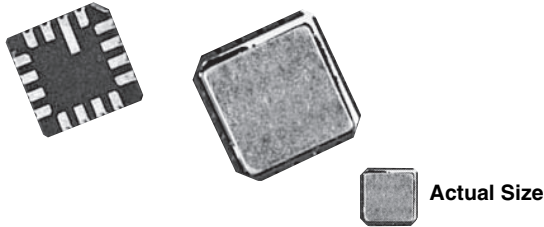


Hermetic, 50 mil Pitch, Leadless Thin Film Chip Resistor, Surface Mount Network



Vishay Dale Thin Film offers a wide resistance range in 16, 20, and 24 terminal hermetic leadless chip carriers. The standard circuits in the ohmic ranges listed below will utilize the outstanding wraparound terminations developed for chip resistors. Should one of the standards not fit your application, consult the applications engineering group as we may be able to meet your requirements.

FEATURES

- High purity alumina substrate for high power dissipation
- Leach resistant terminations with nickel barrier
- 16, 20, 24 terminal gold plated wraparound true hermetic packaging
- Military/aerospace
- Hermetically sealed
- Isolated/bussed circuits
- Ideal for military/aerospace applications
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



Note

* This datasheet provides information about parts that are RoHS-compliant and / or parts that are non-RoHS-compliant. For example, parts with lead (Pb) terminations are not RoHS-compliant. Please see the information / tables in this datasheet for details.

