | 0.80                                       | 1720   |
| 250  | T3           | 10                    | 0494H                          | 2.0              | 10.0              | 15.0                        | 30                            | -40                               | +14    | +16     | 0.80                                       | 1720   |
| 250  | T3           | 5                     | 0495H                          | 2.0              | 10.0              | 15.0                        | 30                            | -40                               | +14    | +16     | 0.80                                       | 1720   |
| 390  | T3           | 20                    | 0496H                          | 2.0              | 16.0              | 22.0                        | 25                            | -64                               | +17.5  | +20     | 0.75                                       | 1800   |
| 390  | T3           | 10                    | 0497H                          | 2.0              | 16.0              | 22.0                        | 25                            | -64                               | +17.5  | +20     | 0.75                                       | 1800   |
| 390  | T3           | 5                     | 0498H                          | 2.0              | 16.0              | 22.0                        | 25                            | -64                               | +17.5  | +20     | 0.75                                       | 1800   |
| 750  | T4           | 20                    | 0499H                          | 4.0              | 16.0              | 25.0                        | 23                            | -80                               | +25    | +25     | 0.44                                       | 2360   |
| 750  | T4           | 10                    | 0500H                          | 4.0              | 16.0              | 25.0                        | 23                            | -80                               | +25    | +25     | 0.44                                       | 2360   |
| <b>15 V<sub>DC</sub> AT +85 °C; 10 V<sub>DC</sub> AT +125 °C</b> |              |                       |                                |                  |                   |                             |                               |                                   |        |         |  |  |
| 15   | T1           | 20                    | 0501H                          | 1.0              | 2.0               | 2.5                         | 155                           | -24                               | +10.5  | +12     | 1.99                                       | 780  |
| 15   | T1           | 10                    | 0502H                          | 1.0              | 2.0               | 2.5                         | 155                           | -24                               | +10.5  | +12     | 1.99                                       | 780  |
| 15   | T1           | 5                     | 0503H                          | 1.0              | 2.0               | 2.5                         | 155                           | -24                               | +10.5  | +12     | 1.99                                       | 780  |
| 33   | T1           | 20                    | 0504H                          | 1.0              | 2.0               | 5.0                         | 90                            | -28                               | +14    | +16     | 1.66                                       | 820  |
| 33   | T1           | 10                    | 0505H                          | 1.0              | 2.0               | 5.0                         | 90                            | -28                               | +14    | +16     | 1.66                                       | 820  |
| 33   | T1           | 5                     | 0506H                          | 1.0              | 2.0               | 5.0                         | 90                            | -28                               | +14    | +16     | 1.66                                       | 820  |
| 70   | T2           | 20                    | 0507H                          | 1.0              | 4.0               | 6.5                         | 75                            | -28                               | +14    | +16     | 1.11                                       | 1150   |
| 70   | T2           | 10                    | 0508H                          | 1.0              | 4.0               | 6.5                         | 75                            | -28                               | +14    | +16     | 1.11                                       | 1150   |
| 70   | T2           | 5                     | 0509H                          | 1.0              | 4.0               | 6.5                         | 75                            | -28                               | +14    | +16     | 1.11                                       | 1150   |
| 120  | T2           | 20                    | 0510H                          | 1.0              | 7.0               | 9.0                         | 50                            | -28                               | +17.5  | +20     | 1.12                                       | 1450   |
| 120  | T2           | 10                    | 0511H                          | 1.0              | 7.0               | 9.0                         | 50                            | -28                               | +17.5  | +20     | 1.12                                       | 1450   |
| 120  | T2           | 5                     | 0512H                          | 1.0              | 7.0               | 9.0                         | 50                            | -28                               | +17.5  | +20     | 1.12                                       | 1450   |
| 170  | T3           | 20                    | 0513H                          | 2.0              | 10.0              | 12.5                        | 35                            | -32                               | +14    | +16     | 0.78                                       | 1480   |
| 170  | T3           | 10                    | 0514H                          | 2.0              | 10.0              | 12.5                        | 35                            | -32                               | +14    | +16     | 0.78                                       | 1480   |
| 170  | T3           | 5                     | 0515H                          | 2.0              | 10.0              | 12.5                        | 35                            | -32                               | +14    | +16     | 0.78                                       | 1480   |
| 270  | T3           | 20                    | 0516H                          | 2.0              | 16.0              | 16.0                        | 30                            | -56                               | +17.5  | +20     | 0.71                                       | 1740   |
| 270  | T3           | 10                    | 0517H                          | 2.0              | 16.0              | 16.0                        | 30                            | -56                               | +17.5  | +20     | 0.71                                       | 1740   |
| 270  | T3           | 5                     | 0518H                          | 2.0              | 16.0              | 16.0                        | 30                            | -56                               | +17.5  | +20     | 0.71                                       | 1740   |
| 540  | T4           | 20                    | 0519 H                         | 6.0              | 24.0              | 20.0                        | 23                            | -80                               | +25    | +25     | 0.47                                       | 2330   |
| 540  | T4           | 10                    | 0520H                          | 6.0              | 24.0              | 20.0                        | 23                            | -80                               | +25    | +25     | 0.47                                       | 2330   |

**Notes**

- (1) Dash number will include the letter "H" to indicate the vibration and shock requirements (i.e., 51 g random vibration, 80 g sinusoidal vibration and 500 g shock)
- (2) Maximum ESR is calculated by the following equation:  

$$ESR (max.) = \frac{DF}{2\pi fC}$$
 , where  
 DF = maximum dissipation factor from Standard Ratings table  
 f = 120 Hz  
 C = nominal capacitance
- (3) For ripple current limits at various temperatures, voltages, and frequencies, see Ripple Current table



