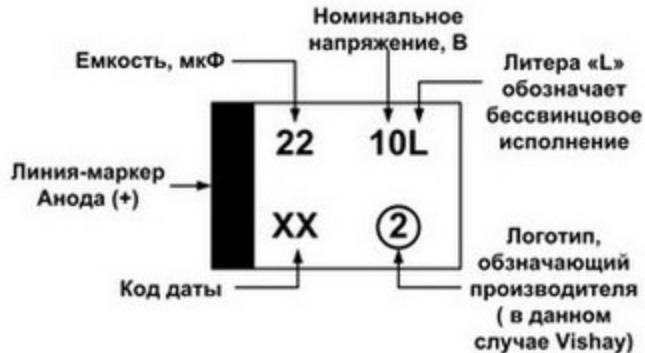


## Маркировка корпусов типа А



Номинальное напряжение	Код напряжения
4,0	G
6,3	J
10	A
16	C
20	D
25	E
35	V
50	T

## Маркировка корпусов типа В, С, D, E, V



# TAJ Series



## Standard and Low Profile Tantalum Capacitors

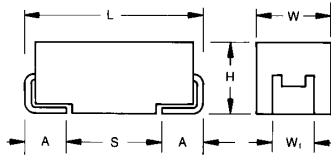


### FEATURES

- General purpose SMT chip tantalum series
- 17 case sizes available, standard and low profile down to 1mm maximum height
- CV range: 0.10 - 2200µF / 2.5 - 50V
- J-lead construction

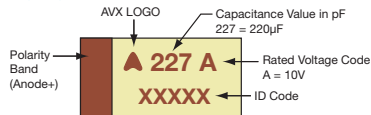
### APPLICATIONS

- General low power DC/DC and LDO
- Entertainment / Infotainment systems
- Height restricted design

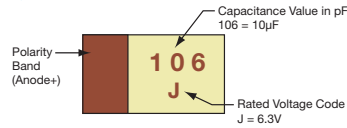


### MARKING

A, B, C, D, E, F, H, K, S, T, U, V, W, X, Y CASE



### P, R CASE



### HOW TO ORDER

TAJ	C	106	M	035	R	NJ	-
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 K = ±10% M = ±20%	Rated DC Voltage 002 = 2.5Vdc 004 = 4Vdc 006 = 6.3Vdc 010 = 10Vdc 016 = 16Vdc 020 = 20Vdc 025 = 25Vdc 035 = 35Vdc 050 = 50Vdc	Packaging R = Pure Tin 7" Reel S = Pure Tin 13" Reel A = Gold Plating 7" Reel B = Gold Plating 13" Reel H = Tin Lead 7" Reel K = Tin Lead 13" Reel H, K = Non RoHS A, B, H, K = please contact manufacturer	Specification Suffix NJ = Standard Suffix	Additional characters may be added for special requirements V = Dry pack Option (selected ratings only)

### TECHNICAL SPECIFICATIONS

Technical Data:	All technical data relate to an ambient temperature of +25°C									
Capacitance Range:	0.10 µF to 2200 µF									
Capacitance Tolerance:	±10%; ±20%									
Rated Voltage (V <sub>R</sub> )	≤ +85°C:	2.5	4	6.3	10	16	20	25	35	50
Category Voltage (V <sub>C</sub> )	≤ +125°C:	1.7	2.7	4	7	10	13	17	23	33
Surge Voltage (V <sub>S</sub> )	≤ +85°C:	3.3	5.2	8	13	20	26	32	46	65
Surge Voltage (V <sub>S</sub> )	≤ +125°C:	2.2	3.4	5	8	13	16	20	28	40
Temperature Range:	-55°C to +125°C									
Reliability:	1% per 1000 hours at 85°C, V <sub>R</sub> with 0.1Ω/V series impedance, 60% confidence level									
Qualification:	CECC 30801 - 005 issue 2 EIA 535BAAC for standard case sizes									
Termination Finished:	Sn Plating (standard), Gold and SnPb Plating upon request									
	For AEC-Q200 availability, please contact AVX									



# TLJ Series



## Tantalum Solid Electrolytic Chip Capacitors High CV Consumer Series



### FEATURES

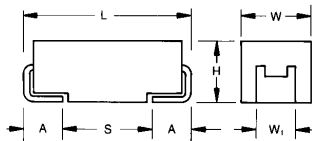
- High Volumetric Efficiency
- 3x reflow 260°C compatible
- 14 case sizes available including low profile codes
- Environmentally friendly
- Consumer applications (e.g. mobiles phones, PDA etc.)
- CV range: 10-1500µF / 2.5-20V



LEAD-FREE  
LEAD-FREE COMPATIBLE  
COMPONENT

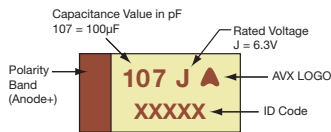
### APPLICATIONS

- Mobile phones
- MP3/4 players

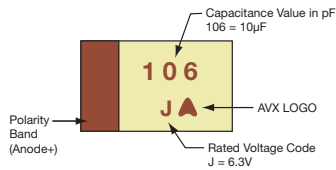


### MARKING

A, B, F, G, H, K, S, T, V, W,  
Y CASE



N, P, R CASE



### CASE DIMENSIONS: millimeters (inches)

Code	EIA Code	EIA Metric	L±0.20 (0.008)	W+0.20 (0.008) -0.10 (0.004)	H+0.20 (0.008) -0.10 (0.004)	W <sub>1</sub> ±0.20 (0.008)	A+0.30 (0.012) -0.20 (0.008)	S Min.
A	1206	3216-18	3.20 (0.126)	1.60 (0.063)	1.60 (0.063)	1.20 (0.047)	0.80 (0.031)	1.10 (0.043)
B	1210	3528-21	3.50 (0.138)	2.80 (0.110)	1.90 (0.075)	2.20 (0.087)	0.80 (0.031)	1.40 (0.055)
F	2312	6032-20	6.00 (0.236)	3.20 (0.126)	2.00 (0.079) max.	2.20 (0.087)	1.30 (0.051)	2.90 (0.114)
G	1206	3216-15	3.20 (0.126)	1.60 (0.063)	1.50 (0.059) max.	1.20 (0.047)	0.80 (0.031)	1.10 (0.043)
H	1210	3528-15	3.50 (0.138)	2.80 (0.110)	1.50 (0.059) max.	2.20 (0.087)	0.80 (0.031)	1.40 (0.055)
K	1206	3216-10	3.20 (0.126)	1.60 (0.063)	1.00 (0.039) max.	1.20 (0.047)	0.80 (0.031)	1.10 (0.043)
N	0805	2012-10	2.05 (0.081)	1.30 (0.051)	1.00 (0.039) max.	1.00 (0.039)	0.50 (0.020)	0.85 (0.033)
P	0805	2012-15	2.05 (0.081)	1.35 (0.053)	1.50 (0.059) max.	1.00±0.10 (0.039±0.004)	0.50 (0.020)	0.85 (0.033)
R	0805	2012-12	2.05 (0.081)	1.30 (0.051)	1.20 (0.047) max.	1.00±0.10 (0.039±0.004)	0.50 (0.020)	0.85 (0.033)
S	1206	3216-12	3.20 (0.126)	1.60 (0.063)	1.20 (0.047) max.	1.20 (0.047)	0.80 (0.031)	1.10 (0.043)
T	1210	3528-12	3.50 (0.138)	2.80 (0.110)	1.20 (0.047) max.	2.20 (0.087)	0.80 (0.031)	1.40 (0.033)
V	2924	7361-38	7.30 (0.287)	6.10 (0.240)	3.55 (0.140)	3.10 (0.120)	1.30 (0.051)	4.40 (0.173)
W	2312	6032-15	6.00 (0.236)	3.20 (0.126)	1.50 (0.059) max.	2.20 (0.087)	1.30 (0.051)	2.90 (0.114)
Y	2917	7343-20	7.30 (0.287)	4.30 (0.169)	2.00 (0.079) max.	2.40 (0.094)	1.30 (0.051)	4.40 (0.173)

W1 dimension applies to the termination width for A dimensional area only.

