

TLC Series

Tantalum Solid Electrolytic Chip Capacitors Consumer Series



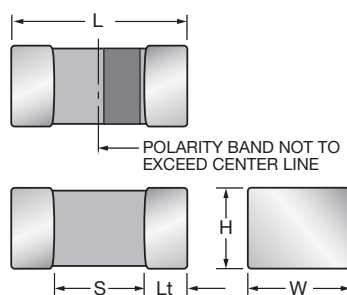
- High capacitance vs. voltage ratio
- Super high volumetric efficiency
- CV range: 0.47-220 μ F / 2-35V
- 10 case sizes available
- Consumer applications (portable hand-held electronics, cellular phones, digital equipments etc.)



CASE DIMENSIONS: millimeters (inches)

Code	EIA Code	EIA Metric	L+0.20 (0.008) -0.00 (0.000)	W+0.15 (0.006) -0.00 (0.000)	H+0.15 (0.006) -0.00 (0.000)	Termination Spacing(S)	Minimum Termination Length (Lt)
A	1206	3216-18	3.20 $\pm$ 0.20 (0.126 $\pm$ 0.008)	1.60 $\pm$ 0.20 (0.063 $\pm$ 0.008)	1.60 $\pm$ 0.20 (0.063 $\pm$ 0.008)	1.80 (0.071) min	0.15 (0.006)
C	1206	3216-10	3.20 $\pm$ 0.20 (0.126 $\pm$ 0.008)	1.60 $\pm$ 0.20 (0.063 $\pm$ 0.008)	1.00 (0.039) max	1.80 (0.071) min	0.15 (0.006)
H	0805	2012-10	2.00 (0.079)	1.35 (0.053)	1.00 (0.039) max	0.70 (0.028) min	0.15 (0.006)
J	0603	1608-08	1.60 (0.063)	0.85 (0.033)	0.75 (0.030) max	0.55 (0.022) min	0.15 (0.006)
K	0402	1005-07	1.00 (0.039)	0.50 $\begin{smallmatrix} +0.20 \\ -0.00 \\ +0.008 \\ -0.000 \end{smallmatrix}$ (0.020 -0.000)	0.50 $\begin{smallmatrix} +0.20 \\ -0.00 \\ +0.008 \\ -0.000 \end{smallmatrix}$ (0.020 -0.000)	0.40 (0.016) min	0.10 (0.004)
L	0603	1608-10	1.60 (0.063)	0.85 (0.033)	0.85 (0.033)	0.55 (0.022) min	0.15 (0.006)
M	0803	2008-10	2.00 (0.079)	0.85 (0.033)	0.85 (0.033)	0.70 (0.028) min	0.15 (0.006)
N	0402	1005-05	1.00 $\pm$ 0.05 (0.039 $\pm$ 0.002)	0.50 $\begin{smallmatrix} +0.00 \\ -0.10 \\ +0.000 \\ -0.004 \end{smallmatrix}$ (0.020 -0.004)	0.50 $\begin{smallmatrix} +0.00 \\ -0.10 \\ +0.000 \\ -0.004 \end{smallmatrix}$ (0.020 -0.004)	0.40 (0.016) min	0.10 (0.004)
Q	0805	2012-12	2.00 (0.079)	1.35 (0.053)	1.20 (0.047) max	0.70 (0.028) min	0.15 (0.006)
R	0805	2012-15	2.00 (0.079)	1.35 (0.053)	1.35 (0.053)	0.70 (0.028) min	0.15 (0.006)
S	1206	3216-12	3.20 $\pm$ 0.20 (0.126 $\pm$ 0.008)	1.60 $\pm$ 0.20 (0.063 $\pm$ 0.008)	1.20 (0.047) max	1.80 (0.071) min	0.15 (0.006)
T	1210	3528-12	3.50 $\pm$ 0.20 (0.138 $\pm$ 0.008)	2.80 $\begin{smallmatrix} +0.20 \\ -0.10 \\ +0.008 \\ -0.004 \end{smallmatrix}$ (0.110 -0.004)	1.20 (0.047) max	2.00 (0.079) min	0.15 (0.006)
U	0805	2012-06	2.00 (0.079)	1.35 (0.053)	0.60 (0.024) max	0.70 (0.028) min	0.15 (0.006)
V	1206	3216-08	3.20 $\pm$ 0.20 (0.126 $\pm$ 0.008)	1.60 $\pm$ 0.20 (0.063 $\pm$ 0.008)	0.75 (0.030) max	1.80 (0.071) min	0.15 (0.006)
Z	0602	1605-07	1.60 (0.063)	0.50 $\begin{smallmatrix} +0.20 \\ -0.00 \\ +0.008 \\ -0.000 \end{smallmatrix}$ (0.020 -0.000)	0.50 $\begin{smallmatrix} +0.20 \\ -0.00 \\ +0.008 \\ -0.000 \end{smallmatrix}$ (0.020 -0.000)	0.55 (0.022) min	0.15 (0.006)