| STANDARD RATINGS: DLA 06015                                      |              |                       |                                |                  |                   |                             |                               |                                   |        |         |  |  |
|--|--------------|-----------------------|--------------------------------|------------------|-------------------|-----------------------------|-------------------------------|-----------------------------------|--------|---------|--|--|
| CAPACITANCE<br>(μF)  | CASE<br>CODE | CAP.<br>TOL.<br>(± %) | PIN<br>FOR<br>DLA<br>06015 (1) | MAX. DCL (μA) AT |                   | MAX. DF<br>AT +25 °C<br>(%) | MAX. IMP.<br>AT -55 °C<br>(Ω) | MAX. CAPACITANCE<br>CHANGE (%) AT |        |         | MAX. ESR<br>AT +25 °C<br>120 Hz<br>(Ω) (2) | MAX.<br>RIPPLE<br>CURRENT<br>AT 85 °C<br>40 kHz<br>3 mA<br>RMS (3) |
|  |              |                       |                                | +25 °C           | +85 °C<br>+125 °C |                             |                               | -55 °C                            | +85 °C | +125 °C |  |  |
| <b>25 V<sub>DC</sub> AT +85 °C; 15 V<sub>DC</sub> AT +125 °C</b> |              |                       |                                |                  |                   |                             |                               |                                   |        |         |  |  |
| 10   | T1           | 20                    | 0521H                          | 1.0              | 2.0               | 2.0                         | 220                           | -16                               | +8     | +9      | 2.66                                       | 715  |
| 10   | T1           | 10                    | 0522H                          | 1.0              | 2.0               | 2.0                         | 220                           | -16                               | +8     | +9      | 2.66                                       | 715  |
| 10   | T1           | 5                     | 0523H                          | 1.0              | 2.0               | 2.0                         | 220                           | -16                               | +8     | +9      | 2.66                                       | 715  |
| 22   | T1           | 20                    | 0524H                          | 1.0              | 2.0               | 3.3                         | 140                           | -20                               | +10.5  | +12     | 1.99                                       | 825  |
| 22   | T1           | 10                    | 0525H                          | 1.0              | 2.0               | 3.3                         | 140                           | -20                               | +10.5  | +12     | 1.99                                       | 825  |
| 22   | T1           | 5                     | 0526H                          | 1.0              | 2.0               | 3.3                         | 140                           | -20                               | +10.5  | +12     | 1.99                                       | 825  |
| 50   | T2           | 20                    | 0527H                          | 1.0              | 2.0               | 5.5                         | 70                            | -28                               | +13    | +15     | 1.46                                       | 1130   |
| 50   | T2           | 10                    | 0528H                          | 1.0              | 2.0               | 5.5                         | 70                            | -28                               | +13    | +15     | 1.46                                       | 1130   |
| 50   | T2           | 5                     | 0529H                          | 1.0              | 2.0               | 5.5                         | 70                            | -28                               | +13    | +15     | 1.46                                       | 1130   |
| 100  | T2           | 20                    | 0530H                          | 1.0              | 10.0              | 7.5                         | 50                            | -28                               | +13    | +15     | 0.99                                       | 1435   |
| 100  | T2           | 10                    | 0531H                          | 1.0              | 10.0              | 7.5                         | 50                            | -28                               | +13    | +15     | 0.99                                       | 1435   |
| 100  | T2           | 5                     | 0532H                          | 1.0              | 10.0              | 7.5                         | 50                            | -28                               | +13    | +15     | 0.99                                       | 1435   |
| 120  | T3           | 20                    | 0533H                          | 2.0              | 6.0               | 10.5                        | 38                            | -32                               | +13    | +15     | 1.16                                       | 1450   |
| 120  | T3           | 10                    | 0534H                          | 2.0              | 6.0               | 10.5                        | 38                            | -32                               | +13    | +15     | 1.16                                       | 1450   |
| 120  | T3           | 5                     | 0535H                          | 2.0              | 6.0               | 10.5                        | 38                            | -32                               | +13    | +15     | 1.16                                       | 1450   |
| 180  | T3           | 20                    | 0536H                          | 2.0              | 18.0              | 13.0                        | 32                            | -48                               | +13    | +15     | 0.96                                       | 1525   |
| 180  | T3           | 10                    | 0537H                          | 2.0              | 18.0              | 13.0                        | 32                            | -48                               | +13    | +15     | 0.96                                       | 1525   |
| 180  | T3           | 5                     | 0538H                          | 2.0              | 18.0              | 13.0                        | 32                            | -48                               | +13    | +15     | 0.96                                       | 1525   |
| 350  | T4           | 20                    | 0539H                          | 7.0              | 28.0              | 17.5                        | 24                            | -70                               | +25    | +25     | 0.67                                       | 1970   |
| 350  | T4           | 10                    | 0540H                          | 7.0              | 28.0              | 17.5                        | 24                            | -70                               | +25    | +25     | 0.67                                       | 1970   |
| <b>30 V<sub>DC</sub> AT +85 °C; 20 V<sub>DC</sub> AT +125 °C</b> |              |                       |                                |                  |                   |                             |                               |                                   |        |         |  |  |
| 8  | T1           | 20                    | 0541H                          | 1.0              | 2.0               | 2.0                         | 275                           | -16                               | +8     | +12     | 3.32                                       | 640  |
| 8  | T1           | 10                    | 0542H                          | 1.0              | 2.0               | 2.0                         | 275                           | -16                               | +8     | +12     | 3.32                                       | 640  |
| 8  | T1           | 5                     | 0543H                          | 1.0              | 2.0               | 2.0                         | 275                           | -16                               | +8     | +12     | 3.32                                       | 640  |
| 15   | T1           | 20                    | 0544H                          | 1.0              | 2.0               | 2.5                         | 175                           | -20                               | +10.5  | +12     | 2.21                                       | 780  |
| 15   | T1           | 10                    | 0545H                          | 1.0              | 2.0               | 2.5                         | 175                           | -20                               | +10.5  | +12     | 2.21                                       | 780  |
| 15   | T1           | 5                     | 0546H                          | 1.0              | 2.0               | 2.5                         | 175                           | -20                               | +10.5  | +12     | 2.21                                       | 780  |
| 40   | T2           | 20                    | 0547H                          | 1.0              | 5.0               | 5.0                         | 65                            | -24                               | +10.5  | +12     | 1.66                                       | 1120   |
| 40   | T2           | 10                    | 0548H                          | 1.0              | 5.0               | 5.0                         | 65                            | -24                               | +10.5  | +12     | 0.66                                       | 1120   |
| 40   | T2           | 5                     | 0549H                          | 1.0              | 5.0               | 5.0                         | 65                            | -24                               | +10.5  | +12     | 0.66                                       | 1120   |
| 68   | T2           | 20                    | 0550H                          | 1.0              | 8.0               | 6.5                         | 60                            | -24                               | +13    | +15     | 1.27                                       | 1285   |
| 68   | T2           | 10                    | 0551H                          | 1.0              | 8.0               | 6.5                         | 60                            | -24                               | +13    | +15     | 1.27                                       | 1285   |
| 68   | T2           | 5                     | 0552H                          | 1.0              | 8.0               | 6.5                         | 60                            | -24                               | +13    | +15     | 1.27                                       | 1285   |
| 100  | T3           | 20                    | 0553H                          | 2.0              | 12.0              | 8.5                         | 40                            | -28                               | +10.5  | +12     | 1.13                                       | 1450   |
| 100  | T3           | 10                    | 0554H                          | 2.0              | 12.0              | 8.5                         | 40                            | -28                               | +10.5  | +12     | 1.13                                       | 1450   |
| 100  | T3           | 5                     | 0555H                          | 2.0              | 12.0              | 8.5                         | 40                            | -28                               | +10.5  | +12     | 1.13                                       | 1450   |
| 150  | T3           | 20                    | 0556H                          | 2.0              | 18.0              | 11.5                        | 35                            | -48                               | +13    | +15     | 1.02                                       | 1525   |
| 150  | T3           | 10                    | 0557H                          | 2.0              | 18.0              | 11.5                        | 35                            | -48                               | +13    | +15     | 1.02                                       | 1525   |
| 150  | T3           | 5                     | 0558H                          | 2.0              | 18.0              | 11.5                        | 35                            | -48                               | +13    | +15     | 1.02                                       | 1525   |
| 300  | T4           | 20                    | 0559H                          | 8.0              | 32.0              | 15.5                        | 25                            | -60                               | +25    | +25     | 0.69                                       | 1950   |
| 300  | T4           | 10                    | 0560H                          | 8.0              | 32.0              | 15.5                        | 25                            | -60                               | +25    | +25     | 0.69                                       | 1950   |

**Notes**

- (1) Dash number will include the letter "H" to indicate the vibration and shock requirements (i.e., 51 g random vibration, 80 g sinusoidal vibration and 500 g shock)
- (2) Maximum ESR is calculated by the following equation:  

$$ESR (max.) = \frac{DF}{2\pi fC}$$
 , where  
 DF = maximum dissipation factor from Standard Ratings table  
 f = 120 Hz  
 C = nominal capacitance
- (3) For ripple current limits at various temperatures, voltages, and frequencies, see Ripple Current table