### HOW TO ORDER

**TLJ**

Type

**W**

Case Size  
See table above

**157**

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

**M**

Tolerance  
M = ±20%

**010**

Rated DC Voltage  
002 = 2.5Vdc  
004 = 4Vdc  
006 = 6.3Vdc  
010 = 10Vdc  
016 = 16Vdc  
020 = 20Vdc

**R**

Packaging  
R = Pure Tin 7" Reel  
S = Pure Tin 13" Reel

**0200**

ESR in mΩ

### TECHNICAL SPECIFICATIONS

Technical Data:

All technical data relate to an ambient temperature of +25°C

Capacitance Range: 10 µF to 1500 µF

Capacitance Tolerance: ±20%

Rated Voltage (V <sub>R</sub> )	-55°C ≤ +40°C:	2.5	4	6.3	10	16	20
Category Voltage (V <sub>C</sub> )	at 85°C:	1.3	2	3.2	5	8	10
Category Voltage (V <sub>C</sub> )	at 125°C:	0.5	0.8	1.3	2	3.2	4

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

# F92 Series



## Resin-Molded Chip, Low Profile J-Lead



### FEATURES

- Compliant to the RoHS2 directive 2011/65/EU
- SMD J-lead
- Low profile case sizes

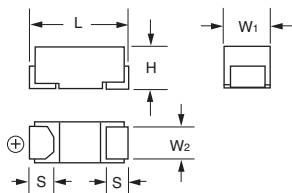
### APPLICATIONS

- Handheld electronics
- USB accessories



### CASE DIMENSIONS: millimeters (inches)

Code	EIA Code	EIA Metric	L	W <sub>1</sub>	W <sub>2</sub>	H	S
A	1206	3216-12	3.20 ± 0.20 (0.126 ± 0.008)	1.60 ± 0.20 (0.063 ± 0.008)	1.20 ± 0.10 (0.047 ± 0.004)	1.10 ± 0.10 (0.043 ± 0.004)	0.80 ± 0.20 (0.031 ± 0.008)
B	1311	3428-12	3.40 ± 0.20 (0.134 ± 0.008)	2.80 ± 0.20 (0.110 ± 0.008)	2.30 ± 0.10 (0.091 ± 0.004)	1.10 ± 0.10 (0.043 ± 0.004)	0.80 ± 0.20 (0.031 ± 0.008)
P	0805	2012-12	2.00 ± 0.20 (0.079 ± 0.008)	1.25 ± 0.10 (0.049 ± 0.004)	0.90 ± 0.10 (0.035 ± 0.004)	1.10 ± 0.10 (0.043 ± 0.004)	0.50 ± 0.20 (0.020 ± 0.008)



### MARKING

**P CASE**

\*Rated Capacitance Code

AS

Rated Voltage Code

4V	G	16V	C	35V	V
6.3V	J	20V	D		
10V	A	25V	E		

\*Capacitance code of "P" case products are as shown below.

**A CASE**

Rated Capacitance Code

G 226

Rated Voltage Code

**B CASE**

Rated Capacitance (µF)

22  
10V

Rated Voltage (V)

### HOW TO ORDER

<b>F92</b>	<b>0J</b>	<b>106</b>	<b>M</b>	<b>P</b>		<b>LZT</b>
Type	Rated Voltage	Capacitance Code	Tolerance	Case Size	Packaging	Specification Suffix
		pF code: 1st two digits represent significant figures, 3rd digit represents multiplier (number of zeros to follow)	K = ±10% M = ±20%	See table above	See Tape & Reel Packaging Section	Rated temperature 60°C only

### TECHNICAL SPECIFICATIONS

Category Temperature Range:	-55 to +125°C								
Rated Temperature:	+85°C								
Capacitance Tolerance:	±20%, ±10% at 120Hz								
Dissipation Factor:	Refer to next page								
ESR 100kHz:	Refer to next page								
Leakage Current:	After 1 minute's application of rated voltage, leakage current at 20°C is not more than 0.01CV or 0.5µA, whichever is greater. After 1 minute's application of rated voltage, leakage current at 85°C is not more than 0.1CV or 5µA, whichever is greater. After 1 minute's application of derated voltage, leakage current at 125°C is not more than 0.125CV or 6.3µA, whichever is greater.								
Capacitance Change By Temperature	<table border="1" style="width: 100%;"> <thead> <tr> <th>P Case</th> <th>A, B Case</th> </tr> </thead> <tbody> <tr> <td>+20% Max. at +125°C</td> <td>+15% Max. at +125°C</td> </tr> <tr> <td>+15% Max. at +85°C</td> <td>+10% Max. at +85°C</td> </tr> <tr> <td>-15% Max. at -55°C</td> <td>-10% Max. at -55°C</td> </tr> </tbody> </table>	P Case	A, B Case	+20% Max. at +125°C	+15% Max. at +125°C	+15% Max. at +85°C	+10% Max. at +85°C	-15% Max. at -55°C	-10% Max. at -55°C
P Case	A, B Case								
+20% Max. at +125°C	+15% Max. at +125°C								
+15% Max. at +85°C	+10% Max. at +85°C								
-15% Max. at -55°C	-10% Max. at -55°C								

# F92 Series



## Resin-Molded Chip, Low Profile J-Lead

### CAPACITANCE AND RATED VOLTAGE RANGE (LETTER DENOTES CASE SIZE)

Capacitance		Rated Voltage							*Cap Code
μF	Code	4V (0G)	6.3V (0J)	10V (1A)	16V (1C)	20V (1D)	25V (1E)	35V (1V)	
0.22	224							A	J
0.33	334							A	N
0.47	474				P	A/P		A	S
0.68	684				P	A			W
1.0	105			P	P	A/P	A/P	A	A
1.5	155			P	P	A			E
2.2	225		P	P	A/P	A	A/B	B	J
3.3	335	P	P	A/P	A			B	N
4.7	475	P	P	A/P	A/B	A <sup>(M)</sup> /B	A/B		S
6.8	685	P	P	A/P	B				w
10	106	A/P	A/P	A/P <sup>(M)</sup>	A/B	B			a
15	156	P	A/P <sup>(M)</sup>	A					e
22	226	A/P <sup>(M)</sup>	A/P <sup>(M)</sup>	A/B	B				J
33	336	A/P <sup>(M)</sup>	A/B	B					n
47	476	A/B	A/B	B					s
68	686	A <sup>(M)</sup> /B							w
100	107	A <sup>(M)</sup> /B	A <sup>(M)**</sup> /B						A
150	157	B <sup>(M)</sup>							E
220	227								J

Released ratings (M tolerance only)

\*\*Rated temperature 60°C only. Please contact AVX when you need detail spec.

Please contact to your local AVX sales office when these series are being designed in your application.

