

## TCP Series Low ESR Tantalum Modules



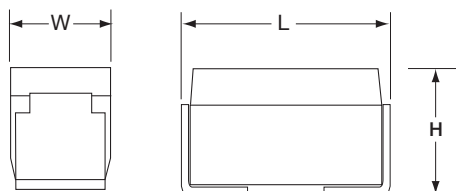
TCP Series tantalum modules represents the highest packing density for high capacitance / voltage available in surface mount tantalum.

These modules feature stacked assemblies of CWR29 capacitors which provide ultra low ESR and utilize established reliability capacitors (Weibull Grade voltage conditioning) in accordance with MIL-PRF-55365. They can also be supplied with SRC9000 Space Level components.

The stacked construction of fully molded capacitors is compatible with a wide range of SMT board assembly processes including wave or reflow solder or conductive epoxy.

There are two termination finishes available: hot solder dipped ("C") and gold plated ("B").

The molding compound has been selected to meet the requirements of UL94V-0 and outgassing requirements of NASA SP-R-0022A.



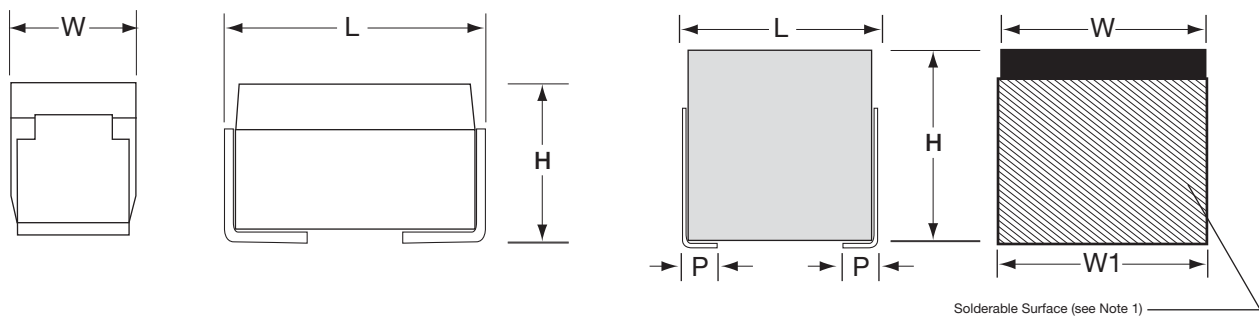
**Note: Additional form factors and ratings are available. Contact plant for details.**

### CAPACITANCE AND RATED VOLTAGE CASE SIZE (ESR IN mΩ)

Capacitance		Rated voltage DC (V <sub>R</sub> ) to 85°C						
μF	Code	6V	10V	15V	20V	25V	35V	50V
9.4	945							2H (200)
18.8	196							4H (100)
20	206						2H (200)	
28.2	286							6H (67)
40	406						4H (100)	
60	606						6H (67)	
66	666					2H (85)		
94	946				2H (75)			
132	137					4H (43)		
188	197				4H (38)			
198	207					6H (28)		
200	207			2H (63)				
282	287				6H (25)			
400	407			4H (31)				
440	447		2H (50)					
600	607			6H (21)				
660	667	2H (50)						
880	887		4H (25)					
1,320	138	4H (25)	6H (17)					
1,980	208	6H (17)						

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## DIMENSIONS



### CASE DIMENSIONS:

millimeters (inches)

Case Code	Length (L) ±0.38 (0.015)	Width (W) ±0.38 (0.015)	Height (H) ±0.38 (0.015)	Term. Width (W <sub>1</sub> ) ±0.38 (0.015)	Term. Length (P) For Reference Only
2H	7.82 (0.308)	4.06 (0.160)	6.10 (0.240)	4.06 (0.160)	1.52 (0.060)
4H	7.82 (0.308)	8.13 (0.320)	6.10 (0.240)	8.13 (0.320)	1.52 (0.060)
6H	7.82 (0.308)	8.13 (0.320)	9.14 (0.360)	8.13 (0.320)	1.52 (0.060)

Additional form factors and ratings are available – contact plant for details.