| STANDARD RATINGS: DLA 06015                                      |              |                       |                                |                  |                   |                             |                               |                                   |        |         |  |  |  |
|--|--------------|-----------------------|--------------------------------|------------------|-------------------|-----------------------------|-------------------------------|-----------------------------------|--------|---------|--|--|--|
| CAPACITANCE<br>(μF)  | CASE<br>CODE | CAP.<br>TOL.<br>(± %) | PIN<br>FOR<br>DLA<br>06015 (1) | MAX. DCL (μA) AT |                   | MAX. DF<br>AT +25 °C<br>(%) | MAX. IMP.<br>AT -55 °C<br>(Ω) | MAX. CAPACITANCE<br>CHANGE (%) AT |        |         | MAX. ESR<br>AT +25 °C<br>120 Hz<br>(Ω) (2) | MAX.<br>RIPPLE<br>CURRENT<br>AT 85 °C<br>40 kHz<br>3 mA<br>RMS (3) |  |
|  |              |                       |                                | +25 °C           | +85 °C<br>+125 °C |                             |                               | -55 °C                            | +85 °C | +125 °C |  |  |  |
| <b>50 V<sub>DC</sub> AT +85 °C; 30 V<sub>DC</sub> AT +125 °C</b> |              |                       |                                |                  |                   |                             |                               |                                   |        |         |  |  |  |
| 5  | T1           | 20                    | 0561H                          | 1.0              | 2.0               | 1.5                         | 400                           | -16                               | +5     | +6      | 3.98                                       | 580  |  |
| 5  | T1           | 10                    | 0562H                          | 1.0              | 2.0               | 1.5                         | 400                           | -16                               | +5     | +6      | 3.98                                       | 580  |  |
| 5  | T1           | 5                     | 0563H                          | 1.0              | 2.0               | 1.5                         | 400                           | -16                               | +5     | +6      | 3.98                                       | 580  |  |
| 10   | T1           | 20                    | 0564H                          | 1.0              | 2.0               | 2.0                         | 250                           | -24                               | +8     | +9      | 2.66                                       | 715  |  |
| 10   | T1           | 10                    | 0565H                          | 1.0              | 2.0               | 2.0                         | 250                           | -24                               | +8     | +9      | 2.66                                       | 715  |  |
| 10   | T1           | 5                     | 0566H                          | 1.0              | 2.0               | 2.0                         | 250                           | -24                               | +8     | +9      | 2.66                                       | 715  |  |
| 25   | T2           | 20                    | 0567H                          | 1.0              | 5.0               | 4.0                         | 95                            | -20                               | +10.5  | +12     | 2.13                                       | 1005   |  |
| 25   | T2           | 10                    | 0568H                          | 1.0              | 5.0               | 4.0                         | 95                            | -20                               | +10.5  | +12     | 2.13                                       | 1005   |  |
| 25   | T2           | 5                     | 0569H                          | 1.0              | 5.0               | 4.0                         | 95                            | -20                               | +10.5  | +12     | 2.13                                       | 1005   |  |
| 47   | T2           | 20                    | 0570H                          | 1.0              | 9.0               | 5.0                         | 70                            | -28                               | +13    | +15     | 1.56                                       | 1155   |  |
| 47   | T2           | 10                    | 0571H                          | 1.0              | 9.0               | 5.0                         | 70                            | -28                               | +13    | +15     | 1.56                                       | 1155   |  |
| 47   | T2           | 5                     | 0572H                          | 1.0              | 9.0               | 5.0                         | 70                            | -28                               | +13    | +15     | 1.56                                       | 1155   |  |
| 60   | T3           | 20                    | 0573H                          | 2.0              | 12.0              | 6.0                         | 45                            | -16                               | +10.5  | +12     | 1.33                                       | 1335   |  |
| 60   | T3           | 10                    | 0574H                          | 2.0              | 12.0              | 6.0                         | 45                            | -16                               | +10.5  | +12     | 1.33                                       | 1335   |  |
| 60   | T3           | 5                     | 0575H                          | 2.0              | 12.0              | 6.0                         | 45                            | -16                               | +10.5  | +12     | 1.33                                       | 1335   |  |
| 82   | T3           | 20                    | 0576H                          | 2.0              | 16.0              | 7.5                         | 45                            | -32                               | +13    | +15     | 1.22                                       | 1400   |  |
| 82   | T3           | 10                    | 0577H                          | 2.0              | 16.0              | 7.5                         | 45                            | -32                               | +13    | +15     | 1.22                                       | 1400   |  |
| 82   | T3           | 5                     | 0578H                          | 2.0              | 16.0              | 7.5                         | 45                            | -32                               | +13    | +15     | 1.22                                       | 1400   |  |
| 160  | T4           | 20                    | 0579H                          | 6.0              | 32.0              | 8.5                         | 27                            | -50                               | +25    | +25     | 0.71                                       | 1900   |  |
| 160  | T4           | 10                    | 0580H                          | 6.0              | 32.0              | 8.5                         | 27                            | -50                               | +25    | +25     | 0.71                                       | 1900   |  |
| <b>60 V<sub>DC</sub> AT +85 °C; 40 V<sub>DC</sub> AT +125 °C</b> |              |                       |                                |                  |                   |                             |                               |                                   |        |         |  |  |  |
| 4  | T1           | 20                    | 0581H                          | 1.0              | 2.0               | 1.4                         | 550                           | -16                               | +5     | +6      | 4.65                                       | 525  |  |
| 4  | T1           | 10                    | 0582H                          | 1.0              | 2.0               | 1.4                         | 550                           | -16                               | +5     | +6      | 4.65                                       | 525  |  |
| 4  | T1           | 5                     | 0583H                          | 1.0              | 2.0               | 1.4                         | 550                           | -16                               | +5     | +6      | 4.65                                       | 525  |  |
| 8.2  | T1           | 20                    | 0584H                          | 1.0              | 2.0               | 2.0                         | 275                           | -24                               | +8     | +9      | 3.24                                       | 625  |  |
| 8.2  | T1           | 10                    | 0585H                          | 1.0              | 2.0               | 2.0                         | 275                           | -24                               | +8     | +9      | 3.24                                       | 625  |  |
| 8.2  | T1           | 5                     | 0586H                          | 1.0              | 2.0               | 2.0                         | 275                           | -24                               | +8     | +9      | 3.24                                       | 625  |  |
| 20   | T2           | 20                    | 0587H                          | 1.0              | 5.0               | 3.5                         | 105                           | -16                               | +10.5  | +12     | 2.32                                       | 930  |  |
| 20   | T2           | 10                    | 0588H                          | 1.0              | 5.0               | 3.5                         | 105                           | -16                               | +10.5  | +12     | 2.32                                       | 930  |  |
| 20   | T2           | 5                     | 0589H                          | 1.0              | 5.0               | 3.5                         | 105                           | -16                               | +10.5  | +12     | 2.32                                       | 930  |  |
| 39   | T2           | 20                    | 0590H                          | 1.0              | 9.0               | 5.0                         | 90                            | -28                               | +10.5  | +12     | 1.70                                       | 1110   |  |
| 39   | T2           | 10                    | 0591H                          | 1.0              | 9.0               | 5.0                         | 90                            | -28                               | +10.5  | +12     | 1.70                                       | 1110   |  |
| 39   | T2           | 5                     | 0592H                          | 1.0              | 9.0               | 5.0                         | 90                            | -28                               | +10.5  | +12     | 1.70                                       | 1110   |  |
| 50   | T3           | 20                    | 0593H                          | 2.0              | 12.0              | 5.0                         | 50                            | -16                               | +10.5  | +12     | 1.33                                       | 1330   |  |
| 50   | T3           | 10                    | 0594H                          | 2.0              | 12.0              | 5.0                         | 50                            | -16                               | +10.5  | +12     | 1.33                                       | 1330   |  |
| 50   | T3           | 5                     | 0595H                          | 2.0              | 12.0              | 5.0                         | 50                            | -16                               | +10.5  | +12     | 1.33                                       | 1330   |  |
| 68   | T3           | 20                    | 0596H                          | 2.0              | 16.0              | 6.5                         | 50                            | -32                               | +10.5  | +12     | 1.27                                       | 1365   |  |
| 68   | T3           | 10                    | 0597H                          | 2.0              | 16.0              | 6.5                         | 50                            | -32                               | +10.5  | +12     | 1.27                                       | 1365   |  |
| 68   | T3           | 5                     | 0598H                          | 2.0              | 16.0              | 6.5                         | 50                            | -32                               | +10.5  | +12     | 1.27                                       | 1365   |  |
| 140  | T4           | 20                    | 0599H                          | 8.0              | 32.0              | 8.0                         | 28                            | -40                               | +20    | +20     | 0.76                                       | 1850   |  |
| 140  | T4           | 10                    | 0600H                          | 8.0              | 32.0              | 8.0                         | 28                            | -40                               | +20    | +20     | 0.76                                       | 1850   |  |

