



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

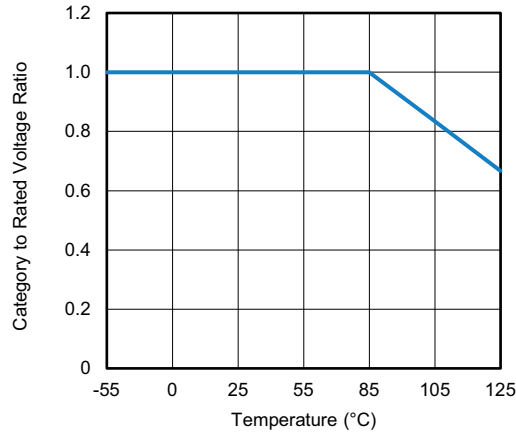
ELECTRICAL PERFORMANCE CHARACTERISTICS			
ITEM	PERFORMANCE CHARACTERISTICS		
Category temperature range	-55 °C to +85 °C (to +125 °C with voltage derating)		
Capacitance tolerance	± 20 %, ± 10 %, tested via bridge method, at 25 °C, 120 Hz		
Dissipation factor	Limits per Standard Ratings table. Tested 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. <i>Note that the leakage current varies with temperature and applied voltage. See graph below for the appropriate adjustment factor.</i>		
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 working (operating) voltage	298W AND TL8		
	RATED VOLTAGE (V) -55 °C to +40 °C	CATEGORY VOLTAGE (V) AT TEMPERATURE RANGE	
		+40 °C to +85 °C	+85 °C to +125 °C
	4.0	2.5	1.6
	6.3	4.0	2.5
	10	6.3	4.0
	16	10	6.3
	20	13	8.0
	25	17	10
	35	23	14
	298D AND TR8		
	RATED VOLTAGE (V) -55 °C to +85 °C	CATEGORY VOLTAGE (V) AT TEMPERATURE RANGE	
		+85 °C to +125 °C	
2.5	1.7		
4.0	2.7		
6.3	4.0		
10	7.0		
16	10		
20	13		
25	17		
35	23		
50	33		

Notes

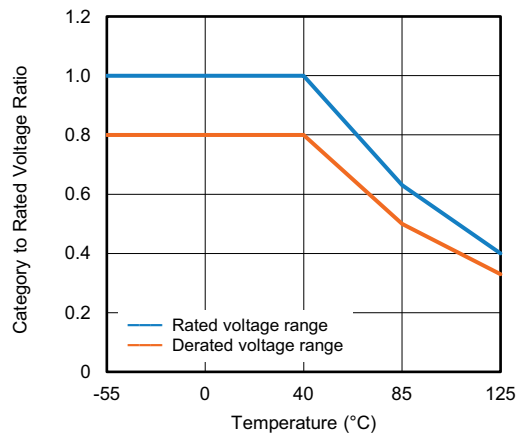
- All information presented in this document reflects typical performance characteristics
- For information about recommended voltage derating see technical note: www.vishay.com/doc?40246
- The voltage derating recommended in technical note (taken as ratio between recommended voltage and full rated voltage) should be applied with respect to maximum allowed working (operating) voltage in given temperature range
- For product series 298W and TL8:
 - in the range from -55 °C to +40 °C maximum allowed working (operating) voltage is equal to rated voltage
 - in the ranges +40 °C to +85 °C and +85 °C to +125 °C maximum allowed working (operating) voltages ("category" voltages) are shown in the table above
- For product series 298D and TR8:
 - in the range from -55 °C to +85 °C maximum allowed working (operating) voltage is equal to 100 % of rated voltage
 - at temperature +125 °C maximum allowed working (operating) voltage ("category" voltage) is equal to 2/3 (or 67 %) of full rated voltage
 - in the range +85 °C to 125 °C "category" voltage linearly decreases from 100 % to 67 %



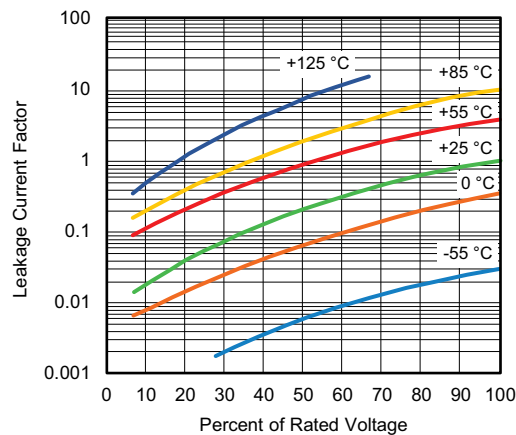
298D / TR8: CATEGORY TO RATED VOLTAGE RATIO VS. OPERATING TEMPERATURE (°C)



298W / TL8: CATEGORY TO RATED VOLTAGE RATIO VS. OPERATING TEMPERATURE (°C)



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 ± 30 % Dissipation factor Not to exceed 150 % of initial Leakage current 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 ± 30 % Dissipation factor Not to exceed 150 % of initial Leakage current 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 ± 30 % Dissipation factor Not to exceed 150 % of initial Leakage current 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 ± 30 % Dissipation factor Not to exceed 150 % of initial Leakage current 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.