# F93 Series



## Resin-Molded Chip, Standard Tantalum J-Lead



### FEATURES

- Compliant to the RoHS2 directive 2011/65/EU
- SMD J-lead

### APPLICATIONS

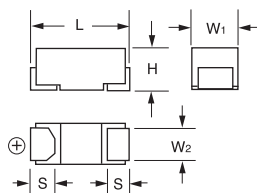
- Low power DC/DC



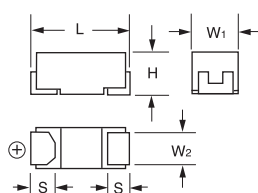
### CASE DIMENSIONS: millimeters (inches)

Code	EIA Code	EIA Metric	L	W <sub>1</sub>	W <sub>2</sub>	H	S
A	1206	3216-18	3.20 ± 0.20 (0.126 ± 0.008)	1.60 ± 0.20 (0.063 ± 0.008)	1.20 ± 0.10 (0.047 ± 0.004)	1.60 ± 0.20 (0.063 ± 0.008)	0.80 ± 0.20 (0.031 ± 0.008)
B	1210	3528-21	3.50 ± 0.20 (0.138 ± 0.008)	2.80 ± 0.20 (0.110 ± 0.008)	2.20 ± 0.10 (0.087 ± 0.004)	1.90 ± 0.20 (0.075 ± 0.008)	0.80 ± 0.20 (0.031 ± 0.008)
C	2312	6032-27	6.00 ± 0.20 (0.236 ± 0.008)	3.20 ± 0.20 (0.126 ± 0.008)	2.20 ± 0.10 (0.087 ± 0.004)	2.50 ± 0.20 (0.098 ± 0.008)	1.30 ± 0.20 (0.051 ± 0.008)
N	2917	7343-30	7.30 ± 0.20 (0.287 ± 0.008)	4.30 ± 0.20 (0.169 ± 0.008)	2.40 ± 0.10 (0.094 ± 0.004)	2.80 ± 0.20 (0.110 ± 0.008)	1.30 ± 0.20 (0.051 ± 0.008)

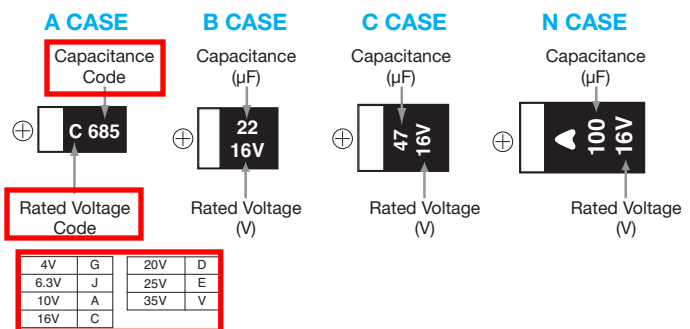
#### A, B CASE



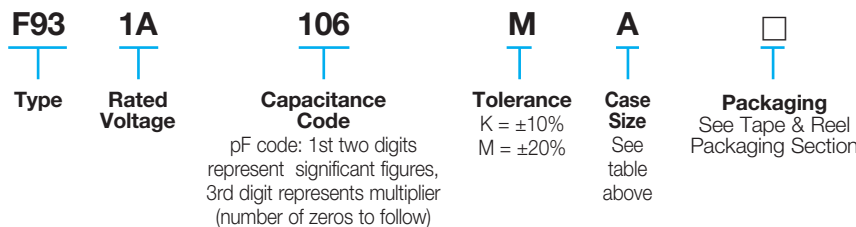
#### C, N CASE



### MARKING



### HOW TO ORDER



### TECHNICAL SPECIFICATIONS

Category Temperature Range:	-55 to +125°C
Rated Temperature:	+85°C
Capacitance Tolerance:	±20%, ±10% at 120Hz
Dissipation Factor:	Refer to next page
ESR 100kHz:	Refer to next page
Leakage Current:	After 1 minute's application of rated voltage, leakage current at 20°C is not more than 0.01CV or 0.5µA, whichever is greater. After 1 minute's application of rated voltage, leakage current at 85°C is not more than 0.1CV or 5µA, whichever is greater. After 1 minute's application of derated voltage, leakage current at 125°C is not more than 0.125CV or 6.3µA, whichever is greater.
Capacitance Change By Temperature	+15% Max. at +125°C +10% Max. at +85°C -10% Max. at -55°C



# F93 Series



## Resin-Molded Chip, Standard Tantalum J-Lead

### CAPACITANCE AND RATED VOLTAGE RANGE (LETTER DENOTES CASE SIZE)

Capacitance		Rated Voltage						
µF	Code	4V (0G)	6.3V (0J)	10V (1A)	16V (1C)	20V (1D)	25V (1E)	35V (1V)
0.33	334							A
0.47	474							A
0.68	684							A
1.0	105				A		A	A
1.5	155				A		A	A
2.2	225				A	A	A	A/B
3.3	335				A	A	A	B
4.7	475			A	A	A/B	A/B	B/C
6.8	685			A	A	A/B		C
10	106		A	A	A/B	A/B	B/C	C
15	156		A	A	A/B	C	C	N
22	226	A	A	A/B	A/B/C	B/C	C/N	N
33	336	A	A	A/B	B/C	C/N	N	N
47	476	A	A/B	A/B/C	B/C/N	C/N	N	
68	686	A	A/B	B/C	C/N			
100	107	A/B	A/B/C	B/C/N	C/N	N		
150	157	B	B/C	C/N	N			
220	227	B/C	B/C/N	C/N	N			
330	337	C	N	N				
470	477	N	N					
680	687	N	N					

Released ratings

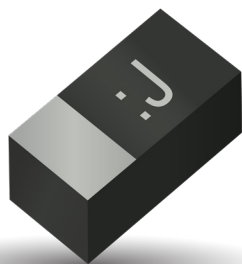
Please contact to your local AVX sales office when these series are being designed in your application.

### RATINGS & PART NUMBER REFERENCE

AVX Part No.	Case Size	Capacitance (µF)	Rated Voltage (V)	DCL (µA)	DF @ 120Hz (%)	ESR @ 100kHz (Ω)	100kHz RMS Current (mA)			*1 ΔC/C (%)	MSL
							25°C	85°C	125°C		
<b>4 Volt</b>											
F930G226#AA	A	22	4	0.9	6	2.5	173	156	69	*	1
F930G336#AA	A	33	4	1.3	8	2.5	173	156	69	*	1
F930G476#AA	A	47	4	1.9	18	2.5	173	156	69	*	1
F930G686#AA	A	68	4	2.7	24	2.5	173	156	69	*	1
F930G107#AA	A	100	4	4.0	30	2.0	194	174	77	*	1
F930G107#BA	B	100	4	4.0	14	0.9	307	277	123	*	1
F930G157#BA	B	150	4	6.0	16	0.7	348	314	139	*	1
F930G227#BA	B	220	4	8.8	18	0.7	348	314	139	*	1
F930G227#CC	C	220	4	8.8	12	0.7	396	357	159	*	1
F930G337#CC	C	330	4	13.2	14	0.7	396	357	159	*	1
F930G477#NC	N	470	4	18.8	16	0.3	707	636	283	*	1
F930G687#NC	N	680	4	27.2	18	0.3	707	636	283	*	1
<b>6.3 Volt</b>											
F930J106#AA	A	10	6.3	0.6	6	3.0	158	142	63	*	1
F930J156#AA	A	15	6.3	0.9	6	2.9	161	145	64	*	1
F930J226#AA	A	22	6.3	1.4	8	2.5	173	156	69	*	1
F930J336#AA	A	33	6.3	2.1	8	2.5	173	156	69	*	1
F930J476#AA	A	47	6.3	3.0	18	2.5	173	156	69	*	1
F930J476#BA	B	47	6.3	3.0	6	1.0	292	262	117	*	1
F930J686#AA	A	68	6.3	4.3	20	2.0	194	174	77	*	1
F930J686#BA	B	68	6.3	4.3	8	1.0	292	262	117	*	1
F930J107#AA	A	100	6.3	6.3	35	2.0	194	174	77	±15	1
F930J107#BA	B	100	6.3	6.3	14	0.9	307	277	123	*	1
F930J107#CC	C	100	6.3	6.3	8	0.7	396	357	159	*	1
F930J157#BA	B	150	6.3	9.5	18	0.9	307	277	123	*	1
F930J157#CC	C	150	6.3	9.5	12	0.7	396	357	159	*	1
F930J227#BA	B	220	6.3	13.9	30	1.2	266	240	106	±15	3
F930J227#CC	C	220	6.3	13.9	14	0.7	396	357	159	*	1
F930J227#NC	N	220	6.3	13.9	10	0.5	548	493	219	*	1
F930J337#NC	N	330	6.3	20.8	14	0.5	548	493	219	*	1
F930J477#NC	N	470	6.3	29.6	16	0.3	707	636	283	*	1
F930J687#NC	N	680	6.3	42.8	40	0.3	707	636	283	±15	3