Under development



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HOW TO ORDER

TLC	L	226	M	006	R	TA
Type	Case Size See table above	Capacitance Code pF code: 1st two digits represent significant figures, 3rd digit represents multiplier (number of zeros to follow)	Tolerance M=±20%	Rated DC Voltage 002=2Vdc 003=3Vdc 004=4Vdc 006=6.3Vdc 008=8Vdc 010=10Vdc 016=16Vdc 020=20Vdc 025=25Vdc 035=35Vdc 050=50Vdc	Packaging R, P = 7" Standard Tin Termination Plastic Tape X, Q = 4 1/4" Standard Tin Termination Plastic Tape A = 7" Gold Termination Plastic Tape F = 4 1/4" Gold Termination Plastic Tape	Standard Suffix OR 4000 ESR in mΩ

TECHNICAL SPECIFICATIONS

Technical Data:	All technical data relate to an ambient temperature of +25°C											
Capacitance Range:	0.33 µF to 470 µF											
Capacitance Tolerance:	±20%											
Rated Voltage (V _R)	-55°C ≤ +40°C:	2	3	4	6.3	8	10	16	20	25	35	50
Category Voltage (V _C)	at 85°C:	1	1.5	2	3.2	4	5	8	10	12.5	17.5	25
Category Voltage (V _C)	at 125°C:	0.4	0.6	0.8	1.3	1.6	2	3.2	4	5	7	10
Temperature Range:	-55°C to +125°C with category voltage											
Reliability:	0.2% per 1000 hours at 85°C, 0.5xV _R with 0.1Ω/V series impedance with 60% confidence level											

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

Capacitance		Voltage Rating DC (V _R) to 40°C										
µF	Code	2.0V	3.0V	4.0V	6.3V	8V	10V	16V	20V	25V	35V	50V
0.33	334							J*		L*		
0.47	474						N*	K				
0.68	684											
1.0	105							J*/K	J*	L	L*/R	R*
1.5	155											
2.2	225						J*/K	J*	H/L*	H/R		
3.3	335							L				
4.7	475			K/N*	K/U		J/K*				R*	
6.8	685		K	K			U					
10	106		K	J/K/Z	J/K/Z		J*/K*/U/Z*	V	R		A*	
15	156	K	K*	K/Z*			H/L					
22	226	J	J	J*/U	L/U		L/M			T*		
33	336			L/U	H/L/L(4000)/U/V	L	H/M*					
47	476	L	L	H/L	H/L*/V		C*/H*/L*/Q*/R/V*					
68	686			R	R		A*/R*					
100	107		H*	C*/H*/Q*/R	H*/R/V*		R*/T					
150	157			R*	R*		A*					
220	227	R*	S*	A*/R*/T	A*		T*					
330	337			A*	T*							
470	477	A*		A*/T*								
680	687											

Released Codes

Engineering samples - please contact manufacturer

*Codes under development - subject to change.

Note: Voltage ratings are minimum values. AVX reserves the right to supply higher ratings in the same case size, to the same reliability standards.



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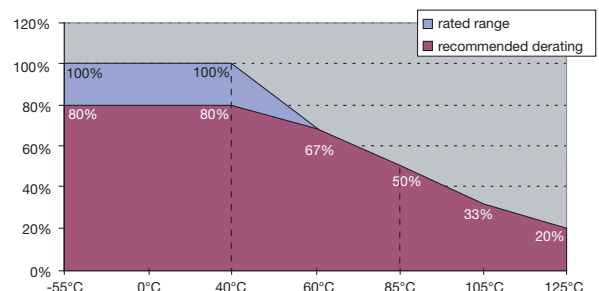