## HOW TO ORDER

KTTIC

<p><b>TC</b></p> <p>↑</p> <p>Type</p>	<p><b>2H</b></p> <p>↑</p> <p>Case Size</p>	<p><b>945</b></p> <p>↑</p> <p>Capacitance Code</p> <p>pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)</p>	<p><b>K</b></p> <p>↑</p> <p>Capacitance Tolerance</p> <p>M = ±20% K = ±10% J = ±5%</p>	<p><b>050</b></p> <p>↑</p> <p>Voltage Code</p> <p>006 = 6Vdc 010 = 10Vdc 015 = 15Vdc 020 = 20Vdc 025 = 25Vdc 035 = 35Vdc 050 = 50Vdc</p>	<p><b>L</b></p> <p>↑</p> <p>Standard or Low ESR Range</p> <p>L = Low ESR</p>	<p><b>R</b></p> <p>↑</p> <p>Packaging</p> <p>B = Bulk R = 7" T&amp;R</p>	<p><b>#</b></p> <p>↑</p> <p>Inspection Level</p> <p>S = Std. Conformance L = Group A D = DSCC DWG</p>	<p><b>@</b></p> <p>↑</p> <p>Reliability Grade</p> <p>Weibull: B = 0.1%/1000 hrs. 90% conf. C = 0.01%/1000 hrs. 90% conf. D = 0.001%/1000 hrs. 90% conf. Z = Non-ER</p>	<p><b>0</b></p> <p>↑</p> <p>Qualification Level</p> <p>0 = N/A 9 = SRC9000</p>	<p><b>^</b></p> <p>↑</p> <p>Termination Finish</p> <p>8 = Hot Solder Dipped 9 = Gold Plated</p>	<p><b>++</b></p> <p>↑</p> <p>Surge Test Option</p> <p>00 = None 23 = 10 Cycles, +25°C 24 = 10 Cycles, -55°C &amp; +85°C 45 = 10 cycles, -55°C &amp; +85°C before Weibull</p>
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## TECHNICAL SPECIFICATIONS

Technical Data:	Unless otherwise specified, all technical data relate to an ambient temperature of 25°C									
Capacitance Range:	9.4 μF to 1,980 μF									
Capacitance Tolerance:	±5%; ±10%; ±20%									
Rated Voltage: (V <sub>R</sub> )	≤85°C:	6	10	15	15	20	25	35	50	
Category Voltage: (V <sub>C</sub> )	125°C:	4	7	10	10	13	17	23	33	
Surge Voltage: (V <sub>S</sub> )	≤85°C:	8	13	20	20	26	32	46	65	
	125°C:	5	8	13	13	16	20	28	40	
Temperature Range:	-55°C to +125°C									

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### RATINGS & PART NUMBER REFERENCE

2-STACK			Parametric Specifications by Rating									Typical Ripple Data by Rating					
AVX P/N	Case	Cap µF	Volt V	ESR @ 100 kHz +25°C mΩ	DC Leakage (max) µA			Disspation Factor (max) %			100kHz Ripple Current Rating			100kHz Ripple Voltage Rating			
					+25°C	+85°C	+125°C	+25°C	+(85/125)°C	-55°C	A	A	A	V	V	V	
					+25°C	+85°C	+125°C	+25°C	+(85/125)°C	-55°C	+25°C	+85°C	+125°C	+25°C	+85°C	+125°C	
TC2H 667	*006L#D^00++	2H	660	6	50	39.6	396	495	10	12	12	2.4	2.2	1.0	0.12	0.11	0.05
TC2H 447	*010L#D^00++	2H	440	10	50	44	440	550	10	12	12	2.4	2.2	1.0	0.12	0.11	0.05
TC2H 207	*015L#D^00++	2H	200	15	63	30	300	375	10	12	12	2.2	2.0	0.9	0.14	0.12	0.05
TC2H 946	*020L#D^00++	2H	94	20	75	18.8	188	235	8	10	10	2.0	1.8	0.8	0.15	0.14	0.06
TC2H 666	*025L#D^00++	2H	66	25	85	16.5	165	206	8	10	10	1.9	1.7	0.8	0.16	0.14	0.06
TC2H 206	*035L#D^00++	2H	20	35	200	7	70	88	8	10	10	1.2	1.1	0.5	0.24	0.22	0.10
TC2H 945	*050L#D^00++	2H	9.4	50	200	4.7	47	59	6	8	8	1.2	1.1	0.5	0.24	0.22	0.10