**Notes**

(1) Dash number will include the letter "H" to indicate the vibration and shock requirements (i.e., 51 g random vibration, 80 g sinusoidal vibration and 500 g shock)

(2) Maximum ESR is calculated by the following equation:

$$ESR (max.) = \frac{DF}{2\pi fC}, \text{ where}$$

DF = maximum dissipation factor from Standard Ratings table

f = 120 Hz

C = nominal capacitance

(3) For ripple current limits at various temperatures, voltages, and frequencies, see Ripple Current table



| STANDARD RATINGS: DLA 06015                                       |              |                       |                                |                  |                   |                             |                               |                                   |        |         |  |  |
|---|--------------|-----------------------|--------------------------------|------------------|-------------------|-----------------------------|-------------------------------|-----------------------------------|--------|---------|--|--|
| CAPACITANCE<br>(μF)   | CASE<br>CODE | CAP.<br>TOL.<br>(± %) | PIN<br>FOR<br>DLA<br>06015 (1) | MAX. DCL (μA) AT |                   | MAX. DF<br>AT +25 °C<br>(%) | MAX. IMP.<br>AT -55 °C<br>(Ω) | MAX. CAPACITANCE<br>CHANGE (%) AT |        |         | MAX. ESR<br>AT +25 °C<br>120 Hz<br>(Ω) (2) | MAX.<br>RIPPLE<br>CURRENT<br>AT 85 °C<br>40 kHz<br>3 mA<br>RMS (3) |
|   |              |                       |                                | +25 °C           | +85 °C<br>+125 °C |                             |                               | -55 °C                            | +85 °C | +125 °C |  |  |
| <b>75 V<sub>DC</sub> AT +85 °C; 50 V<sub>DC</sub> AT +125 °C</b>  |              |                       |                                |                  |                   |                             |                               |                                   |        |         |  |  |
| 3.5   | T1           | 20                    | 0601H                          | 1.0              | 2.0               | 1.25                        | 650                           | -16                               | +5     | +6      | 4.74                                       | 525  |
| 3.5   | T1           | 10                    | 0602H                          | 1.0              | 2.0               | 1.25                        | 650                           | -16                               | +5     | +6      | 4.74                                       | 525  |
| 3.5   | T1           | 5                     | 0603H                          | 1.0              | 2.0               | 1.25                        | 650                           | -16                               | +5     | +6      | 4.74                                       | 525  |
| 6.8   | T1           | 20                    | 0604H                          | 1.0              | 2.0               | 1.75                        | 300                           | -20                               | +8     | +9      | 3.42                                       | 610  |
| 6.8   | T1           | 10                    | 0605H                          | 1.0              | 2.0               | 1.75                        | 300                           | -20                               | +8     | +9      | 3.42                                       | 610  |
| 6.8   | T1           | 5                     | 0606H                          | 1.0              | 2.0               | 1.75                        | 300                           | -20                               | +8     | +9      | 3.42                                       | 610  |
| 15  | T2           | 20                    | 0607H                          | 1.0              | 5.0               | 3.0                         | 150                           | -16                               | +8     | +9      | 2.66                                       | 890  |
| 15  | T2           | 10                    | 0608H                          | 1.0              | 5.0               | 3.0                         | 150                           | -16                               | +8     | +9      | 2.66                                       | 890  |
| 15  | T2           | 5                     | 0609H                          | 1.0              | 5.0               | 3.0                         | 150                           | -16                               | +8     | +9      | 2.66                                       | 890  |
| 33  | T2           | 20                    | 0610H                          | 1.0              | 10.0              | 5.0                         | 90                            | -24                               | +10.5  | +15     | 2.01                                       | 1000   |
| 33  | T2           | 10                    | 0611H                          | 1.0              | 10.0              | 5.0                         | 90                            | -24                               | +10.5  | +15     | 2.01                                       | 1000   |
| 33  | T2           | 5                     | 0612H                          | 1.0              | 10.0              | 5.0                         | 90                            | -24                               | +10.5  | +15     | 2.01                                       | 1000   |
| 40  | T3           | 20                    | 0613H                          | 2.0              | 12.0              | 4.5                         | 60                            | -16                               | +10.5  | +12     | 1.50                                       | 1250   |
| 40  | T3           | 10                    | 0614H                          | 2.0              | 12.0              | 4.5                         | 60                            | -16                               | +10.5  | +12     | 1.50                                       | 1250   |
| 40  | T3           | 5                     | 0615H                          | 2.0              | 12.0              | 4.5                         | 60                            | -16                               | +10.5  | +12     | 1.50                                       | 1250   |
| 56  | T3           | 20                    | 0616H                          | 2.0              | 17.0              | 5.5                         | 60                            | -28                               | +10.5  | +15     | 1.31                                       | 1335   |
| 56  | T3           | 10                    | 0617H                          | 2.0              | 17.0              | 5.5                         | 60                            | -28                               | +10.5  | +15     | 1.31                                       | 1335   |
| 56  | T3           | 5                     | 0618H                          | 2.0              | 17.0              | 5.5                         | 60                            | -28                               | +10.5  | +15     | 1.31                                       | 1335   |
| 110   | T4           | 20                    | 0619H                          | 9.0              | 36.0              | 6.0                         | 29                            | -35                               | +20    | +20     | 0.73                                       | 1850   |
| 110   | T4           | 10                    | 0620H                          | 9.0              | 36.0              | 6.0                         | 29                            | -35                               | +20    | +20     | 0.73                                       | 1850   |
| <b>100 V<sub>DC</sub> AT +85 °C; 65 V<sub>DC</sub> AT +125 °C</b> |              |                       |                                |                  |                   |                             |                               |                                   |        |         |  |  |
| 2.5   | T1           | 20                    | 0621H                          | 1.0              | 2.0               | 1.0                         | 950                           | -16                               | +7     | +8      | 5.31                                       | 505  |
| 2.5   | T1           | 10                    | 0622H                          | 1.0              | 2.0               | 1.0                         | 950                           | -16                               | +7     | +8      | 5.31                                       | 505  |
| 2.5   | T1           | 5                     | 0623H                          | 1.0              | 2.0               | 1.0                         | 950                           | -16                               | +7     | +8      | 5.31                                       | 505  |
| 4.7   | T1           | 20                    | 0624H                          | 1.0              | 2.0               | 1.5                         | 500                           | -16                               | +7     | +8      | 4.24                                       | 565  |
| 4.7   | T1           | 10                    | 0625H                          | 1.0              | 2.0               | 1.5                         | 500                           | -16                               | +7     | +8      | 4.24                                       | 565  |
| 4.7   | T1           | 5                     | 0626H                          | 1.0              | 2.0               | 1.5                         | 500                           | -16                               | +7     | +8      | 4.24                                       | 565  |
| 11  | T2           | 20                    | 0627H                          | 1.0              | 4.0               | 2.5                         | 200                           | -16                               | +8     | +8      | 3.02                                       | 835  |
| 11  | T2           | 10                    | 0628H                          | 1.0              | 4.0               | 2.5                         | 200                           | -16                               | +8     | +8      | 3.02                                       | 835  |
| 11  | T2           | 5                     | 0629H                          | 1.0              | 4.0               | 2.5                         | 200                           | -16                               | +8     | +8      | 3.02                                       | 835  |
| 22  | T2           | 20                    | 0630H                          | 1.0              | 9.0               | 3.75                        | 100                           | -16                               | +8     | +8      | 2.26                                       | 965  |
| 22  | T2           | 10                    | 0631H                          | 1.0              | 9.0               | 3.75                        | 100                           | -16                               | +8     | +8      | 2.26                                       | 965  |
| 22  | T2           | 5                     | 0632H                          | 1.0              | 9.0               | 3.75                        | 100                           | -16                               | +8     | +8      | 2.26                                       | 965  |
| 30  | T3           | 20                    | 0633H                          | 2.0              | 12.0              | 3.5                         | 80                            | -16                               | +8     | +8      | 1.55                                       | 1240   |
| 30  | T3           | 10                    | 0634H                          | 2.0              | 12.0              | 3.5                         | 80                            | -16                               | +8     | +8      | 1.55                                       | 1240   |
| 30  | T3           | 5                     | 0635H                          | 2.0              | 12.0              | 3.5                         | 80                            | -16                               | +8     | +8      | 1.55                                       | 1240   |
| 43  | T3           | 20                    | 0636H                          | 2.0              | 17.0              | 4.25                        | 70                            | -20                               | +8     | +8      | 1.31                                       | 1335   |
| 43  | T3           | 10                    | 0637H                          | 2.0              | 17.0              | 4.25                        | 70                            | -20                               | +8     | +8      | 1.31                                       | 1335   |
| 43  | T3           | 5                     | 0638H                          | 2.0              | 17.0              | 4.25                        | 70                            | -20                               | +8     | +8      | 1.31                                       | 1335   |
| 86  | T4           | 20                    | 0639H                          | 9.0              | 36.0              | 5.0                         | 30                            | -25                               | +15    | +15     | 0.77                                       | 1800   |
| 86  | T4           | 10                    | 0640H                          | 9.0              | 36.0              | 5.0                         | 30                            | -25                               | +15    | +15     | 0.77                                       | 1800   |