RATINGS & PART NUMBER REFERENCE

AVX Part No.	EIA Code	EIA Metric	Case Size	Cap (μF)	Rated Voltage (V)	DCL (μA) Max.	ESR Max. (Ω) @100kHz	MSL
2 Volt @ 40°C (1 Volt @ 85°C, 0.4 Volt @ 125°C)								
TLCK156M002#TA	0402	1005-07	K	15	2	0.5	15	3
TLCKJ226M002#TA	0603	1608-08	J	22	2	0.5	7.5	3
TLCL476M002#TA	0603	1608-10	L	47	2	0.9	7.5	3
TLCKR227M002#TA	0805	2012-15	R	220	2	4.4	5	3
TLCA477M002#TA	1206	3216-18	A	470	2	9.4	1	3
3 Volt @ 40°C (1.5 Volt @ 85°C, 0.6 Volt @ 125°C)								
TLCK685M003#TA	0402	1005-07	K	6.8	3	0.5	15	3
TLCK106M003#TA	0402	1005-07	K	10	3	0.5	15	3
TLCKJ156M003#TA	0402	1005-07	K	15	3	0.5	15	3
TLCKJ226M003#TA	0603	1608-08	J	22	3	0.7	7.5	3
TLCL476M003#TA	0603	1608-10	L	47	3	1.4	7.5	3
TLCH107M003#TA	0805	2012-10	H	100	3	3.0	5	3
TLCS227M003#TA	1206	3216-12	S	220	3	6.6	2	3
4 Volt @ 40°C (2 Volt @ 85°C, 0.8 Volt @ 125°C)								
TLCK475M004#TA	0402	1005-07	K	4.7	4	0.5	15	3
TLCKN475M004#TA	0402	1005-05	N	4.7	4	0.5	20	3
TLCK685M004#TA	0402	1005-07	K	6.8	4	0.5	15	3
TLCKJ106M004#TA	0603	1608-08	J	10	4	0.5	7.5	3
TLCKJ106M004#TA	0402	1005-07	K	10	4	0.5	15	3
TLCKZ106M004#TA	0602	1605-07	Z	10	4	0.5	15	3
TLCK156M004#TA	0402	1005-07	K	15	4	3.0	15	3
TLCKZ156M004#TA	0602	1605-07	Z	15	4	0.6	15	3
TLCKJ226M004#TA	0603	1608-08	J	22	4	0.9	7.5	3
TLCKJ226M004#TA	0805	2012-06	U	22	4	0.9	12	3
TLCL336M004#TA	0603	1608-10	L	33	4	1.3	7.5	3
TLCKJ336M004#TA	0805	2012-06	U	33	4	2.6	9	3
TLCH476M004#TA	0805	2012-10	H	47	4	1.9	5	3
TLCL476M004#TA	0603	1608-10	L	47	4	1.9	7.5	3
TLCKR686M004#TA	0805	2012-15	R	68	4	2.7	5	3
TLCC107M004#TA	1205	3216-10	C	100	4	4.0	2	3
TLCH107M004#TA	0805	2012-10	H	100	4	4.0	5	3
TLCKQ107M004#TA	0805	2012-12	Q	100	4	4.0	5	3
TLCKR107M004#TA	0805	2012-15	R	100	4	4.0	5	3
TLCKR157M004#TA	0805	2012-15	R	150	4	6.0	5	3
TLCA227M004#TA	1206	3216-18	A	220	4	8.8	1	3
TLCKR227M004#TA	0805	2012-15	R	220	4	8.8	5	3
TLCT227M004#TA	1210	3528-12	T	220	4	8.8	1	3
TLCA477M004#TA	1206	3216-18	A	470	4	18.8	1	3
6.3 Volt @ 40°C (3.2 Volt @ 85°C, 1.3 Volt @ 125°C)								
TLCK475M006#TA	0402	1005-07	K	4.7	6.3	0.5	15	3
TLCKU475M006#TA	0805	2012-06	U	4.7	6.3	0.5	5	3
TLCKJ106M006#TA	0603	1608-08	J	10	6.3	0.6	7.5	3
TLCK106M006#TA	0402	1005-07	K	10	6.3	3.1	15	3
TLCKZ106M006#TA	0602	1605-07	Z	10	6.3	0.6	15	3
TLCKL226M006#TA	0603	1608-10	L	22	6.3	1.4	7.5	3
TLCKJ226M006#TA	0805	2012-06	U	22	6.3	2.8	12	3
TLCH336M006#TA	0805	2012-10	H	33	6.3	2.0	5	3
TLCL336M006#TA	0603	1608-10	L	33	6.3	2.1	7.5	3
TLCL336M006#4000	0603	1608-10	L	33	6.3	2.1	4	3
TLCKU336M006#TA	0805	2012-06	U	33	6.3	10.4	7.5	3
TLCKV336M006#TA	1206	3216-08	V	33	6.3	4.2	5	3
TLCH476M006#TA	0805	2012-10	H	47	6.3	3.0	5	3
TLCKV476M006#TA	1206	3216-08	V	47	6.3	6.0	15	3
TLCKR686M006#TA	0805	2012-15	R	68	6.3	4.3	5	3
TLCKR107M006#TA	0805	2012-15	R	100	6.3	6.0	5	3
TLCKR157M006#TA	0805	2012-15	R	150	6.3	9.5	5	3