# F98 Series

## Resin-Molded Chip, High CV Undertab



### FEATURES

- Compliant to the RoHS2 directive 2011/65/EU
- SMD face down design
- Small and low profile



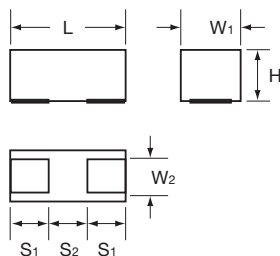
### APPLICATIONS

- Smartphone
- Mobile phone
- Wireless module
- Hearing aid

### CASE DIMENSIONS: millimeters (inches)

Code	EIA Code	EIA Metric	L	W <sub>1</sub>	W <sub>2</sub>	H	S <sub>1</sub>	S <sub>2</sub>
M	0603	1608-09	1.60 <sup>+0.20</sup> <sub>-0.10</sub> (0.063 <sup>+0.008</sup> <sub>-0.004</sub> )	0.85 <sup>+0.20</sup> <sub>-0.10</sub> (0.033 <sup>+0.008</sup> <sub>-0.004</sub> )	0.65±0.10 (0.026±0.004)	0.80±0.10*3 (0.031±0.004)	0.50±0.10 (0.020±0.004)	0.60±0.10 (0.024±0.004)
S	0805	2012-09	2.00 <sup>+0.20</sup> <sub>-0.10</sub> (0.079 <sup>+0.008</sup> <sub>-0.004</sub> )	1.25 <sup>+0.20</sup> <sub>-0.10</sub> (0.049 <sup>+0.008</sup> <sub>-0.004</sub> )	0.90±0.10 (0.035±0.004)	0.80±0.10 (0.031±0.004)	0.50±0.10 (0.020±0.004)	1.00±0.10 (0.039±0.004)
U	0402	1106-06	1.10±0.05 (0.043±0.002)	0.60±0.05 (0.024±0.002)	0.35±0.05 (0.014±0.002)	0.55±0.05 (0.022±0.002)	0.30±0.05 (0.012±0.002)	0.50±0.05 (0.020±0.002)

\*3 F980J107MMAAXE: 1.0mm Max.



### MARKING

#### U CASE

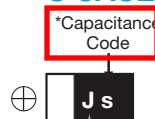


#### M CASE



Rated Voltage Code

#### S CASE



Rated Voltage Code

### HOW TO ORDER

**F98**

Type

**0J**

Rated Voltage

**106**

Capacitance Code

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

**M**

Tolerance  
M = ±20%

**M**

Case Size  
See table above

**□**

Packaging  
See Tape & Reel Packaging Section

**□□□**

Specification Suffix  
LZT = Rated temperature 60°C  
AXE = Rated temperature 60°C and H dimension 1.0mm Max

### TECHNICAL SPECIFICATIONS

Category Temperature Range:	-55 to +125°C
Rated Temperature:	+85°C or +60°C
Capacitance Tolerance:	±20% at 120Hz
Dissipation Factor:	Refer to next page
ESR 100kHz:	Refer to next page
Leakage Current:	After 5 minute's application of rated voltage, leakage current at 85°C or +60°C 10 times or less than 20°C specified value. After 5 minute's application of rated voltage, leakage current at 125°C 12.5 times or less than 20°C specified value.
Termination Finish:	M, S case: Gold Plating (standard), U case: Sn-3.5Ag Plating (standard)



# F98 Series

## Resin-Molded Chip, High CV Undertab



### CAPACITANCE AND RATED VOLTAGE RANGE (LETTER DENOTES CASE SIZE)

Capacitance		Rated Voltage								*Cap Code
µF	Code	2.5 (0e)	4V (0G)	6.3V (0J)	10V (1A)	16V (1C)	20V (1D)	25V (1E)	35V (1V)	
0.47	474					U				N
1.0	105					M	M	M	S	A
2.2	225				M/U	M				J
4.7	475		U	M/U	M/U**	M				S
10	106		U	M/U**	M	S				a
15	156		U							e
22	226		M/U**	M	M**/S					J
33	336		M	M	M**/S					n
47	476	M	M	M/S	S					s
68	686		M/S							w
100	107		M/S	M*4/S						A
220	227		S							J

Released ratings

\*4 (AXE) Rated temperature 60°C and H dimension 1.0mm Max. Please contact AVX when you need detail spec.

\*\* (LZT) Rated temperature 60°C. Please contact AVX when you need detail spec.

Please contact to your local AVX sales office when these series are being designed in your application.

### RATINGS & PART NUMBER REFERENCE

AVX Part No.	Case Size	Capacitance (µF)	Rated Voltage (V)	DCL (µA)	DF @ 120Hz (%)	ESR @ 100kHz (Ω)	100kHz RMS Current (mA)				*1 ΔC/C (%)	MSL
							25°C	60°C	85°C	125°C		
2.5 Volt												
F980E476MMA	M	47	2.5	1.2	30	4	79	-	71	32	±30	3
4 Volt												
F980G475MUA	U	4.7	4	0.5	20	20	27	-	25	11	±30	3
F980G106MUA	U	10	4	0.8	25	20	27	-	25	11	±30	3
F980G156MUA	U	15	4	9.0	40	25	24	-	22	10	±30	3
F980G226MMA	M	22	4	0.9	15	7.5	58	-	52	23	±30	3
F980G226MUALZT	U	22	4	25.0	40	20	27	25	-	11	±30	3
F980G336MMA	M	33	4	1.3	30	4	79	-	71	32	±30	3
F980G476MMA	M	47	4	1.9	40	8	56	-	50	22	±30	3
F980G686MMA	M	68	4	27.2	50	10	50	-	45	20	±30	3
F980G686MSA	S	68	4	2.7	30	4	106	-	95	42	±30	3
F980G107MMA	M	100	4	80.0	60	10	50	-	45	20	±30	3
F980G107MSA	S	100	4	4.0	35	4	106	-	95	42	±30	3
F980G227MSA	S	220	4	132	80	5	95	-	85	38	±30	3
6.3 Volt												
F980J475MMA	M	4.7	6.3	0.5	20	7.5	58	-	52	23	±30	3
F980J475MUA	U	4.7	6.3	0.6	20	20	27	-	25	11	±30	3
F980J106MMA	M	10	6.3	0.6	8	6	65	-	58	26	±30	3
F980J106MUALZT	U	10	6.3	6.3	30	30	22	20	-	9	±30	3
F980J226MMA	M	22	6.3	1.4	20	6	65	-	58	26	±30	3
F980J336MMA	M	33	6.3	4.2	35	8	56	-	50	22	±30	3
F980J476MMA	M	47	6.3	29.6	45	10	50	-	45	20	±30	3
F980J476MSA	S	47	6.3	3.0	25	6	87	-	78	35	±30	3
F980J107MMAAXE	M	100	6.3	126	80	10	50	45	-	20	±30	3
F980J107MSA	S	100	6.3	63.0	50	8	75	-	68	30	±30	3
10 Volt												
F981A225MMA	M	2.2	10	0.5	6	7.5	58	-	52	23	±30	3
F981A225MUA	U	2.2	10	0.5	15	15	32	-	28	13	±30	3
F981A475MMA	M	4.7	10	0.5	6	6	65	-	58	26	±30	3
F981A475MUALZT	U	4.7	10	4.7	25	25	24	22	-	10	±30	3
F981A106MMA	M	10	10	1.0	20	7.5	58	-	52	23	±30	3
F981A226MMAALZT	M	22	10	11.0	30	8	56	50	-	22	±30	3
F981A226MSA	S	22	10	2.2	20	4	106	-	95	42	±30	3
F981A336MMAALZT	M	33	10	33.0	45	8	56	50	-	22	±30	3
F981A336MSA	S	33	10	3.3	30	6	87	-	78	35	±30	3
F981A476MSA	S	47	10	9.4	35	5	95	-	85	38	±30	3
16 Volt												
F981C474MUA	U	0.47	16	0.5	6	25	24	-	22	10	±20	3
F981C105MMA	M	1	16	0.5	6	10	50	-	45	20	±30	3
F981C225MMA	M	2.2	16	0.5	6	10	50	-	45	20	±30	3
F981C475MMA	M	4.7	16	0.8	12	12	46	-	41	18	±30	3
F981C106MSA	S	10	16	1.6	18	4	106	-	95	42	±30	3
20 Volt												
F981D105MMA	M	1	20	0.5	6	10	50	-	45	20	±30	3
25 Volt												
F981E105MMA	M	1	25	0.5	8	10	50	-	45	20	±30	3
35 Volt												
F981V105MSA	S	1	35	0.7	20	8	75	-	68	30	±30	3

\*2: Leakage Current

After 5 minute's application of rated voltage, leakage current at 20°C.

