

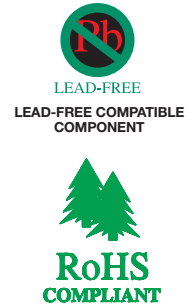
# TLC Series



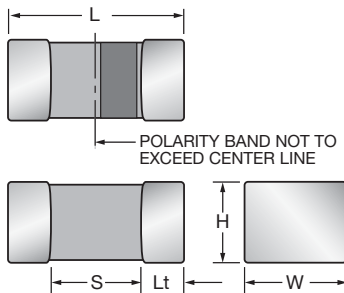
## Tantalum Solid Electrolytic Chip Capacitors Consumer Series



The consumer TLC series of TACmicrochip® tantalum capacitors offers high capacitance vs. voltage ratio based on stable MnO<sub>2</sub> electrode capacitors. The TLC series complies with RoHS requirements and it is an environmentally friendly component ready for lead-free assembly systems. The TLC series is suitable for wide range of consumer electronic applications such as the latest portable handheld electronics, cellular phones, PDAs or other digital equipment and cameras.



- Super High Volumetric Efficiency
- Environmentally Friendly Component
- Small & Low Profile Case Sizes
- Leadfree Assembly Systems
- Consumer Applications



### CASE DIMENSIONS: millimeters (inches)

Code	EIA Code	EIA Metric	Length (L)	Width (W)	Height (H)	Termination Spacing(S)	Minimum Termination Length (Lt)	Average Mass
A	1206	3216-18	3.20 <sup>+0.20</sup> <sub>-0.20</sub> (0.126 <sup>+0.008</sup> <sub>-0.008</sub> )	1.60 <sup>+0.20</sup> <sub>-0.20</sub> (0.063 <sup>+0.008</sup> <sub>-0.008</sub> )	1.60 <sup>+0.20</sup> <sub>-0.20</sub> (0.063 <sup>+0.008</sup> <sub>-0.008</sub> )	1.80 min (0.071 min)	0.15 (0.006)	44.6mg
C	1206	3216-10	3.20 <sup>+0.20</sup> <sub>-0.20</sub> (0.126 <sup>+0.008</sup> <sub>-0.008</sub> )	1.60 <sup>+0.20</sup> <sub>-0.20</sub> (0.063 <sup>+0.008</sup> <sub>-0.008</sub> )	1.00 max (0.039 max)	1.80 min (0.071 min)	0.15 (0.006)	TBA
H	0805	2012-10	2.00 <sup>+0.20</sup> <sub>-0.00</sub> (0.079 <sup>+0.008</sup> <sub>-0.000</sub> )	1.35 <sup>+0.15</sup> <sub>-0.00</sub> (0.053 <sup>+0.006</sup> <sub>-0.000</sub> )	1.00 max (0.039 max)	0.70 min (0.028 min)	0.15 (0.006)	17.1mg
J	0603	1608-08	1.60 <sup>+0.20</sup> <sub>-0.00</sub> (0.063 <sup>+0.008</sup> <sub>-0.000</sub> )	0.85 <sup>+0.15</sup> <sub>-0.00</sub> (0.033 <sup>+0.006</sup> <sub>-0.000</sub> )	0.75 max (0.030 max)	0.55 min (0.022 min)	0.15 (0.006)	5.8mg
K	0402	1005-07	1.00 <sup>+0.20</sup> <sub>-0.00</sub> (0.039 <sup>+0.008</sup> <sub>-0.000</sub> )	0.50 <sup>+0.20</sup> <sub>-0.00</sub> (0.020 <sup>+0.008</sup> <sub>-0.000</sub> )	0.50 <sup>+0.20</sup> <sub>-0.00</sub> (0.020 <sup>+0.008</sup> <sub>-0.000</sub> )	0.40 min (0.016 min)	0.10 (0.004)	2.0mg
L	0603	1608-10	1.60 <sup>+0.20</sup> <sub>-0.00</sub> (0.063 <sup>+0.008</sup> <sub>-0.000</sub> )	0.85 <sup>+0.15</sup> <sub>-0.00</sub> (0.033 <sup>+0.006</sup> <sub>-0.000</sub> )	0.85 <sup>+0.15</sup> <sub>-0.00</sub> (0.033 <sup>+0.006</sup> <sub>-0.000</sub> )	0.55 min (0.022 min)	0.15 (0.006)	8.6mg
M	0803	2008-10	2.00 <sup>+0.20</sup> <sub>-0.00</sub> (0.079 <sup>+0.008</sup> <sub>-0.000</sub> )	0.85 <sup>+0.15</sup> <sub>-0.00</sub> (0.033 <sup>+0.006</sup> <sub>-0.000</sub> )	0.85 <sup>+0.15</sup> <sub>-0.00</sub> (0.033 <sup>+0.006</sup> <sub>-0.000</sub> )	0.70 min (0.028 min)	0.15 (0.006)	9.9mg