**Notes**

(1) Dash number will include the letter "H" to indicate the vibration and shock requirements (i.e., 51 g random vibration, 80 g sinusoidal vibration and 500 g shock)

(2) Maximum ESR is calculated by the following equation:

$$ESR (max.) = \frac{DF}{2\pi fC}, \text{ where}$$

DF = maximum dissipation factor from Standard Ratings table

f = 120 Hz

C = nominal capacitance

(3) For ripple current limits at various temperatures, voltages, and frequencies, see Ripple Current table



| STANDARD RATINGS: DLA 06015                                  |              |                       |                                |                  |                   |                             |                               |                                   |        |         |  |  |
|--|--------------|-----------------------|--------------------------------|------------------|-------------------|-----------------------------|-------------------------------|-----------------------------------|--------|---------|--|--|
| CAPACITANCE<br>(μF)  | CASE<br>CODE | CAP.<br>TOL.<br>(± %) | PIN<br>FOR<br>DLA<br>06015 (1) | MAX. DCL (μA) AT |                   | MAX. DF<br>AT +25 °C<br>(%) | MAX. IMP.<br>AT -55 °C<br>(Ω) | MAX. CAPACITANCE<br>CHANGE (%) AT |        |         | MAX. ESR<br>AT +25 °C<br>120 Hz<br>(Ω) (2) | MAX.<br>RIPPLE<br>CURRENT<br>AT 85 °C<br>40 kHz<br>3 mA<br>RMS (3) |
|  |              |                       |                                | +25 °C           | +85 °C<br>+125 °C |                             |                               | -55 °C                            | +85 °C | +125 °C |  |  |
| 125 V <sub>DC</sub> AT +85 °C; 85 V <sub>DC</sub> AT +125 °C |              |                       |                                |                  |                   |                             |                               |                                   |        |         |  |  |
| 1.7  | T1           | 20                    | 0641H                          | 1.0              | 2.0               | 1.0                         | 1250                          | -16                               | +7     | +8      | 7.81                                       | 415  |
| 1.7  | T1           | 10                    | 0642H                          | 1.0              | 2.0               | 1.0                         | 1250                          | -16                               | +7     | +8      | 7.81                                       | 415  |
| 1.7  | T1           | 5                     | 0643H                          | 1.0              | 2.0               | 1.0                         | 1250                          | -16                               | +7     | +8      | 7.81                                       | 415  |
| 3.6  | T1           | 20                    | 0644H                          | 1.0              | 2.0               | 1.35                        | 600                           | -24                               | +7     | +8      | 4.98                                       | 520  |
| 3.6  | T1           | 10                    | 0645H                          | 1.0              | 2.0               | 1.35                        | 600                           | -16                               | +7     | +8      | 4.98                                       | 520  |
| 3.6  | T1           | 5                     | 0646H                          | 1.0              | 2.0               | 1.35                        | 600                           | -16                               | +7     | +8      | 4.98                                       | 520  |
| 9.0  | T2           | 20                    | 0647H                          | 1.0              | 5.0               | 2.5                         | 240                           | -16                               | +7     | +8      | 3.69                                       | 755  |
| 9.0  | T2           | 10                    | 0648H                          | 1.0              | 5.0               | 2.5                         | 240                           | -16                               | +7     | +8      | 3.69                                       | 755  |
| 9.0  | T2           | 5                     | 0649H                          | 1.0              | 5.0               | 2.5                         | 240                           | -16                               | +7     | +8      | 3.69                                       | 755  |
| 14   | T2           | 20                    | 0650H                          | 1.0              | 7.0               | 3.0                         | 167                           | -16                               | +7     | +8      | 2.85                                       | 860  |
| 14   | T2           | 10                    | 0651H                          | 1.0              | 7.0               | 3.0                         | 167                           | -16                               | +7     | +8      | 2.85                                       | 860  |
| 14   | T2           | 5                     | 0652H                          | 1.0              | 7.0               | 3.0                         | 167                           | -16                               | +7     | +8      | 2.85                                       | 860  |
| 18   | T3           | 20                    | 0653H                          | 2.0              | 9.0               | 2.5                         | 129                           | -16                               | +7     | +8      | 1.85                                       | 1130   |
| 18   | T3           | 10                    | 0654H                          | 2.0              | 9.0               | 2.5                         | 129                           | -16                               | +7     | +8      | 1.85                                       | 1130   |
| 18   | T3           | 5                     | 0655H                          | 2.0              | 9.0               | 2.5                         | 129                           | -16                               | +7     | +8      | 1.85                                       | 1130   |
| 25   | T3           | 20                    | 0656H                          | 2.0              | 13.0              | 3.0                         | 93                            | -16                               | +7     | +8      | 1.59                                       | 1200   |
| 25   | T3           | 10                    | 0657H                          | 2.0              | 13.0              | 3.0                         | 93                            | -16                               | +7     | +8      | 1.59                                       | 1200   |
| 25   | T3           | 5                     | 0658H                          | 2.0              | 13.0              | 3.0                         | 93                            | -16                               | +7     | +8      | 1.59                                       | 1200   |
| 56   | T4           | 20                    | 0659 H                         | 10.0             | 40.0              | 3.25                        | 32                            | -25                               | +15    | +15     | 0.77                                       | 1800   |
| 56   | T4           | 10                    | 0660H                          | 10.0             | 40.0              | 3.25                        | 32                            | -25                               | +15    | +15     | 0.77                                       | 1800   |

**Notes**

- (1) Dash number will include the letter "H" to indicate the vibration and shock requirements (i.e., 51 g random vibration, 80 g sinusoidal vibration and 500 g shock)
- (2) Maximum ESR is calculated by the following equation:  

$$ESR (max.) = \frac{DF}{2\pi fC}$$
 , where  
 DF = maximum dissipation factor from Standard Ratings table  
 f = 120 Hz  
 C = nominal capacitance
- (3) For ripple current limits at various temperatures, voltages, and frequencies, see Ripple Current table