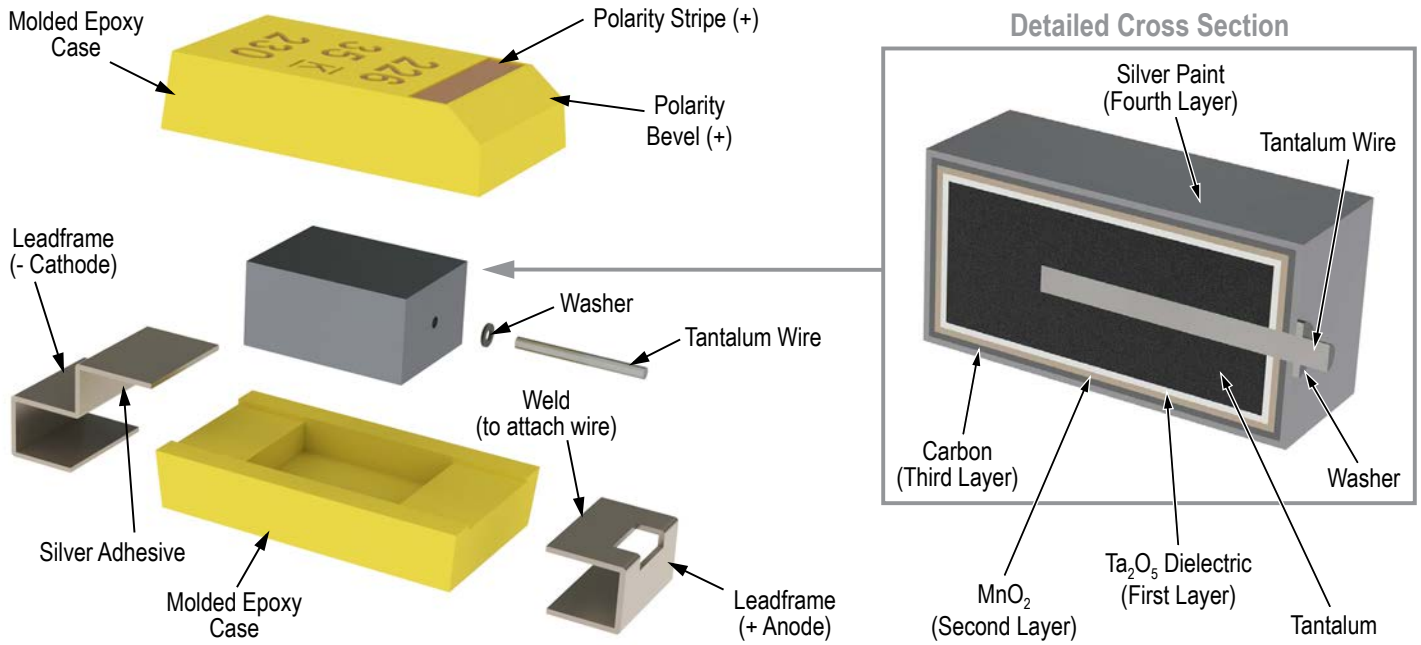
Moisture Sensitivity Level (MSL) is defined according to J-STD-020.



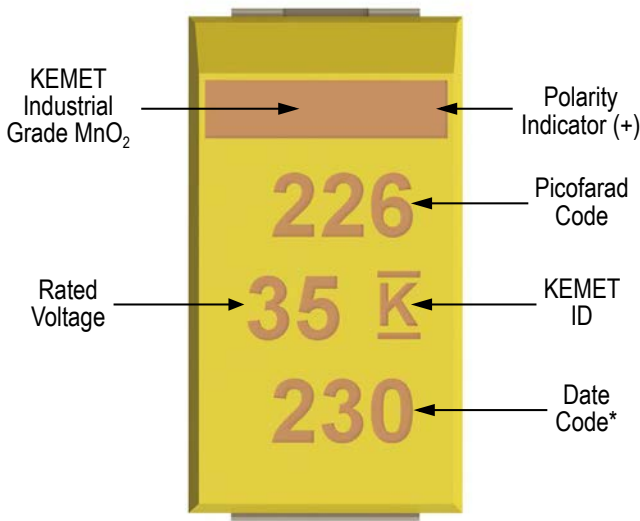
The Important Information/Disclaimer is incorporated in these specifications by reference and should be reviewed in full before placing any order.



## Construction



## Capacitor Marking



\* 230 = 30<sup>th</sup> week of 2012

Date Code *	
1 <sup>st</sup> digit = Last number of Year	2 = 2012 3 = 2013 4 = 2014 5 = 2015 6 = 2016 7 = 2017
2 <sup>nd</sup> and 3 <sup>rd</sup> digit = Week of the Year	01 = 1 <sup>st</sup> week of the Year to 52 = 52 <sup>nd</sup> week of the Year

## Surface Mount Type

**CS,CT,CX series**



# SP-Cap

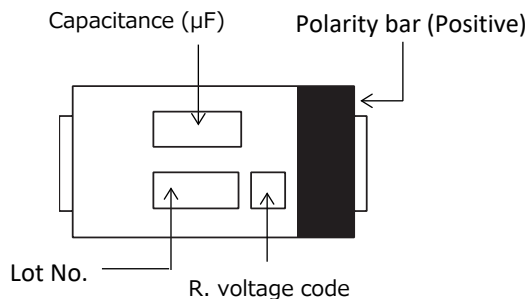
### Features

- High voltage (35 V max.)
- Low profile (Height 1.0 mm max.)
- High ripple current (5600 mA rms max.)
- RoHS compliance, Halogen free

### Specifications

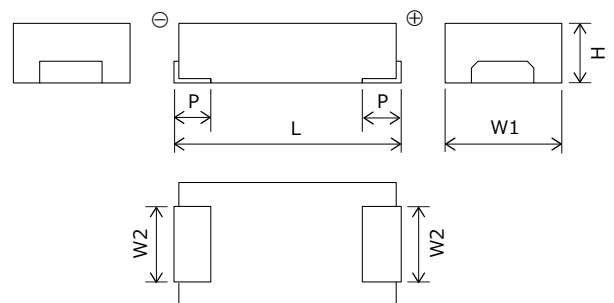
Series	CS	CT	CX	
Category temp. range	-55 °C to +105 °C			
Rated voltage range	4.0 V to 35 V		2.0 V to 35 V	
Nominal cap. range	10 μF to 120 μF	15 μF to 180 μF	15 μF to 560 μF	
Capacitance tolerance	±20 % (120 Hz / +20 °C)			
DC leakage current	I ≤ 0.1 CV(μA) [2.0 V to 6.3 V, 2 min], I ≤ 0.3 CV(μA) [10 V to 35 V, 2 min]			
Dissipation factor (tan δ)	≤ 0.06 (120 Hz / +20 °C)			
Surge voltage (V)	Rated voltage × 1.25 [2.0 V to 16 V], × 1.15 [20 V to 35 V] (15 °C to 35 °C)			
Endurance	+105 °C 2000 h, rated voltage applied			
	Capacitance change	Within ±20 % of the initial value		
	Dissipation factor (tan δ)	≤ 2 times of the initial limit		
	DC leakage current	≤ 3 times of the initial limit : 2.0 V to 6.3 V Within the initial limit : 10 V to 35 V		
Damp heat (Steady state)	+60 °C, 90 % RH, 500 h, No-applied voltage			
	Capacitance change of initial measurd value	2.0 V to 2.5 V +70 %, -20 %	4.0 V, 10 V to 35 V +60 %, -20 %	6.3 V +50 %, -20 %
	Dissipation factor (tan δ)	≤ 2 times of the initial limit		
	DC leakage current	Within the initial limit : 2.0 V to 6.3 V ≤ 3 times of the initial limit : 10 V to 35 V		