Q	0805	2012-12	2.00 <sup>+0.20</sup> <sub>-0.00</sub> (0.079 <sup>+0.008</sup> <sub>-0.000</sub> )	1.35 <sup>+0.15</sup> <sub>-0.00</sub> (0.053 <sup>+0.006</sup> <sub>-0.000</sub> )	1.20 max (0.047 max)	0.70 min (0.028 min)	0.15 (0.006)	21.0mg
R	0805	2012-15	2.00 <sup>+0.20</sup> <sub>-0.00</sub> (0.079 <sup>+0.008</sup> <sub>-0.000</sub> )	1.35 <sup>+0.15</sup> <sub>-0.00</sub> (0.053 <sup>+0.006</sup> <sub>-0.000</sub> )	1.35 <sup>+0.15</sup> <sub>-0.00</sub> (0.053 <sup>+0.006</sup> <sub>-0.000</sub> )	0.70 min (0.028 min)	0.15 (0.006)	29.9mg
S	1206	3216-12	3.20 <sup>+0.20</sup> <sub>-0.20</sub> (0.126 <sup>+0.008</sup> <sub>-0.008</sub> )	1.60 <sup>+0.20</sup> <sub>-0.20</sub> (0.063 <sup>+0.008</sup> <sub>-0.008</sub> )	1.20 max (0.047 max)	1.80 min (0.071 min)	0.15 (0.006)	33.0mg
T	1411	3528-12	3.50 <sup>+0.20</sup> <sub>-0.20</sub> (0.138 <sup>+0.008</sup> <sub>-0.008</sub> )	2.80 <sup>+0.20</sup> <sub>-0.10</sub> (0.110 <sup>+0.008</sup> <sub>-0.004</sub> )	1.20 max (0.047 max)	2.00 min (0.079 min)	0.15 (0.006)	65.0mg
U	0805	2012-06	2.00 <sup>+0.20</sup> <sub>-0.00</sub> (0.079 <sup>+0.008</sup> <sub>-0.000</sub> )	1.35 <sup>+0.15</sup> <sub>-0.00</sub> (0.053 <sup>+0.006</sup> <sub>-0.000</sub> )	0.60 max (0.039 max)	0.70 min (0.028 min)	0.15 (0.006)	8.9mg
V	1206	3216-08	3.20 <sup>+0.20</sup> <sub>-0.20</sub> (0.126 <sup>+0.008</sup> <sub>-0.008</sub> )	1.60 <sup>+0.20</sup> <sub>-0.20</sub> (0.063 <sup>+0.008</sup> <sub>-0.008</sub> )	0.75 max (0.030 max)	1.80 min (0.071 min)	0.15 (0.006)	19.1mg
Z	0602	1605-07	1.60 <sup>+0.20</sup> <sub>-0.00</sub> (0.063 <sup>+0.008</sup> <sub>-0.000</sub> )	0.50 <sup>+0.20</sup> <sub>-0.00</sub> (0.020 <sup>+0.008</sup> <sub>-0.000</sub> )	0.50 <sup>+0.20</sup> <sub>-0.00</sub> (0.020 <sup>+0.008</sup> <sub>-0.000</sub> )	0.55 min (0.022 min)	0.15 (0.006)	4.5mg

# TLC Series



## Tantalum Solid Electrolytic Chip Capacitors Consumer Series

### PACKAGING SUFFIX/QUANTITY

Case Size	Standard Tin Termination		Gold Termination		Tape Type/Width
	4 1/4 inch Reel	7 inch Reel	4 1/4 inch Reel	7 inch Reel	
A	XTA / 500	RTA / 2,000	FTA / 500	ATA / 2,000	Plastic / 8mm
H	XTA / 500	RTA / 3,500	FTA / 500	ATA / 3,500	Plastic / 8mm
J	XTA / 500	RTA / 3,500	FTA / 500	ATA / 3,500	Plastic / 8mm
K	QTA / 1,000	PTA / 10,000	-	-	Plastic / 8mm
L	XTA / 500	RTA / 3,500	FTA / 500	ATA / 3,500	Plastic / 8mm
M	XTA / 500	RTA / 2,500	FTA / 500	ATA / 2,500	Plastic / 8mm
R	XTA / 500	RTA / 2,500	FTA / 500	ATA / 2,500	Plastic / 8mm
T	XTA / 500	RTA / 2,500	FTA / 500	ATA / 2,500	Plastic / 8mm
U	XTA / 500	RTA / 3,500	FTA / 500	ATA / 3,500	Plastic / 8mm
V	XTA / 500	RTA / 2,500	FTA / 500	ATA / 2,500	Plastic / 8mm