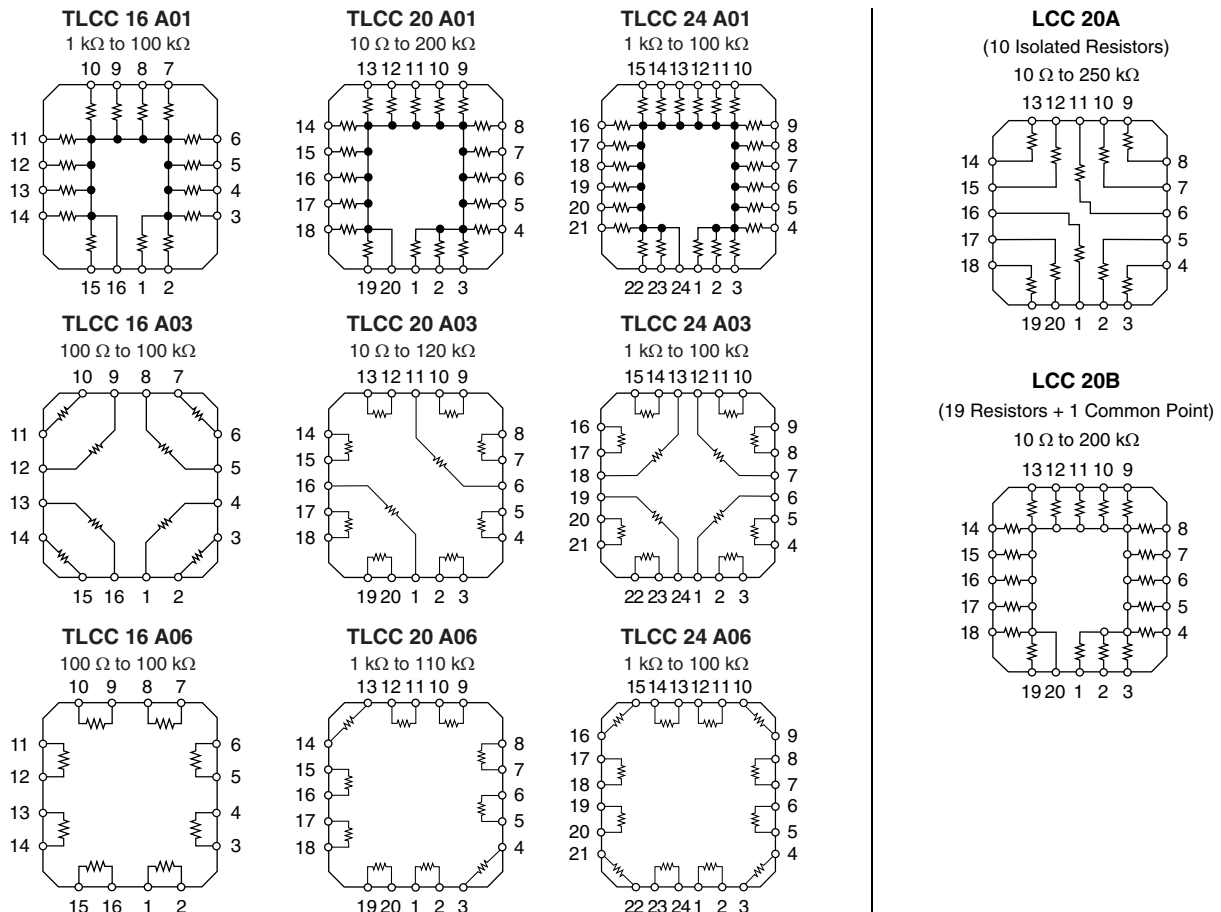
TYPICAL PERFORMANCE

| TCR | ABSOLUTE | TRACKING |
|------|----------|----------|
| | 25 | 5 |
| TOL. | ABSOLUTE | RATIO |
| | 0.1 | NA |

Note

- Resistance range: Noted on schematics.

SCHEMATIC



| STANDARD ELECTRICAL SPECIFICATIONS | | |
|------------------------------------|-----------------------------------------------------------------|---------------------------------------|
| TEST | SPECIFICATIONS | CONDITIONS |
| Material | Passivated nichrome | - |
| Pin/Lead Number | 16, 20, 24 | - |
| Resistance Range | 10 Ω to 250 k Ω per resistor | - |
| TCR: Absolute | ± 25 ppm/ $^{\circ}$ C to ± 300 ppm/ $^{\circ}$ C | -55 $^{\circ}$ C to +125 $^{\circ}$ C |
| TCR: Tracking | ± 5 ppm/ $^{\circ}$ C | -55 $^{\circ}$ C to +125 $^{\circ}$ C |
| Tolerance: Absolute | ± 0.1 % to ± 1.0 % | +25 $^{\circ}$ C |
| Tolerance: Ratio | N/a | - |
| Power Rating: Resistor | 50 mW max. = common circuits 100 mW max. = isolated circuits | Maximum at +70 $^{\circ}$ C |
| Power Rating: Package | 500 mW | Maximum at +70 $^{\circ}$ C |
| Stability: Absolute | $\Delta R \pm 0.05$ % | 2000 h at +70 $^{\circ}$ C |
| Stability: Ratio | - | - |
| Voltage Coefficient | < 5 ppm/V (typical) | - |
| Working Voltage | 100 V max. not to exceed $\sqrt{P \times R}$ | - |
| Operating Temperature Range | -55 $^{\circ}$ C to +125 $^{\circ}$ C | - |
| Storage Temperature Range | -55 $^{\circ}$ C to +150 $^{\circ}$ C | - |
| Noise | < -30 dB | - |
| Thermal EMF | 0.008 μ V/ $^{\circ}$ C | - |
| Shelf Life Stability: Absolute | $\Delta R \pm 0.01$ % | 1 year at + 25 $^{\circ}$ C |
| Shelf Life Stability: Ratio | - | - |

Note

- Tantalum nitride film is custom, consult factory.