### Marking



R. voltage code		Unit : V	
d	2.0	j	6.3
e	2.5	A	10
g	4.0	C	16
		D	20
		E	25
		V	35

### Dimensions (not to scale)



Series	L±0.2	W1±0.2	W2±0.1	H±0.1	P±0.3
CS	7.3	4.3	2.4	1.1	1.3
CT	7.3	4.3	2.4	1.4	1.3
CX	7.3	4.3	2.4	1.9	1.3

\* Externals of figure are the reference.

## Surface Mount Type

# POSCAP

Series : **TPB**



### Features

- Standard
- RoHS compliance, Halogen free

### Specifications

Size code	B2	D3L	D4
Category temperature range	-55 °C to +105 °C		
Rated voltage range	4 V.DC to 10 V.DC		6.3 V.DC to 10 V.DC
Category voltage range	4 V.DC to 10 V.DC		6.3 V.DC to 10 V.DC
Rated capacitance range	33 μF to 68 μF	150 μF to 330 μF	220 μF to 470 μF
Capacitance tolerance	±20 % (120 Hz / + 20 °C)		
Leakage current	Please see the attached characteristics list		
Dissipation factor (tan δ)	Please see the attached characteristics list		
Surge voltage (V.DC)	Rated voltage × 1.15		
Endurance	+105 °C 2000h, (B2 size : 1000h) rated voltage applied * Rated temp. +85 °C 1000h rated voltage applied		
	Capacitance change	Within ±20 % of the initial value	
	tan δ	≤ 1.5 times of the initial limit	
	DC leakage current	Within the initial limit	
Damp heat (Steady State)	+60 °C, 90 % to 95 %, 500 h, No-applied voltage		
	Capacitance change	Within +40 %, -20 % of the initial value	
	tan δ	≤ 1.5 times of the initial limit	
	DC leakage current	≤ 3 times of the initial limit	

### Marking

Size	Marking
B2 Size	
D3L Size	
D4 Size	

R. Voltage (V.DC)	4.0	6.3	10.0
Code	g	j	A

R. Cap. (μF)	33	47	68
Code	N7	S7	W7

### Dimensions (not to scale)

Size code	L±0.3*1	W±0.2	H±0.2*2	S±0.2	W1±0.1
B2	3.5	2.8	1.9	0.8	2.2
D3L	7.3	4.3	2.8	1.3	2.4
D4	7.3	4.3	3.8	1.3	2.4

Unit : mm

\* 1 ±0.2 : B2 \* 2 ±0.1 : B2

### Characteristics list

Series	Rated voltage (V.DC)	Rated temp. (°C)	Category voltage (V.DC)	Category temp. (°C)	Rated capacitance (μF)	Case size (mm)			Size code	Specifications				Standard	
						L	W	H		Ripple*1 (mAr.m.s.)	ESR*2 (mΩ max.)	tan δ*3	LC*4 (μA)	Part number	Min. Packaging Qty (pcs)
TPB	4.0	105	4.0	105	68	3.5	2.8	1.9	B2	1100	70	0.08	27.2	4TPB68M	2000
		105	4.0	105	330	7.3	4.3	2.8	D3L	2000	40	0.10	132.0	4TPB330ML	2500
	6.3	105	6.3	105	68	3.5	2.8	1.9	B2	1100	70	0.08	42.8	6TPB68M	2000
		105	6.3	105	220	7.3	4.3	2.8	D3L	2000	40	0.10	138.6	6TPB220ML	2500
		85	5.0	105		7.3	4.3	2.8		2000	40	0.10	207.9	6TPB330MAL	2500
		105	6.3	105	330	7.3	4.3	2.8	D4	2000	40	0.10	207.9	6TPB330ML	2500
		105	6.3	105	470	7.3	4.3	3.8		3000	40	0.10	207.9	6TPB330M	2000
		105	6.3	105	470	7.3	4.3	3.8	3000	35	0.15	296.1	6TPB470M	2000	
	10	105	10.0	105	33	3.5	2.8	1.9	B2	1100	70	0.08	33.0	10TPB33M	2000
		105	10.0	105	47	3.5	2.8	1.9		1100	70	0.08	47.0	10TPB47M	2000
		105	10.0	105	150	7.3	4.3	2.8	D3L	2000	40	0.10	150.0	10TPB150ML	2500
		105	10.0	105	220	7.3	4.3	2.8		2000	40	0.10	220.0	10TPB220ML	2500
		105	10.0	105	330	7.3	4.3	3.8	D4	3000	40	0.10	220.0	10TPB220M	2000
		105	10.0	105	330	7.3	4.3	3.8		3000	35	0.10	330.0	10TPB330M	2000

\*1 Ripple current (100 kHz/ +45 °C), \*2 ESR (100 kHz/+20 °C) \*3 tan δ (120 Hz/+20 °C) \*4 After 5 minutes

◆ Please refer to each page in this catalog for "Reflow conditions" and "Taping specifications".

**Surface Mount Type**

**TPE series** B size



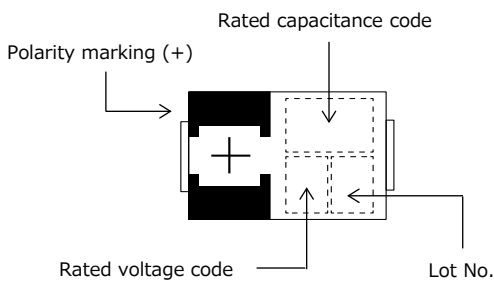
**Features**

- Small size (L 3.5 × W 2.8 × H 1.9 mm)
- Low ESR (15 mΩ max.)
- RoHS compliance, Halogen free

**Specifications**

Size code	B2	
Category temp. range	-55 °C to +105 °C	
Rated volt. range	2.0 V to 10 V	
Category volt. range	1.8 V to 8 V	
Rated cap. range	47 μF to 470 μF	
Capacitance tolerance	±20 % (120 Hz / +20 °C)	
Leakage current	Please see the attached characteristics list	
Dissipation factor(tan δ)	Please see the attached characteristics list	
Surge voltage (V)	Rated voltage × 1.15	
Endurance	+105 °C 1000 h rated voltage applied Rated temp, +85 °C Products : +85 °C 1000 h, rated voltage applied	
	Capacitance change	Within ±20 % of the initial value
	Dissipation factor(tan δ)	≤ 1.5 times of the initial limit
	Leakage current	Within the initial limit
Damp heat (Steady State)	+60 °C, 90 % to 95 % RH, 500 h, No-applied voltage	
	Capacitance change	Within +50 %, -20 % of the initial value (2R5TPE220MAZB (MAPB, MAFB), 2R5TPE330MAZB, 2TPE330MAFB (MADGB), 2TPE470MAJGB (MAFB), 2TPE330MFB, ETPE330MAFB (MA9GB))
	Dissipation factor(tan δ)	≤ 1.5 times of the initial limit
	Leakage current	≤ 3 times of the initial limit

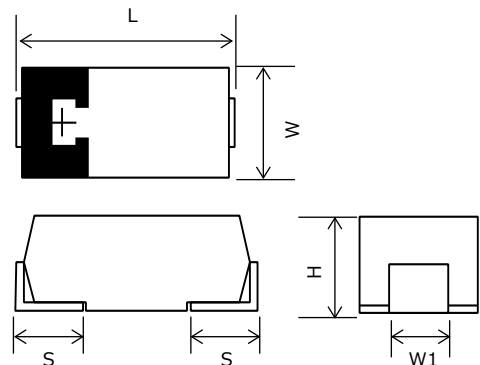
**Marking**



R. voltage code		Unit : V	
d	2.0	g	4.0
e	2.5	j	6.3
		k	8.0
		A	10

R. capacitance code		Unit : μF	
S7	47	E8	150
A8	100	J8	220
C8	120	N8	330
		S8	470

**Dimensions (not to scale)**



Unit : mm					
Size code	L±0.2	W±0.2	H±0.1	S±0.2	W1±0.1
B2	3.5	2.8	1.9	0.8	2.2

\* Externals of figure are the reference.