### HOW TO ORDER

**TLC**



Type

**L**



Case Size  
See table above

**226**



Capacitance Code  
pF code: 1st two digits represent significant figures, 3rd digit represents multiplier (number of zeros to follow)

**M**



Tolerance  
M=±20%

**006**



Rated DC Voltage  
003=3Vdc  
004=4Vdc  
002=2Vdc  
006=6.3Vdc  
010=10Vdc  
016=16Vdc  
020=20Vdc  
025=25Vdc  
035=35Vdc

**RTA**



Packaging  
See table above

### TECHNICAL SPECIFICATIONS

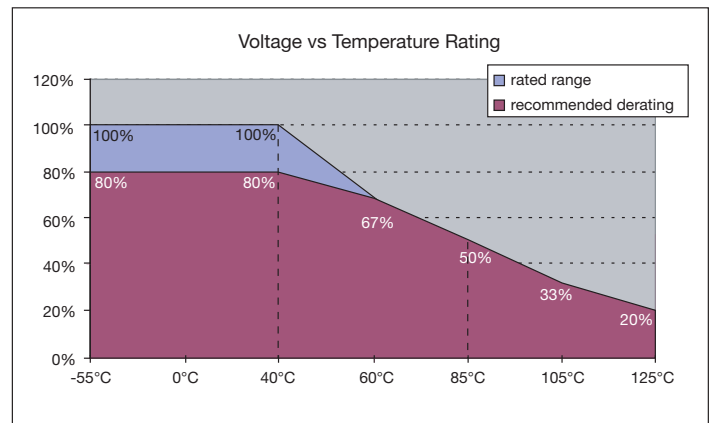
Technical Data:	All technical data relate to an ambient temperature of +25°C									
Capacitance Range:	0.47 μF to 220 μF									
Capacitance Tolerance:	±20%									
Rated Voltage (V <sub>R</sub> )	-55°C ≤ +40°C:	2	3	4	6.3	10	16	20	25	35
Category Voltage (V <sub>C</sub> )	at 85°C:	1	1.5	2	3.2	5.0	8.0	10.0	12.5	17.5
Category Voltage (V <sub>C</sub> )	at 125°C:	0.4	0.6	0.8	1.3	2.0	3.2	4.0	5.0	7.0
Temperature Range:	-55°C to +125°C with category voltage									
Reliability:	0.2% per 1000 hours at 85°C, 0.5xV <sub>R</sub> with 0.1Ω/V series impedance with 60% confidence level									

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5 RMS with DC bias of 1.5V. DCL is measured at rated voltage after 5 minutes.