4-STACK			Parametric Specifications by Rating									Typical Ripple Data by Rating					
AVX P/N	Case	Cap µF	Volt V	ESR @ 100 kHz +25°C mΩ	DC Leakage (max) µA			Disspation Factor (max) %			100kHz Ripple Current Rating			100kHz Ripple Voltage Rating			
					+25°C	+85°C	+125°C	+25°C	+(85/125)°C	-55°C	A	A	A	V	V	V	
					+25°C	+85°C	+125°C	+25°C	+(85/125)°C	-55°C	+25°C	+85°C	+125°C	+25°C	+85°C	+125°C	
TC4H 138	*006L#D^00++	4H	1320	6	25	79.2	792	990	10	12	12	4.2	3.8	1.7	0.11	0.10	0.04
TC4H 887	*010L#D^00++	4H	880	10	25	88	880	1100	10	12	12	4.2	3.8	1.7	0.11	0.10	0.04
TC4H 407	*015L#D^00++	4H	400	15	31	60	600	750	10	12	12	3.8	3.4	1.5	0.12	0.11	0.05
TC4H 197	*020L#D^00++	4H	188	20	38	37.6	376	470	8	10	10	3.5	3.2	1.4	0.13	0.12	0.05
TC4H 137	*025L#D^00++	4H	132	25	43	33	330	413	8	10	10	3.2	2.9	1.3	0.14	0.13	0.06
TC4H 406	*035L#D^00++	4H	40	35	100	14	140	175	8	10	10	2.1	1.9	0.8	0.21	0.19	0.08
TC4H 196	*050L#D^00++	4H	18.8	50	100	9.4	94	118	6	8	8	2.1	1.9	0.8	0.21	0.19	0.08

6-STACK			Parametric Specifications by Rating									Typical Ripple Data by Rating					
AVX P/N	Case	Cap µF	Volt V	ESR @ 100 kHz +25°C mΩ	DC Leakage (max) µA			Disspation Factor (max) %			100kHz Ripple Current Rating			100kHz Ripple Voltage Rating			
					+25°C	+85°C	+125°C	+25°C	+(85/125)°C	-55°C	A	A	A	V	V	V	
					+25°C	+85°C	+125°C	+25°C	+(85/125)°C	-55°C	+25°C	+85°C	+125°C	+25°C	+85°C	+125°C	
TC6H 208	*006L#D^00++	6H	1980	6	17	118.8	1188	1485	10	12	12	5.9	5.3	2.4	0.10	0.09	0.04
TC6H 138	*010L#D^00++	6H	1320	10	17	132	1320	1650	10	12	12	5.9	5.3	2.4	0.10	0.09	0.04
TC6H 607	*015L#D^00++	6H	600	15	21	90	900	1125	10	12	12	5.2	4.7	2.1	0.11	0.10	0.04
TC6H 287	*020L#D^00++	6H	282	20	25	56.4	564	705	8	10	10	4.8	4.3	1.9	0.12	0.11	0.05
TC6H 207	*025L#D^00++	6H	198	25	28	49.5	495	619	8	10	10	4.5	4.1	1.8	0.13	0.11	0.05
TC6H 606	*035L#D^00++	6H	60	35	67	21	210	263	8	10	10	2.9	2.6	1.2	0.19	0.17	0.08
TC6H 286	*050L#D^00++	6H	28.2	50	67	14.1	141	176	6	8	8	2.9	2.6	1.2	0.19	0.17	0.08

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts. DCL is measured at rated voltage after 5 minutes.

**NOTE:** AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.