### Surface Mount Type

Series: **TE** Type : T

■ Features Standard

Japan  
China



#### ■ Specifications

Category temp. range	-55 to 125°C	
Rated W.V. Range	4 to 35 V .DC	
Nominal Cap. Range	0.15 to 330 μF	
Capacitance Tolerance	±20 % (120Hz/20°C)	
DC Leakage Current	I ≤ 0.01 CV or 0.5(μA) after 2 minutes application of rated working voltage at 20°C (whichever is greater)	
tanδ	Please see the attached standard products list	
Resistance to Soldering Heat	The capacitor shall withstand dipping into solder for 5±1 seconds at 260±5°C	
Moisture Resistance	After 500 hours exposure at 40 °C and 90 to 95 % R.H. without load, the capacitor shall meet the following limits.	
	Capacitance change	±10% of initial measured value
	tanδ	≤ initial specified value, miniaturized size: ≤ 150% of initial specified value.
Endurance	After 2000 hours application of rated DC working voltage at 85°C or derated voltage at 125°C, the capacitor shall meet the following limits.	
	Capacitance change	±10% of initial measured value
	tanδ	≤ initial specified value
	DC leakage current	≤ 125 % of initial specified value

#### ■ Marking

● Size Y

● Size X,C,V,D

W.V. code

W.V. (V)	4	6.3	10	16	20	25	35
code	G	J	A	C	D	E	V

Capacitance code

Capacitance(μF)	1	1.5	2.2	3.3	4.7	6.8
1st code	A	E	J	N	S	W

Multiplier

Multiplier	10 <sup>5</sup>	10 <sup>6</sup>	10 <sup>7</sup>
2nd code	5	6	7

(Ex.) A6: 1.0 x 10<sup>6</sup> pF(1.0μF)  
J5: 2.2 x 10<sup>5</sup> pF(0.22μF)

\* (for 6.3W.V. abbreviated to 6 V)

#### ■ Dimensions in mm (not to scale)

EIA code	Size code	L±0.2	W1±0.2	W2±0.1	H±0.2	P±0.3
3216	Y	3.2	1.6	1.2	1.6	0.8
3528	X	3.5	2.8	2.2	1.9	0.8
6032	C	6.0	3.2	2.2	2.5	1.3
5846	V	5.8	4.6	2.4	3.2	1.3
7343	D	7.3	4.3	2.4	2.8	1.3

\* Each case side has different terminal configuration

#### ■ Case size

W.V.(V.DC) Cap.(μF)	4(0G)		6.3(0J)		10(1A)		16(1C)		20(1D)		25(1E)		35(1H)
	Standard	Miniature	Standard	Miniature	Standard	Miniature	Standard	Miniature	Standard	Miniature	Standard	Miniature	Standard
0.15 to 0.33													Y
0.47 (474)											Y		Y
0.68 (684)									Y				Y
1.0 (105)							Y				Y		Y
1.5 (155)							Y		Y		Y		X
2.2 (225)					Y		Y		Y		X	Y	X
3.3 (335)			Y		Y		Y		X	Y	X		X
4.7 (475)	Y		Y		Y		Y		X	Y	X		C
6.8 (685)	Y		Y		Y		X	Y	X		C		C
10 (106)	Y		Y		X	Y	X		C	X	C		D,V
15 (156)	Y		X	Y	X		C	X	C		D,V		D
22 (226)	X	Y	X	Y	C	X	C		D,V	C	D		
33 (336)	X		C	X	C	X	D,V	C	D,V				
47 (476)	C	X	C	X	D,V	C	D,V						
68 (686)	C		D,V	C	D,V		D						
100 (107)	D,V	C	D,V	C	D								
150 (157)	D,V		D			D							
220 (227)	D			D									
330 (337)		D											

Note : 1. ( ) indicates the W.V. and capacitance code.

2. When selecting W.V. refer to page 20.

3. We recommend current sizes shown in the above table for new design, but conventional case size is available on request.

4. Other rating upon request (voltage, capacitance, tolerance, size)

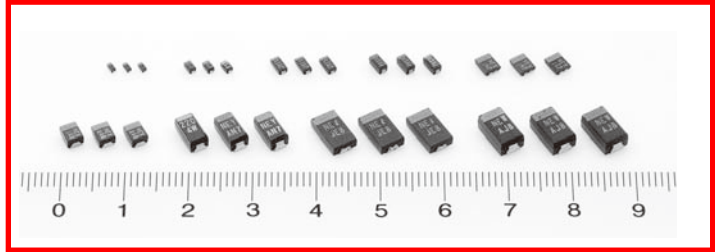
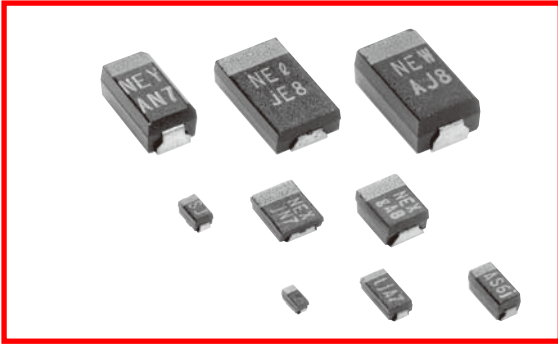
Rev.02/04

Design, Specifications are subject to change without notice. Ask factory for technical specifications before purchase and/or use. Whenever a doubt about safety arises from this product, please inform us immediately for technical consultation without fail.

# NEC TOKIN offers the latest technology

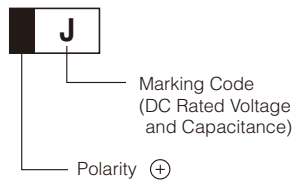
<Tantalum Capacitors>

<Conductive Polymer Tantalum Capacitors>  
"NeoCapacitors"



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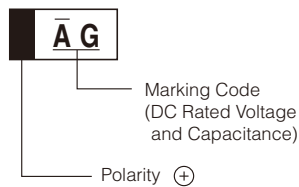
**[J case] (ex. 4.7  $\mu$ F / 6.3 V)**



**[J case Marking Code]**

$\mu$ F \ U <sub>R</sub>	4V	6.3V	10V
2.2		Γ	<
3.3		↵	
4.7		J	
6.8			
10	Ω		

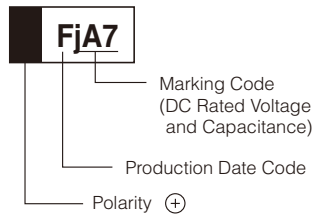
**[P case] (ex. 10  $\mu$ F / 4 V)**



**[P case Marking Code]**

$\mu$ F \ U <sub>R</sub>	2.5V	4V	6.3V	10V	16V
1.0					
2.2					
3.3			NJ		
4.7			SJ		
6.8			WJ		
10		AG	AJ	AA	
15					
22	Je	JG			

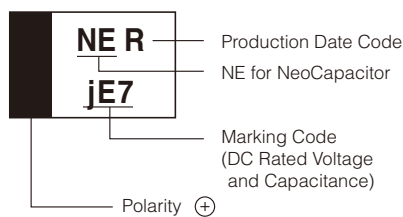
**[A2, A cases] (ex. 10  $\mu$ F / 6.3 V)**