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

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

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



# TLC Series



## Tantalum Solid Electrolytic Chip Capacitors Consumer Series

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

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

Developmental Ratings - subject to change

### RATINGS & PART NUMBER REFERENCE

AVX Part No.	EIA Code	EIA Metric	Case Size	Cap ( $\mu\text{F}$ )	Rated Voltage (V)	DCL ( $\mu\text{A}$ ) Max.	ESR Max. ( $\Omega$ ) @100kHz
TLCL476M002#	0603	1608-10	L	47	2.0	0.9	7.5
TLCR227M002#	0805	2012-15	R	220	2.0	4.4	5.0
TLC A477M002#	1206	3216-18	A	470	2.0	9.4	1.0
TLCK685M003#	0402	1005-07	K	6.8	3.0	0.5	15
TLCK106M003#	0402	1005-07	K	10	3.0	0.5	15
TLCJ226M003#	0603	1608-08	J	22	3.0	0.7	7.5
TLCL476M003#	0603	1608-10	L	47	3.0	1.4	7.5
TLCH107M003#	0805	2012-10	H	100	3.0	3.0	5
TLCS227M003#	1206	3216-12	S	220	3.0	6.6	2
TLCK475M004#	0402	1005-07	K	4.7	4.0	0.5	15
TLCK685M004#	0402	1005-07	K	6.8	4.0	0.5	15
TLCJ106M004#	0603	1608-08	J	10	4.0	0.5	7.5
TLCK106M004#	0402	1005-07	K	10	4.0	0.5	15
TL CZ106M004#	0602	1605-07	Z	10	4.0	0.5	15
TLCJ226M004#	0603	1608-08	J	22	4.0	0.9	7.5
TLCL336M004#	0603	1608-10	L	33	4.0	1.3	7.5
TLCH476M004#	0805	2012-10	H	47	4.0	1.9	5
TLCL476M004#	0603	1608-10	L	47	4.0	1.9	7.5
TL CR686M004#	0805	2012-15	R	68	4.0	2.7	5
TLCH107M004#	0805	2012-10	H	100	4.0	4.0	5
TLCC107M004#	1205	3216-10	C	100	4.0	4.0	2.0
TLCQ107M004#	0805	2012-12	Q	100	4.0	4.0	5
TLC A227M004#	1206	3216-18	A	220	4.0	8.8	1.0
TLCT227M004#	1210	3528-12	T	220	4.0	8.8	1
TLCK475M006#	0402	1005-07	K	4.7	6.3	0.5	15
TL CU475M006#	0805	2012-06	U	4.7	6.3	0.5	5
TLCJ106M006#	0603	1608-08	J	10	6.3	0.6	7.5
TLCK106M006	0402	1005-07	K	10	6.3	0.6	15
TL CZ106M006#	0602	1605-07	Z	10	6.3	0.6	15
TLCL226M006#	0603	1608-10	L	22	6.3	1.4	7.5
TLCH336M006#	0805	2012-10	H	33	6.3	2.0	5
TLCL336M006#	0603	1608-10	L	33	6.3	2.1	7.5
TLCH476M006#	0805	2012-10	H	47	6.3	3.0	5
TL CR686M006#	0805	2012-15	R	68	6.3	4.3	5
TL CR107M006#	0805	2012-15	R	100	6.3	6.0	5
TLCJ225M010#	0603	1608-08	J	2.2	10	0.5	7.5

AVX Part No.	EIA Code	EIA Metric	Case Size	Cap ( $\mu\text{F}$ )	Rated Voltage (V)	DCL ( $\mu\text{A}$ ) Max.	ESR Max. ( $\Omega$ ) @100kHz
TLCK225M010#	0402	1005-07	K	2.2	10	0.5	15
TL CJ475M010#	0603	1608-08	J	4.7	10	0.5	7.5
TL CU685M010#	0805	2012-06	U	6.8	10	0.7	5
TLCJ106M010#	0603	1608-08	J	10	10	1.0	7.5
TL CU106M010#	0805	2012-06	U	10	10	1.0	5
TLCH156M010#	0603	1608-08	L	15	10	1.5	7.5
TLCH156M010#	0805	2012-10	H	15	10	1.5	5
TLCL226M010#	0603	1608-10	L	22	10	2.2	7.5
TL CM226M010#	0803	2008-10	M	22	10	2.2	7.5
TLCH336M010#	0805	2012-10	H	33	10	3.3	5
TLC C476M010#	1205	3216-10	C	47	10	4.7	2
TLC Q476M010#	0805	2012-12	Q	47	10	4.7	5
TL CR476M010#	0805	2012-15	R	47	10	4.7	5
TLC A686M010#	1206	3216-18	A	68	10	6.8	1
TL CR686M010#	0805	2012-15	R	68	10	6.8	5
TLCT107M010#	1210	3528-12	T	100	10	10	1
TL CJ334*016#	0603	1608-08	J	0.33	16	0.5	7.5
TL CK474M016#	0402	1005-07	K	0.47	16	0.5	15
TL CJ105M016#	0603	1608-08	J	1.0	16	0.5	7.5
TL CJ225M016#	0603	1608-08	J	2.2	16	0.5	7.5
TLCL335M016#	0603	1608-10	L	3.3	16	0.5	7.5
TL CV106M016#	1206	1206-08	V	10	16	1.6	2
TL CJ105M020#	0603	1608-08	J	1.0	20	0.5	7.5
TLCH225M020#	0805	2012-10	H	2.2	20	0.5	5
TLCL225M020#	0603	1608-10	L	2.2	20	0.5	7.5
TL CR106M020#	0805	2012-15	R	10	20	2.0	5
TLCL334*025#	0603	1608-10	L	0.33	25	0.5	7.5
TLCL105M025#	0603	1608-10	L	1.0	25	0.5	7.5
TL CR225M025#	0805	2012-15	R	2.2	25	0.6	5
TLCH225M025#	0805	2012-10	H	2.2	25	0.6	5
TL CR105M035#	0805	2012-15	R	1.0	35	0.5	5

# Refer to packaging suffix table for options. Developmental Ratings - subject to change.

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.