| DIMENSIONS in inches and millimeters | | | | | | |
|--------------------------------------|---------|-------------|---------|-------------|---------|-------------|
| | | | | | | |
| DIMENSION | 16 PINS | | 20 PINS | | 24 PINS | |
| | INCHES | MILLIMETERS | INCHES | MILLIMETERS | INCHES | MILLIMETERS |
| A | 0.050 | 1.27 | 0.050 | 1.27 | 0.050 | 1.27 |
| B | 0.300 | 7.26 | 0.350 | 8.89 | 0.400 | 10.16 |
| C | 0.300 | 7.26 | 0.350 | 8.89 | 0.400 | 10.16 |
| D | 0.077 | 1.96 | 0.077 | 1.96 | 0.077 | 1.96 |
| E | 0.025 | 0.635 | 0.025 | 0.635 | 0.025 | 0.635 |
| F | 0.050 | 1.27 | 0.050 | 1.27 | 0.050 | 1.27 |
| G | 0.040 | 1.02 | 0.040 | 1.02 | 0.040 | 1.02 |
| H | 0.020 | 0.508 | 0.020 | 0.508 | 0.020 | 0.508 |



| MECHANICAL SPECIFICATIONS | |
|--------------------------------|-------------------------------|
| Resistive Element | Passivated nichrome |
| Substrate Material | Alumina |
| Body | Ceramic |
| Terminals | Gold over nickel |
| Marking Resistance to Solvents | Per MIL-PRF-83401 |
| Tin Lead Option | Sn63 |
| Lead (Pb)-free Option | 96.5 % Sn, 3.0 % Ag, 0.5 % Cu |
| Tin Lead and Lead (Pb)-free | Hot solder dip |

| GLOBAL PART NUMBER INFORMATION | | | | | | | | | | | | | | | | | |
|---------------------------------------------------------------------------|-------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|---|---|---|---|---|---|
| New Global Part Numbering: TLCC20AE1002BUF | | | | | | | | | | | | | | | | | |
| T | L | C | C | 2 | 0 | A | E | 1 | 0 | 0 | 2 | B | U | F | | | |
| T | L | C | C | T | 1 | 6 | A | 0 | 1 | K | 1 | 0 | 0 | 3 | K | U | F |
| GLOBAL MODEL (4 or 5 digits) | TERMINAL COUNT ⁽¹⁾ | SCHEMATICS (4 or 5 digits) | TCR CHARACTERISTICS | RESISTANCE | TOLERANCE | PACKAGING | | | | | | | | | | | |
| LCC (Tin lead) | 20 | A = Isolated resistors B = Resistor to common bus | E = 25 ppm/°C H = 50 ppm/°C K = 100 ppm/°C M = 300 ppm/°C | First 3 digits are significant figures and the last digit specifies the number of zeros to follow. Example: 10R0 = 10 Ω 12R5 = 12.5 Ω 1000 = 100 Ω 1001 = 1000 Ω | B = 0.1 % D = 0.5 % F = 1 % G = 2 % J = 5 % K = 10 % S = Special | TAPE AND REEL T0 = 100 min., 100 mult T1 = 1000 min., 1000 mult T3 = 300 min., 300 mult T5 = 500 min., 500 mult TF = Full reel 2000 TS = 100 min., 1 mult UF = TUBED | | | | | | | | | | | |
| LCCT (Lead (Pb)-free) (e1) | 20 | | | | | | | | | | | | | | | | |
| TLCC (Tin lead) | 16 20 24 | A01 = Resistor to common bus | | | | | | | | | | | | | | | |
| TLCCCT (Lead (Pb)-free) (e1) | 16 20 24 | A03 = Isolated parallel resistor A06 = Isolated adjacent resistor | | | | | | | | | | | | | | | |
| Historical Part Number example: LC20BK1003J (for reference purposes only) | | | | | | | | | | | | | | | | | |
| LC | 20 | B | K | 1003 | J | | | | | | | | | | | | |
| SERIES | PINS | SCHEMATIC | TCR CHARACTERISTIC | RESISTANCE | TOLERANCE | | | | | | | | | | | | |

Note

⁽¹⁾ LCC or LCCT only available in 20 pin size.



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