DLA 20001



Vishav

Wet Tantalum Capacitors, Space Level, Established Reliability, **DLA Drawing 20001**



LINKS TO ADDITIONAL RESOURCES



FEATURES

- Screened for space level applications
- Tantalum case, hermetically sealed, axial leaded
- Screened M39006/33 capacitors
 - Established 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
- Reverse voltage rating at +85 °C is 3 V_{DC} and at +125 °C is 2 V_{DC}

CROSS REFERENCE									
DLA DRAWING	MIL SPECIFICATION	STYLE							
DLA 20001	M39006/33	CLR93							

Established Reliability "Space Level" Wet Tantalum Capacitors

In accordance with the DLA 20001 drawing, all parts are up-screened from "M" failure rate, "H" characteristic, MIL-PRF-39006/33 capacitors.

Parts are marked with the DLA 20001 drawing number and PIN (dash number).

For information on the exact performance of these capacitors, please refer to the latest issue of the DLA 20001 drawing and M39006/33 specification.





⁽¹⁾ Length of basic case sleeving shall be as specified in MIL-PRF-39006

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SHAY

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STANDARD	RATI	NGS													
CARACITANCE CARE CAP.		CAP.	PIN	MAX. DO	CL (μΑ) AT	MAX. ESR AT	MAX. DF ⁽¹⁾ AT	MAX. IMP. AT	MAX. CH	CAPACI ANGE (%	TANCE 5) AT	MAX. RIPPLE			
CAPACITANCE (μF)	CODE	TOL. (± %)	DLA 20001	+25 °C	+85 °C +125 °C	+25 °C +25 °C 120 Hz 120 Hz (Ω) (%)		-55 °C 120 Hz (Ω)	-55 °C	+85 °C	+125 °C	AT +85 °C 40 kHz (mA _{RMS})			
				50 V	_{DC} AT +85	°C; 30 V _D	_C AT +125	°C							
68	T1	20	0021H	1	5	1.5	9.2	35	-25	8	15	1050			
68	T1	10	0022H	1	5	1.5	9.2	35	-25	8	15	1050			
220	T2	20	0023H	2	2 10 0.9 17.9 17.5 -50 8		15	1800							
220	T2	10	0024H	2	10	0.9	17.9	17.5	-50	8	15	1800			
470	Т3	20	0027H	3	25	0.75	31.9	10	-50 8 15		15	2100			
470	Т3	10	0028H	3	25	0.75	31.9	10	-50	8	15	2100			
680	T4	20	0029H	5	40	0.7	43.1	10	-58	10	20	2750			
680	T4	10	0030H	5	40	0.7	43.1	10	-58	10	20	2750			
				60 V	_{DC} AT +85	°C; 40 V _D	_C AT +125	°C							
47	T1	20	0031H	1	5	2	8.5	44	-25	8	12	1050			
47	T1	10	0032H	1	5	2	8.5	44	-25	8	12	1050			
150	T2	20	0033H	2	10	1.1	14.9	20	-40	8	15	1650			
150	T2	10	0034H	2	10	1.1	14.9	20	-40	8	15	1650			
390	Т3	20	0037H	3	25	0.9	31.8	15	-60	8	15	2100			
390	Т3	10	0038H	3	25	0.9	31.8	15	-60	8	15	2100			
560	T4	20	0039H	5	40	0.8	40.5	10	-58	8	15	2750			
560	T4	10	0040H	5	40	0.8	40.5	10	-58	8	15	2750			
				75 V	_{DC} AT +85	°C; 50 V _D	_C AT +125	°C							
33	T1	20	0041H	1	5	2.5	7.5	66	-25	5	9	1050			
33	T1	10	0042H	1	5	2.5	7.5	66	-25	5	9	1050			
110	T2	20	0043H	2	10	1.3	12.9	24	-35	6	10	1650			
110	T2	10	0044H	2	10	1.3	12.9	24	-35	6	10	1650			
330	Т3	20	0047H	3	30	1.0	29.9	12	-45	6	10	2100			
330	Т3	10	0048H	3	30	1.0	29.9	12	-45	6	10	2100			
470	T4	20	0049H	5	50	0.9	38.3	12	-55	8	12	2750			
470	T4	10	0050H	5	50	0.9	38.3	12	-55	8	12	2750			
				100 \	/ _{DC} AT +85	°C; 65 V _I	_{DC} AT +125	°C							
15	T1	20	0051H	1	5	3.5	4.8	125	-18	3	10	1050			
15	T1	10	0052H	1	5	3.5	4.8	125	-18	3	10	1050			
68	T2	20	0053H	2	10	2.1	12.9	37	-30	4	12	1650			
68	T2	10	0054H	2	10	2.1	12.9	37	-30	4	12	1650			
150	Т3	20	0057H	3	25	1.6	21.7	22	-35	6	12	2100			
150	Т3	10	0058H	3	25	1.6	21.7	22	-35	6	12	2100			
220	T4	20	0059H	5	50	1.2	23.9	15	-40	6	12	2750			
220	T4	10	0060H	5	50	1.2	23.9	15	-40	6	12	2750			