| STANDARD RATINGS: DLA 06016                                      |           |                 |                       |                  |                |                       |                         |                                 |        |         |                                   |  |
|--|-----------|-----------------|-----------------------|------------------|----------------|-----------------------|-------------------------|---------------------------------|--------|---------|-----------------------------------|--|
| CAPACITANCE (µF)   | CASE CODE | CAP. TOL. (± %) | PIN FOR DLA 06016 (1) | MAX. DCL (µA) AT |                | MAX. DF AT +25 °C (%) | MAX. IMP. AT -55 °C (Ω) | MAX.. CAPACITANCE CHANGE (%) AT |        |         | MAX. ESR AT +25 °C 120 Hz (Ω) (2) | MAX. RIPPLE CURRENT AT 85 °C 40 kHz 3 mA RMS (3) |
|  |           |                 |                       | +25 °C           | +85 °C +125 °C |                       |                         | -55 °C                          | +85 °C | +125 °C |                                   |  |
| <b>6 V<sub>DC</sub> AT +85 °C; 4 V<sub>DC</sub> AT +125 °C</b>   |           |                 |                       |                  |                |                       |                         |                                 |        |         |                                   |  |
| 220  | T1        | 20              | 0177H                 | 2                | 9              | 25                    | 36                      | -64                             | 13     | 16      | 1.51                              | 1000   |
| 220  | T1        | 10              | 0178H                 | 2                | 9              | 25                    | 36                      | -64                             | 13     | 16      | 1.51                              | 1000   |
| 820  | T2        | 20              | 0179H                 | 3                | 14             | 77.5                  | 18                      | -88                             | 16     | 20      | 1.26                              | 1500   |
| 820  | T2        | 10              | 0180H                 | 3                | 14             | 77.5                  | 18                      | -88                             | 16     | 20      | 1.26                              | 1500   |
| 1500   | T3        | 20              | 0181H                 | 5                | 20             | 86                    | 18                      | -90                             | 20     | 25      | 0.76                              | 1900   |
| 1500   | T3        | 10              | 0182H                 | 5                | 20             | 86                    | 18                      | -90                             | 20     | 25      | 0.76                              | 1900   |
| 2200   | T4        | 20              | 0183H                 | 6                | 24             | 85                    | 13                      | -90                             | 25     | 30      | 0.52                              | 2300   |
| 2200   | T4        | 10              | 0184H                 | 6                | 24             | 85                    | 13                      | -90                             | 25     | 30      | 0.52                              | 2300   |
| <b>8 V<sub>DC</sub> AT +85 °C; 5 V<sub>DC</sub> AT +125 °C</b>   |           |                 |                       |                  |                |                       |                         |                                 |        |         |                                   |  |
| 180  | T1        | 20              | 0185H                 | 2                | 9              | 20.5                  | 45                      | -60                             | 13     | 16      | 1.51                              | 1000   |
| 180  | T1        | 10              | 0186H                 | 2                | 9              | 20.5                  | 45                      | -60                             | 13     | 16      | 1.51                              | 1000   |
| 680  | T2        | 20              | 0187H                 | 3                | 14             | 65                    | 22                      | -83                             | 16     | 20      | 1.27                              | 1500   |
| 680  | T2        | 10              | 0188H                 | 3                | 14             | 65                    | 22                      | -83                             | 16     | 20      | 1.27                              | 1500   |
| 1500   | T3        | 20              | 0189H                 | 5                | 20             | 85                    | 18                      | -90                             | 20     | 25      | 0.75                              | 1900   |
| 1500   | T3        | 10              | 0190H                 | 5                | 20             | 85                    | 18                      | -90                             | 20     | 25      | 0.75                              | 1900   |
| 1800   | T4        | 20              | 0191H                 | 7                | 25             | 69                    | 14                      | -90                             | 25     | 30      | 0.51                              | 2300   |
| 1800   | T4        | 10              | 0192H                 | 7                | 25             | 69                    | 14                      | -90                             | 25     | 30      | 0.51                              | 2300   |
| <b>10 V<sub>DC</sub> AT +85 °C; 7 V<sub>DC</sub> AT +125 °C</b>  |           |                 |                       |                  |                |                       |                         |                                 |        |         |                                   |  |
| 150  | T1        | 20              | 0193H                 | 2                | 9              | 17                    | 54                      | -55                             | 13     | 16      | 1.51                              | 900  |
| 150  | T1        | 10              | 0194                  | 2                | 9              | 17                    | 54                      | -55                             | 13     | 16      | 1.51                              | 900  |
| 560  | T2        | 20              | 0195H                 | 3                | 16             | 53                    | 27                      | -77                             | 16     | 20      | 1.26                              | 1450   |
| 560  | T2        | 10              | 0196H                 | 3                | 16             | 53                    | 27                      | -77                             | 16     | 20      | 1.26                              | 1450   |
| 1200   | T3        | 20              | 0197H                 | 5                | 20             | 68.5                  | 18                      | -88                             | 20     | 25      | 0.76                              | 1850   |
| 1200   | T3        | 10              | 0198H                 | 5                | 20             | 68.5                  | 18                      | -88                             | 20     | 25      | 0.76                              | 1850   |
| 1500   | T4        | 20              | 0199H                 | 7                | 25             | 57                    | 15                      | -88                             | 25     | 30      | 0.51                              | 2300   |
| 1500   | T4        | 10              | 0200H                 | 7                | 25             | 57                    | 15                      | -88                             | 25     | 30      | 0.51                              | 2300   |
| <b>15 V<sub>DC</sub> AT +85 °C; 10 V<sub>DC</sub> AT +125 °C</b> |           |                 |                       |                  |                |                       |                         |                                 |        |         |                                   |  |
| 100  | T1        | 20              | 0201H                 | 2                | 9              | 15                    | 72                      | -44                             | 13     | 16      | 1.99                              | 900  |
| 100  | T1        | 10              | 0202H                 | 2                | 9              | 15                    | 72                      | -44                             | 13     | 16      | 1.99                              | 900  |
| 390  | T2        | 20              | 0203H                 | 3                | 16             | 37                    | 31                      | -66                             | 16     | 20      | 1.26                              | 1450   |
| 390  | T2        | 10              | 0204H                 | 3                | 16             | 37                    | 31                      | -66                             | 16     | 20      | 1.26                              | 1450   |
| 820  | T3        | 20              | 0205H                 | 6                | 24             | 55.5                  | 22                      | -77                             | 20     | 25      | 0.9                               | 1800   |
| 820  | T3        | 10              | 0206H                 | 6                | 24             | 55.5                  | 22                      | -77                             | 20     | 25      | 0.9                               | 1800   |
| 1000   | T4        | 20              | 0207H                 | 8                | 32             | 46                    | 17                      | -77                             | 25     | 30      | 0.61                              | 2300   |
| 1000   | T4        | 10              | 0208H                 | 8                | 32             | 46                    | 17                      | -77                             | 25     | 30      | 0.61                              | 2300   |
| <b>25 V<sub>DC</sub> AT +85 °C; 15 V<sub>DC</sub> AT +125 °C</b> |           |                 |                       |                  |                |                       |                         |                                 |        |         |                                   |  |
| 68   | T1        | 20              | 0209H                 | 2                | 9              | 11                    | 90                      | -40                             | 12     | 15      | 2.15                              | 850  |
| 68   | T1        | 10              | 0210H                 | 2                | 9              | 11                    | 90                      | -40                             | 12     | 15      | 2.15                              | 850  |
| 270  | T2        | 20              | 0211H                 | 3                | 16             | 27.5                  | 33                      | -62                             | 13     | 16      | 1.35                              | 1400   |
| 270  | T2        | 10              | 0212H                 | 3                | 16             | 27.5                  | 33                      | -62                             | 13     | 16      | 1.35                              | 1400   |
| 560  | T3        | 20              | 0213H                 | 7                | 28             | 38                    | 24                      | -72                             | 20     | 25      | 0.9                               | 1750   |
| 560  | T3        | 10              | 0214H                 | 7                | 28             | 38                    | 24                      | -72                             | 20     | 25      | 0.9                               | 1750   |
| 680  | T4        | 20              | 0215H                 | 8                | 32             | 31.5                  | 19                      | -72                             | 25     | 30      | 0.62                              | 2100   |
| 680  | T4        | 10              | 0216H                 | 8                | 32             | 31.5                  | 19                      | -72                             | 25     | 30      | 0.62                              | 2100   |

