Solid Tantalum Chip Capacitors MICROTAN® Leadframeless Molded Capacitors 298D, 298W, TR8 and TL8

ELECTRICAL PERFORMANCE CHARACTERISTICS

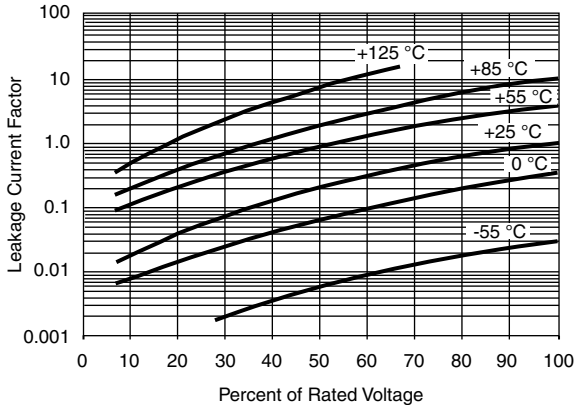
ITEM	PERFORMANCE CHARACTERISTICS
Category temperature range	-55 °C to +85 °C (to +125 °C with voltage derating)
Capacitance tolerance	± 20 %, ± 10 %, tested via bridge method, at 25 °C, 120 Hz
Dissipation factor	Limits per Standard Ratings table. Tested via bridge method, at 25 °C, 120 Hz.
ESR	Limits per Standard Ratings table. Tested via bridge method, at 25 °C, 100 kHz.
Leakage current	After application of rated voltage applied to capacitors for 5 min using a steady source of power with 1 kΩ resistor in series with the capacitor under test, leakage current at 25 °C is not more than described in Standard Ratings table. *Note that the leakage current varies with temperature and applied voltage. See graph below for the appropriate adjustment factor.*
Reverse voltage	Capacitors are capable of withstanding peak voltages in the reverse direction equal to: 10 % of the DC rating at +25 °C 5 % of the DC rating at +85 °C 1 % of the DC rating at +125 °C Vishay does not recommend intentional or repetitive application of reverse voltage.
Ripple current and Temperature derating	For maximum permissible ripple current (I_{RMS}) or/and voltage (V_{RMS}) please refer to product datasheet and Guide to Application. If capacitors are to be used at temperatures above +25 °C, the permissible RMS ripple current or voltage shall be calculated using the derating factors: 1.0 at +25 °C 0.9 at +85 °C 0.4 at +125 °C
Maximum operating voltage	**298W AND TL8**

RATED VOLTAGE (V)	CATEGORY VOLTAGE (V) AT TEMPERATURE RANGE		
	-55 °C to +40 °C	+40 °C to +85 °C	-85 °C to +125 °C
4.0	4.0	2.5	1.6
6.3	6.3	4.0	2.5
10	10	6.3	4.0
16	16	10	6.3
20	20	13	8
25	25	17	10
35	35	23	14

298D AND TR8

RATED VOLTAGE (V)	CATEGORY VOLTAGE (V) AT TEMPERATURE RANGE	
	-55 °C to +85 °C	+85 °C to +125 °C
2.5	2.5	1.7
4.0	4.0	2.7
6.3	6.3	4.0
10	10	7.0
16	16	10
20	20	13
25	25	17
35	35	23
50	50	33

TYPICAL LEAKAGE CURRENT FACTOR RANGE



Notes

- **At +25 °C**, the leakage current shall not exceed the value listed in the Standard Ratings table.
- **At +85 °C**, the leakage current shall not exceed 10 times the value listed in the Standard Ratings table.
- **At +125 °C**, the leakage current shall not exceed 12 times the value listed in the Standard Ratings table.

ENVIRONMENTAL PERFORMANCE CHARACTERISTICS

ITEM	CONDITION	POST TEST PERFORMANCE	
Thermal shock	At -55 °C/+125 °C, 30 min each, for 5 cycles. MIL-STD-202 method 107	Capacitance change Dissipation factor Leakage current	± 30 % Not to exceed 150 % of initial Not to exceed 200 % of initial
Surge voltage	85 °C, 1000 successive test cycles at 1.3 of category voltage in series with a 1 kΩ resistor at the rate of 30 s ON, 30 s OFF, MIL-PRF-55365	Capacitance change Dissipation factor Leakage current	± 30 % Not to exceed 150 % of initial Not to exceed 200 % of initial
Life test at +85 °C	1000 h application of category voltage at 85 °C with a 3 Ω series resistance, MIL-STD-202 method 108	Capacitance change Dissipation factor Leakage current	± 30 % Not to exceed 150 % of initial Not to exceed 200 % of initial
Humidity test	At 40 °C/90 % RH 500 h, no voltage applied. MIL-STD-202 method 103	Capacitance change Dissipation factor Leakage current	± 30 % Not to exceed 150 % of initial Not to exceed 200 % of initial

MECHANICAL PERFORMANCE CHARACTERISTICS

ITEM	CONDITION	POST TEST PERFORMANCE
Terminal strength/ Shear stress test	Apply a pressure load of 5 N for 10 s ± 1 s horizontally to the center of capacitor side body. AEC-Q200-006	There shall be no visual damage when viewed at 20 x magnification and the component shall meet the original electrical requirements.
Vibration	MIL-STD-202, method 204, condition D, 10 Hz to 2000 Hz, 20 *g* peak	There shall be no mechanical or visual damage to capacitors post-conditioning.
Shock (specified pulse)	MIL-STD-202, method 213, condition I, 100 *g* peak	Capacitance change ± 30 % Dissipation factor Initial specified value or less Leakage current Initial specified value or less There shall be no mechanical or visual damage to capacitors post-conditioning.
Resistance to solder heat	MIL-STD-202, method 210, condition K	Capacitance change ± 30 % Dissipation factor Not to exceed 150 % of initial Leakage current Not to exceed 200 % of initial There shall be no mechanical or visual damage to capacitors post-conditioning.
Solderability	MIL-STD-202, method 208, ANSI/J-STD-002, test B. Applies only to solder and tin plated terminations. Does not apply to gold terminations.	All terminations shall exhibit a continuous solder coating free from defects for a minimum of 95 % of the critical area of any individual lead.
Resistance to solvents	MIL-STD-202, method 215	Marking has to remain legible, no degradation of encapsulation material.
Flammability	Encapsulation materials meet UL 94 V-0 with an oxygen index of 32 %	

Note

- All measurements to be performed after 24 h conditioning at room temperature.