AVX Part No.	EIA Code	EIA Metric	Case Size	Cap (μF)	Rated Voltage (V)	DCL (μA) Max.	ESR Max. (Ω) @100kHz	MSL
8 Volt @ 40°C (4 Volt @ 85°C, 1.6 Volt @ 125°C)								
TLCL336M008#TA	0603	1608-08	L	33	8	26.4	10	3
10 Volt @ 40°C (5 Volt @ 85°C, 2 Volt @ 125°C)								
TLCKN474M010#TA	0402	1005-05	N	0.47	10	0.5	20	3
TLCKJ225M010#TA	0603	1608-08	J	2.2	10	0.5	7.5	3
TLCK225M010#TA	0402	1005-07	K	2.2	10	0.5	15	3
TLCKJ475M010#TA	0603	1608-08	J	4.7	10	0.5	10	3
TLCK475M010#TA	0402	1005-07	K	4.7	10	0.5	15	3
TLCKU685M010#TA	0805	2012-06	U	6.8	10	0.7	5	3
TLCKJ106M010#TA	0603	1608-08	J	10	10	1.0	7.5	3
TLCKU106M010#TA	0805	2012-06	U	10	10	1.0	5	3
TLCKZ106M010#TA	0602	1605-07	Z	10	10	1.0	15	3
TLCH156M010#TA	0805	2012-10	H	15	10	1.5	5	3
TLCL156M010#TA	0603	1608-08	L	15	10	1.5	7.5	3
TLCL226M010#TA	0603	1608-10	L	22	10	1.1	10	3
TLCKM226M010#TA	0803	2008-10	M	22	10	2.2	7.5	3
TLCH336M010#TA	0805	2012-10	H	33	10	3.3	5	3
TLCC476M010#TA	1205	3216-10	C	47	10	4.7	2	3
TLCKQ476M010#TA	0805	2012-12	Q	47	10	4.7	5	3
TLCKR476M010#TA	0805	2012-15	R	47	10	4.7	5	3
TLCA686M010#TA	1206	3216-18	A	68	10	6.8	1	3
TLCKR686M010#TA	0805	2012-15	R	68	10	6.8	5	3
TLCKR107M010#TA	0805	2012-15	R	100	10	10	5	3
TLCT107M010#TA	1210	3528-12	T	100	10	10	1	3
16 Volt @ 40°C (8 Volt @ 85°C, 3.2 Volt @ 125°C)								
TLCKJ334M016#TA	0603	1608-08	J	0.33	16	0.5	7.5	3
TLCK474M016#TA	0402	1005-07	K	0.47	16	0.5	15	3
TLCKJ105M016#TA	0603	1608-08	J	1.0	16	0.5	7.5	3
TLCK105M016#TA	0402	1005-07	K	1	16	0.8	15	3
TLCKJ225M016#TA	0603	1608-08	J	2.2	16	0.5	7.5	3
TLCL335M016#TA	0603	1608-10	L	3.3	16	0.5	7.5	3
TLCKV106M016#TA	1206	3216-08	V	10	16	1.6	2	3
20 Volt @ 40°C (10 Volt @ 85°C, 4 Volt @ 125°C)								
TLCKJ105M020#TA	0603	1608-08	J	1.0	20	0.5	7.5	3
TLCKH225M020#TA	0805	2012-10	H	2.2	20	0.5	5	3
TLCKL225M020#TA	0603	1608-10	L	2.2	20	0.5	7.5	3
TLCKR106M020#TA	0805	2012-15	R	10	20	2.0	5	3
25 Volt @ 40°C (12.5 Volt @ 85°C, 5 Volt @ 125°C)								
TLCL334M025#TA	0603	1608-10	L	0.33	25	0.5	7.5	3
TLCL105M025#TA	0603	1608-10	L	1.0	25	0.5	7.5	3
TLCKH225M025#TA	0805	2012-10	H	2.2	25	0.6	5	3
TLCKR225M025#TA	0805	2012-15	R	2.2	25	0.6	5	3
TLCT226M025#TA	1210	3528-12	T	22	25	5.5	1	3
35 Volt @ 40°C (17.5 Volt @ 85°C, 7 Volt @ 125°C)								
TLCL105M035#TA	0603	1608-10	L	1.0	35	0.5	7.5	3
TLCKR105M035#TA	0805	2012-15	R	1.0	35	0.5	5	3
TLCKR475M035#TA	0805	2012-15	R	4.7	35	1.6	5	3
TLCA106M035#TA	1206	3216-18	A	10	35	3.5	1	3

Voltage vs Temperature Rating



Moisture Sensitivity Level (MSL) is defined according to J-STD-020.

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.

DCL allowed to move up to 2.00 times the limit post mounting.

ESR allowed to move up to 1.25 times the limit post mounting.

For typical weight and composition see page 150.

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.