**Notes**

- (1) Dash number will include the letter "H" to indicate the vibration and shock requirements (i.e., 51 g random vibration, 80 g sinusoidal vibration and 500 g shock)
- (2) Maximum ESR is calculated by the following equation:  

$$ESR (max.) = \frac{DF}{2\pi fC}$$
 , where  
 DF = maximum dissipation factor from Standard Ratings table  
 f = 120 Hz  
 C = nominal capacitance
- (3) For ripple current limits at various temperatures, voltages, and frequencies, see Ripple Current table





| STANDARD RATINGS: DLA 06016                                      |           |                 |                       |                  |                |                       |                         |                                 |        |         |                                   |  |
|--|-----------|-----------------|-----------------------|------------------|----------------|-----------------------|-------------------------|---------------------------------|--------|---------|-----------------------------------|--|
| CAPACITANCE (µF)   | CASE CODE | CAP. TOL. (± %) | PIN FOR DLA 06016 (1) | MAX. DCL (µA) AT |                | MAX. DF AT +25 °C (%) | MAX. IMP. AT -55 °C (Ω) | MAX.. CAPACITANCE CHANGE (%) AT |        |         | MAX. ESR AT +25 °C 120 Hz (Ω) (2) | MAX. RIPPLE CURRENT AT 85 °C 40 kHz 3 mA RMS (3) |
|  |           |                 |                       | +25 °C           | +85 °C +125 °C |                       |                         | -55 °C                          | +85 °C | +125 °C |                                   |  |
| <b>30 V<sub>DC</sub> AT +85 °C; 20 V<sub>DC</sub> AT +125 °C</b> |           |                 |                       |                  |                |                       |                         |                                 |        |         |                                   |  |
| 56   | T1        | 20              | 0217H                 | 2                | 9              | 11                    | 100                     | -38                             | 12     | 15      | 2.61                              | 800  |
| 56   | T1        | 10              | 0218H                 | 2                | 9              | 11                    | 100                     | -38                             | 12     | 15      | 2.61                              | 800  |
| 220  | T2        | 20              | 0219H                 | 3                | 16             | 21                    | 36                      | -60                             | 13     | 16      | 1.27                              | 1200   |
| 220  | T2        | 10              | 0220H                 | 3                | 16             | 21                    | 36                      | -60                             | 13     | 16      | 1.27                              | 1200   |
| 470  | T3        | 20              | 0221H                 | 8                | 32             | 32                    | 25                      | -65                             | 20     | 25      | 0.91                              | 1500   |
| 470  | T3        | 10              | 0222H                 | 8                | 32             | 32                    | 25                      | -65                             | 20     | 25      | 0.91                              | 1500   |
| 560  | T4        | 20              | 0223H                 | 9                | 36             | 27.5                  | 20                      | -65                             | 25     | 30      | 0.65                              | 2000   |
| 560  | T4        | 10              | 0224H                 | 9                | 36             | 27.5                  | 20                      | -65                             | 25     | 30      | 0.65                              | 2000   |
| <b>50 V<sub>DC</sub> AT +85 °C; 30 V<sub>DC</sub> AT +125 °C</b> |           |                 |                       |                  |                |                       |                         |                                 |        |         |                                   |  |
| 33   | T1        | 20              | 0225H                 | 2                | 9              | 6.15                  | 135                     | -29                             | 10     | 12      | 2.48                              | 700  |
| 33   | T1        | 10              | 0226H                 | 2                | 9              | 6.15                  | 135                     | -29                             | 10     | 12      | 2.48                              | 700  |
| 120  | T2        | 20              | 0227H                 | 4                | 24             | 11.3                  | 49                      | -42                             | 12     | 15      | 1.25                              | 1200   |
| 120  | T2        | 10              | 0228H                 | 4                | 24             | 11.3                  | 49                      | -42                             | 12     | 15      | 1.25                              | 1200   |
| 270  | T3        | 20              | 0229H                 | 8                | 32             | 18.5                  | 29                      | -46                             | 20     | 25      | 0.91                              | 1450   |
| 270  | T3        | 10              | 0230H                 | 8                | 32             | 18.5                  | 29                      | -46                             | 20     | 25      | 0.91                              | 1450   |
| 330  | T4        | 20              | 0231H                 | 9                | 36             | 19                    | 22                      | -46                             | 25     | 30      | 0.77                              | 1900   |
| 330  | T4        | 10              | 0232H                 | 9                | 36             | 19                    | 22                      | -46                             | 25     | 30      | 0.77                              | 1900   |
| <b>60 V<sub>DC</sub> AT +85 °C; 40 V<sub>DC</sub> AT +125 °C</b> |           |                 |                       |                  |                |                       |                         |                                 |        |         |                                   |  |
| 27   | T1        | 20              | 0233H                 | 3                | 12             | 5.1                   | 144                     | -24                             | 10     | 12      | 2.51                              | 700  |
| 27   | T1        | 10              | 0234H                 | 3                | 12             | 5.1                   | 144                     | -24                             | 10     | 12      | 2.51                              | 700  |
| 100  | T2        | 20              | 0235H                 | 4                | 20             | 9.5                   | 54                      | -36                             | 12     | 15      | 1.26                              | 1100   |
| 100  | T2        | 10              | 0236H                 | 4                | 20             | 9.5                   | 54                      | -36                             | 12     | 15      | 1.26                              | 1100   |
| 220  | T3        | 20              | 0237H                 | 8                | 32             | 15                    | 29                      | -40                             | 16     | 20      | 0.91                              | 1400   |
| 220  | T3        | 10              | 0238H                 | 8                | 32             | 15                    | 29                      | -40                             | 16     | 20      | 0.91                              | 1400   |
| 270  | T4        | 20              | 0239H                 | 9                | 36             | 13.5                  | 23                      | -45                             | 20     | 25      | 0.67                              | 1850   |
| 270  | T4        | 10              | 0240H                 | 9                | 36             | 13.5                  | 23                      | -45                             | 20     | 25      | 0.67                              | 1850   |
| <b>75 V<sub>DC</sub> AT +85 °C; 50 V<sub>DC</sub> AT +125 °C</b> |           |                 |                       |                  |                |                       |                         |                                 |        |         |                                   |  |
| 22   | T1        | 20              | 0241H                 | 3                | 12             | 4.25                  | 157                     | -19                             | 10     | 12      | 2.57                              | 600  |
| 22   | T1        | 10              | 0242H                 | 3                | 12             | 4.25                  | 157                     | -19                             | 10     | 12      | 2.57                              | 600  |
| 82   | T2        | 20              | 0243H                 | 4                | 24             | 7.6                   | 63                      | -30                             | 12     | 15      | 1.23                              | 1000   |
| 82   | T2        | 10              | 0244H                 | 4                | 24             | 7.6                   | 63                      | -30                             | 12     | 15      | 1.23                              | 1000   |
| 180  | T3        | 20              | 0245H                 | 9                | 36             | 12.2                  | 30                      | -35                             | 16     | 20      | 0.9                               | 1300   |
| 180  | T3        | 10              | 0246H                 | 9                | 36             | 12.2                  | 30                      | -35                             | 16     | 20      | 0.9                               | 1300   |
| 220  | T4        | 20              | 0247H                 | 10               | 40             | 18.5                  | 24                      | -40                             | 20     | 25      | 1.12                              | 1800   |
| 220  | T4        | 10              | 0248H                 | 10               | 40             | 18.5                  | 24                      | -40                             | 20     | 25      | 1.12                              | 1800   |