Notes

• Letter "H" in the dash number indicates high vibration and shock requirements

(i.e., 53.79 g's random vibration, 80 g's sinusoidal vibration, and 500 g's shock)

⁽¹⁾ DF is calculated from ESR and is for reference only

⁽²⁾ For ripple current limits at various temperatures, voltages, and frequencies, see "Ripple Current" table

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RIPPLE CURRENT MULTIPLIERS VS. FREQUENCY, TEMPERATURE, AND APPLIED PEAK VOLTAGE																									
FREQUEN APPLIED I CURRENT	CY OF RIPPLE		120) Hz			800) Hz			1 k	kHz		10 kHz			40 kHz				100 kHz				
AMBIENT		TEMP °C				TEMP °C			TEMP °C			TEMP °C			TEMP °C			TEMP °C							
STILL AIR		≤ 55	85	105	125	≤ 55	85	105	125	≤ 55	85	105	125	≤ 55	85	105	125	≤ 55	85	105	125	≤ 55	85	105	125
	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	-	-
% OF	90 %	0.60	0.46	-	I	0.71	0.55	-	I	0.72	0.55	-	I	0.88	0.67	-	-	1.0	0.77	1	-	1.1	0.85	-	-
APPLIED	80 %	0.60	0.52	0.35	I	0.71	0.62	0.42	1	0.72	0.62	0.42	I	0.88	0.76	0.52	-	1.0	0.87	0.59	-	1.1	0.96	0.65	-
VOLTAGE	70 %	0.60	0.58	0.44	-	0.71	0.69	0.52	I	0.72	0.70	0.52	I	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

GROUP A INSPECTION AND GROUP B INSPECTION PER DLA 20001

GROUP A INSPECTION								
TEST / INSPECTION	REQUIREMENT PARAGRAPH	SAMPLE PROCEDURE						
SUBGROUP 1								
Thermal shock (10 cycles)	3.2							
Constant voltage conditioning (168 h)	3.3	100 %						
DC leakage at +25 °C	3.1.9							
DC leakage at +85 °C	3.1.9	100 %						
Capacitance	3.1.7							
ESR	3.1.11							
Seal, condition C	3.4							
Seal, condition A or D	3.5							
SUBGROUP 2								
Mechanical examination (dimensions only)	3.1.1	See Table IV of DLA20001						
SUBGROUP3								
Solderability	3.6	5 samples, 0 failures						
SUBGROUP4								
Visual inspection	3.8g							
Materials	3.9	13 samples 0 failures						
Marking	3.10	is samples, o failures						
Workmanship	3.15							

GROUP B INSPECTION							
TEST / INSPECTION	REQUIREMENT PARAGRAPH	SAMPLE PROCEDURE					
SUBGROUP 1							
Stability at low and high temperatures	3.7	13 samples, 0 failures					
SUBGROUP 2							
Thermal shock (30 cycles)	3.2						
Life (1000 h at +85 °C)	3.8						
DC leakage at +25 °C	3.1.9	10 complex 0 failures					
DC leakage at +85 °C	3.1.9	to samples, o tallutes					
Capacitance	3.1.7						
ESR	3.1.11						

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