

TWA-X SERIES



High Temperature – COTS-Plus 230°C Wet Electrolytic Tantalum Capacitor



The TWA-X series represents a high temperature version of conventional wet electrolytic tantalum capacitors that are designed for use at 230°C. High capacitance cathode system allows high level of CV (Capacitance/Voltage) in standard case sizes.

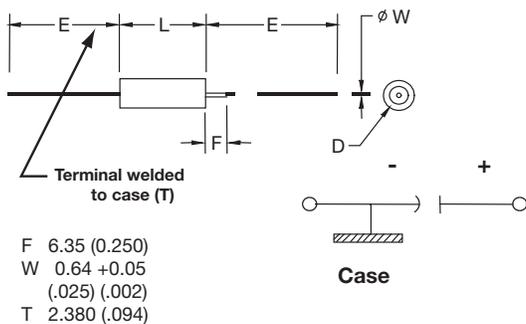
Selected values of the TWA-X are capable of up to 500 hours of operation at extreme temperatures with the applicable derated voltage.

Mechanical testing being conducted in accordance to MIL-STD- 202, High Frequency vibration - method 204, test condition "D" Mechanical Shock Test - method 213, test condition "I".

This design includes a welded tantalum can and header assembly that provides a hermetic seal to withstand also harsh shock and vibration requirements.

Contact the factory for additional options for customized component design.

OUTLINE DIMENSIONS



CASE DIMENSIONS: millimeters (inches)

DLA Case Size	Case Size	L +0.79 (0.031) -0.41 (0.016)	D Without Insulating Sleeve ±0.41 (0.016)	D With Insulating Sleeve Max	E ±6.35 (0.250)
T4	E	26.97 (1.062)	9.52 (0.375)	10.31 (0.406)	57.15 (2.250)

HOW TO ORDER

PART NUMBER:

TWA	E	407	*	100	□	B	X	Z	0	^	00
Type	Case Size	Capacitance Code pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	Capacitance Tolerance K = ±10% M = ±20%	Voltage Code	Insulation Sleeve C=Without Sleeve S= With Sleeve	Packaging B = Tray Pack	Qualification X = High-Temp up to 230°C	Reliability Z = Non-ER	Qualification Level 0 = N/A	Termination Finish 0 = Sn/Pb 60/40 7 = Matte tin	Custom Test Options 00 = Standard



For RoHS compliant products, please select correct termination style.

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RIPPLE CURRENT MULTIPLIERS vs. Frequency, temperature and applied voltage^{1/2/}

Frequency of Applied Ripple Current	120Hz				800Hz				1kHz				
	≤55	85	105	125	≤55	85	105	125	≤55	85	105	125	
Ambient Still Air Temperature (°C)	≤55	85	105	125	≤55	85	105	125	≤55	85	105	125	
% of Rated Peak Voltage	100%	0.60	0.39	–	–	0.71	0.43	–	–	0.72	0.45	–	–
	90%	0.60	0.46	–	–	0.71	0.55	–	–	0.72	0.55	–	–
	80%	0.60	0.52	0.35	–	0.71	0.62	0.42	–	0.72	0.62	0.42	–
	70%	0.60	0.58	0.44	–	0.71	0.69	0.52	–	0.72	0.70	0.52	–
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	

Frequency of Applied Ripple Current	10kHz				40kHz				100kHz				
	≤55	85	105	125	≤55	85	105	125	≤55	85	105	125	
Ambient Still Air Temperature (°C)	≤55	85	105	125	≤55	85	105	125	≤55	85	105	125	
% of Rated Peak Voltage	100%	0.88	0.55	–	–	1.00	0.63	–	–	1.10	0.69	–	–
	90%	0.88	0.67	–	–	1.00	0.77	–	–	1.10	0.85	–	–
	80%	0.88	0.76	0.52	–	1.00	0.87	0.59	–	1.10	0.96	0.65	–
	70%	0.88	0.85	0.64	–	1.00	0.97	0.73	–	1.10	1.07	0.80	–
66-2/3%	0.88	0.88	0.68	0.40	1.00	1.00	0.77	0.45	1.10	1.10	0.85	0.50	

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 capacitors.

CAPACITANCE AND RATED VOLTAGE, V_R (VOLTAGE CODE) RANGE (LETTER DENOTES CASE SIZE)

Capacitance		Rated Voltage DC (V _R) to 85°C		
μF	Code	75V	100V	125V
220	227	E		
330	337			E
400	407		E	
470	477			

Available Ratings

RATINGS & PART NUMBER REFERENCE

Part Number	Case Size		Cap (μF) 25°C at 120Hz	DC Rated Voltage (V) At 85°C	ESR max (Ohms) at 120Hz	DC Leakage max (μA)		Impedance max (Ohms) -55°C at 120Hz	Maximum Capacitance Change (%)			AC Ripple (mA rms) 85°C at 40kHz	85°C Capability max. Time at 85°C (hrs)	200°C Capability max.			230°C Capability max.			Energy (mJ)	Energy / volume (mJ/mm ³)
	Code	DLA				+25°C	+85 & +125°C		-55°C	+85°C	+125°C			Ur (V)	Time at 200°C (hrs)	DCL@ 200°C (μA)	Ur (V)	Time at 230°C (hrs)	DCL@ 230°C (μA)		
	TWAE227*075□BXZ0*00	E				T4	220		75	1.2	5			50	20	-40	8	15	1800		
TWAE407*100□BXZ0*00	E	T4	400	100	0.8	10	150	10	-50	10	35	4100	2000	60	2000	1000	25	500	1000	1278.20	0.666
TWAE337*125□BXZ0*00	E	T4	330	125	0.8	10	60	10	-45	15	25	3600	500	75	500	1000	40	500	1000	1648.52	0.859

Energy is calculated by this formula (consider derating factor):

$$\text{Energy} = \frac{1}{2} C \times ((V_r \times X)^2 - V_x^2)$$

where C = Capacitance

V_r = Rated Voltage

X = Recommended derating factor

V_x = 3V (invariable)

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5RMS with DC bias of 2.2V. DCL is measured at rated voltage after 5 minutes.
NOTE: KYOCERA AVX reserves the rights to supply higher voltage rating in the same case size, to the same reliability standards.

$$DF = 2\pi f C \times (ESR)$$

$$2\pi = 6.28$$

$$f = 120\text{Hz}$$

C = Actual measured capacitance

ESR = Actual measured ESR