**Notes**

- (1) Dash number will include the letter "H" to indicate the vibration and shock requirements (i.e., 51 g random vibration, 80 g sinusoidal vibration and 500 g shock)
- (2) Maximum ESR is calculated by the following equation:  

$$ESR (max.) = \frac{DF}{2\pi fC}$$
 , where  
 DF = maximum dissipation factor from Standard Ratings table  
 f = 120 Hz  
 C = nominal capacitance
- (3) For ripple current limits at various temperatures, voltages, and frequencies, see Ripple Current table



| STANDARD RATINGS: DLA 06016                                       |           |                 |                       |                  |                |                       |                         |                                 |        |         |                                   |  |
|---|-----------|-----------------|-----------------------|------------------|----------------|-----------------------|-------------------------|---------------------------------|--------|---------|-----------------------------------|--|
| CAPACITANCE (µF)  | CASE CODE | CAP. TOL. (± %) | PIN FOR DLA 06016 (1) | MAX. DCL (µA) AT |                | MAX. DF AT +25 °C (%) | MAX. IMP. AT -55 °C (Ω) | MAX.. CAPACITANCE CHANGE (%) AT |        |         | MAX. ESR AT +25 °C 120 Hz (Ω) (2) | MAX. RIPPLE CURRENT AT 85 °C 40 kHz 3 mA RMS (3) |
|   |           |                 |                       | +25 °C           | +85 °C +125 °C |                       |                         | -55 °C                          | +85 °C | +125 °C |                                   |  |
| <b>100 V<sub>DC</sub> AT +85 °C; 65 V<sub>DC</sub> AT +125 °C</b> |           |                 |                       |                  |                |                       |                         |                                 |        |         |                                   |  |
| 10  | T1        | 20              | 0249H                 | 3                | 12             | 2.25                  | 200                     | -17                             | 10     | 12      | 2.99                              | 800  |
| 10  | T1        | 10              | 0250H                 | 3                | 12             | 2.25                  | 200                     | -17                             | 10     | 12      | 2.99                              | 800  |
| 39  | T2        | 20              | 0251H                 | 5                | 24             | 5.2                   | 80                      | -20                             | 12     | 15      | 1.77                              | 1300   |
| 39  | T2        | 10              | 0252H                 | 5                | 24             | 5.2                   | 80                      | -20                             | 12     | 15      | 1.77                              | 1300   |
| 68  | T3        | 20              | 0253H                 | 10               | 40             | 5.65                  | 40                      | -30                             | 14     | 16      | 1.11                              | 1600   |
| 68  | T3        | 10              | 0254H                 | 10               | 40             | 5.65                  | 40                      | -30                             | 14     | 16      | 1.11                              | 1600   |
| 120   | T4        | 20              | 0255H                 | 12               | 48             | 12.5                  | 30                      | -35                             | 15     | 17      | 1.38                              | 2000   |
| 120   | T4        | 10              | 0256H                 | 12               | 48             | 12.5                  | 30                      | -35                             | 15     | 17      | 1.38                              | 2000   |
| <b>125 V<sub>DC</sub> AT +85 °C; 85 V<sub>DC</sub> AT +125 °C</b> |           |                 |                       |                  |                |                       |                         |                                 |        |         |                                   |  |
| 6.8   | T1        | 20              | 0257H                 | 3                | 12             | 3                     | 300                     | -14                             | 10     | 12      | 5.86                              | 700  |
| 6.8   | T1        | 10              | 0258H                 | 3                | 12             | 3                     | 300                     | -14                             | 10     | 12      | 5.86                              | 700  |
| 27  | T2        | 20              | 0259H                 | 5                | 24             | 3.6                   | 90                      | -18                             | 12     | 15      | 1.77                              | 1200   |
| 27  | T2        | 10              | 0260H                 | 5                | 24             | 3.6                   | 90                      | -18                             | 12     | 15      | 1.77                              | 1200   |
| 47  | T3        | 20              | 0261H                 | 10               | 40             | 3.95                  | 50                      | -26                             | 14     | 16      | 1.12                              | 1500   |
| 47  | T3        | 10              | 0262H                 | 10               | 40             | 3.95                  | 50                      | -26                             | 14     | 16      | 1.12                              | 1500   |
| 82  | T4        | 20              | 0263H                 | 12               | 48             | 8.7                   | 32                      | -30                             | 15     | 17      | 1.41                              | 1900   |
| 82  | T4        | 10              | 0264H                 | 12               | 48             | 8.7                   | 32                      | -30                             | 15     | 17      | 1.41                              | 1900   |

**Notes**

- (1) Dash number will include the letter "H" to indicate the vibration and shock requirements (i.e., 51 g random vibration, 80 g sinusoidal vibration and 500 g shock)
- (2) Maximum ESR is calculated by the following equation:  

$$ESR (max.) = \frac{DF}{2\pi f C}$$
 , where  
 DF = maximum dissipation factor from Standard Ratings table  
 f = 120 Hz  
 C = nominal capacitance
- (3) For ripple current limits at various temperatures, voltages, and frequencies, see Ripple Current table

| DLA 06013, DLA 06014, DLA 06015, DLA 06016 RIPPLE CURRENT MULTIPLIERS VS. FREQUENCY, TEMPERATURE AND APPLIED PEAK VOLTAGE |          |         |      |      |      |         |      |      |      |         |      |      |      |         |      |      |      |         |      |      |      |         |      |      |      |
|---|----------|---------|------|------|------|---------|------|------|------|---------|------|------|------|---------|------|------|------|---------|------|------|------|---------|------|------|------|
| FREQUENCY OF APPLIED RIPPLE CURRENT   |          | 120 Hz  |      |      |      | 800 Hz  |      |      |      | 1 kHz   |      |      |      | 10 kHz  |      |      |      | 40 kHz  |      |      |      | 100 kHz |      |      |      |
| AMBIENT STILL AIR   |          | TEMP °C |      |      |      | TEMP °C |      |      |      | TEMP °C |      |      |      | TEMP °C |      |      |      | TEMP °C |      |      |      |         |      |      |      |
|   |          | ≤ 55    | 85   | 105  | 125  | ≤ 55    | 85   | 105  | 125  | ≤ 55    | 85   | 105  | 125  | ≤ 55    | 85   | 105  | 125  | ≤ 55    | 85   | 105  | 125  |         |      |      |      |
| % OF APPLIED VOLTAGE  | 100 %    | 0.60    | 0.39 | -    | -    | 0.71    | 0.43 | -    | -    | 0.72    | 0.46 | -    | -    | 0.88    | 0.55 | -    | -    | 1.0     | 0.63 | -    | -    | 1.1     | 0.69 | -    | -    |
|   | 90 %     | 0.60    | 0.46 | -    | -    | 0.71    | 0.55 | -    | -    | 0.72    | 0.55 | -    | -    | 0.88    | 0.67 | -    | -    | 1.0     | 0.77 | -    | -    | 1.1     | 0.85 | -    | -    |
|   | 80 %     | 0.60    | 0.52 | 0.35 | -    | 0.71    | 0.62 | 0.42 | -    | 0.72    | 0.62 | 0.42 | -    | 0.88    | 0.76 | 0.52 | -    | 1.0     | 0.87 | 0.59 | -    | 1.1     | 0.96 | 0.65 | -    |
|   | 70 %     | 0.60    | 0.58 | 0.44 | -    | 0.71    | 0.69 | 0.52 | -    | 0.72    | 0.70 | 0.52 | -    | 0.88    | 0.85 | 0.64 | -    | 1.0     | 0.97 | 0.73 | -    | 1.1     | 1.07 | 0.80 | -    |
|   | 66 2/3 % | 0.60    | 0.60 | 0.46 | 0.27 | 0.71    | 0.71 | 0.55 | 0.32 | 0.72    | 0.72 | 0.55 | 0.32 | 0.88    | 0.88 | 0.68 | 0.40 | 1.0     | 1.0  | 0.77 | 0.45 | 1.1     | 1.1  | 0.85 | 0.50 |

**Notes**

- 1. At +125 °C the rated voltage of the capacitors decreases to 66 2/3 % of the +85 °C rated voltage
- 2. The peak of the applied AC ripple voltage plus the applied DC voltage must not exceed the DC voltage rating of the capacitor either forward or reverse
- 3. The ripple current listed represents a rating calculated using a maximum internal temperature rise (ΔT) of +50 °C at 40 kHz at +85 °C ambient with a maximum peak rated voltage of 66 2/3 % of the +85 °C peak voltage rating
- 4. The maximum allowable internal temperature rise (ΔT) decreases linearly to a calculated +10 °C rise at +125 °C ambient
- 5. The internal temperature rise is directly proportional to the equivalent series resistance of the capacitor and equivalent series resistance increases with decreasing frequency



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