**[A2, A, B3, B2, C2, C, V, D cases Marking Code]**

$\mu$ F \ U <sub>R</sub>	2.5V	4V	6.3V	10V	16V	20V	25V
	e	g	j	A	C	D	E
3.3	N6			AN6	CN6		
4.7	S6			AS6	CS6		
6.8	W6		jW6	AW6	CW6		
10	A7	gA7	JA7	AA7	CA7		
15	E7		JE7	AE7			
22	J7	gJ7	JJ7	AJ7			
33	N7	eN7	gN7	JN7	AN7	CN7	
47	S7	eS7	gS7	JS7	AS7	CS7	
68	W7		gW7	JW7	AW7		
100	A8	eA8	gA8	JA8	AA8		
150	E8		gE8	JE8	AE8		
220	J8	eJ8	gJ8	JJ8	AJ8		
330	N8	eN8	gN8	JN8			
470	S8	eS8	gS8				
680	W8	eW8	gW8				
1000	A9	eA9					

**[B3, B2 cases] (ex. 15  $\mu$ F / 6.3 V)**



**[A2, A, B3, B2, C2, C, V, D cases production date code]**

Y \ M	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
2007	a	b	c	d	e	f	g	h	j	k	l	m
2008	n	p	q	r	s	t	u	v	w	x	y	z
2009	A	B	C	D	E	F	G	H	J	K	L	M
2010	N	P	Q	R	S	T	U	V	W	X	Y	Z

NOTE: Production date code will resume beginning in 2011.

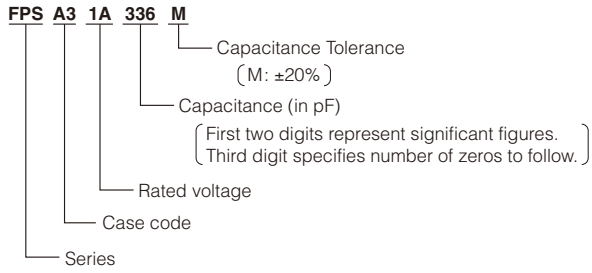


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- Before using the product in this catalog, please read "Precautions" and other safety precautions listed in the printed version catalog.

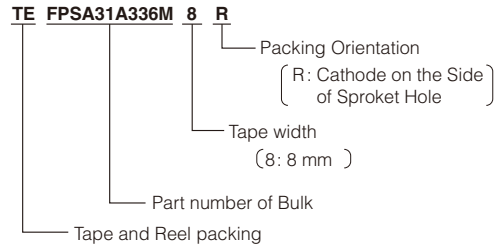


## ■ PART NUMBER SYSTEM

[Bulk]

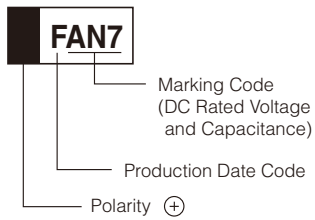


[Tape and Reel]



## ■ MARKINGS

[A3, cases] (ex. 3.3  $\mu$ F / 10 V)



[A3 case Marking Code]

$\mu$ F \ U <sub>R</sub>		4V	6.3V	10V
		g	j	a
22	J7			
33	N7			AN7
47	S7		jS7	
68	W7			
100	A8	gA8		

[A3 cases production date code]

Y \ M	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
2007	a	b	c	d	e	f	g	h	j	k	l	m
2008	n	p	q	r	s	t	u	v	w	x	y	z
2009	A	B	C	D	E	F	G	H	J	K	L	M
2010	N	P	Q	R	S	T	U	V	W	X	Y	Z

NOTE: Production date code will resume beginning in 2011.

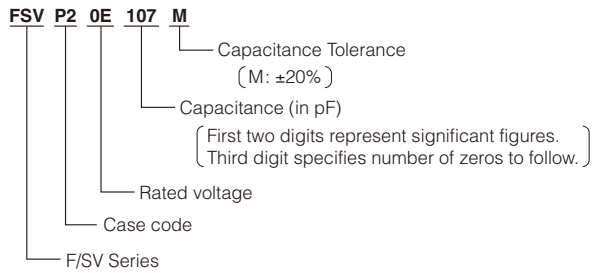


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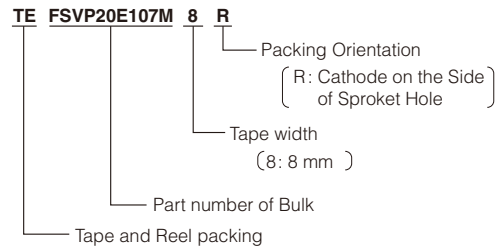
## ■ PART NUMBER SYSTEM

### [Bulk]

#### P2, A3 case

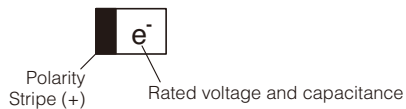


### [Tape and Reel]

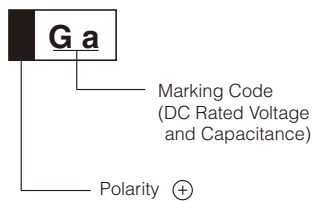


## ■ MARKINGS

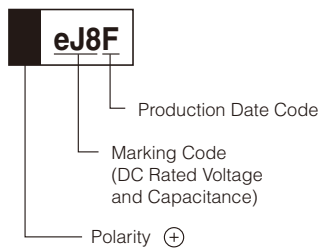
### [J case]



### [P2 case]



### [A3 case]



### 【定格電圧及び公称静電容量記号】

UR : 定格電圧

μF \ UR	UR : 定格電圧					
	2.5	4	6.3	10	16	20
	0E	0G	0J	1A	1C	1D
4.7	475					
6.8	685					
10	106					
15	156					
22	226		J <sup>-</sup>			
33	336	G <sup>-</sup>				
47	476	e <sup>-</sup>				

UR : 定格電圧

μF \ UR	UR : 定格電圧						
	2.5	4	6.3	10	16	20	25
	0E	0G	0J	1A	1C	1D	1E
10	106						
15	156						
22	226						
33	336						
47	476						
68	686		G <sup>W</sup>				
100	107	ea					

UR : 定格電圧

μF \ UR	UR : 定格電圧					
	2.5V	4V	6.3V	10V	16V	20V
	0E	0G	0J	1A	1C	1D
10					CA7	
15						
22						
33				AN7		
47						
68			jW7			
100						
150						
220	eJ8					

### 【A2, A, B3, B2, C2, C, V, D cases production date code】

Y \ M	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
2007	a	b	c	d	e	f	g	h	j	k	l	m
2008	n	p	q	r	s	t	u	v	w	x	y	z
2009	A	B	C	D	E	F	G	H	J	K	L	M
2010	N	P	Q	R	S	T	U	V	W	X	Y	Z

NOTE: Production date code will resume beginning in 2011.

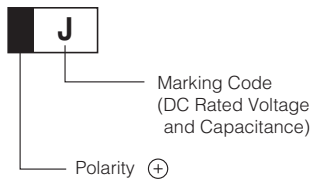


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■ MARKINGS

The standard marking shows capacitance, DC rated voltage, and polarity.

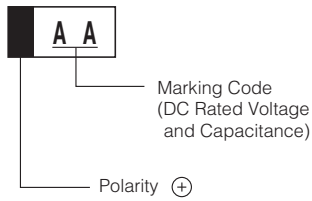
[J case] (ex. 4.7  $\mu$ F / 6.3 V)



[J case Marking Code]

$\mu$ F \ U <sub>R</sub>	2.5 V	4 V	6.3 V	10 V	16 V
1.0					○
1.5				▽	○
2.2			┌	A	
3.3			└	A	
4.7			J	▽	
6.8		G	┌		
10	e	⊖	┌		
15	e				

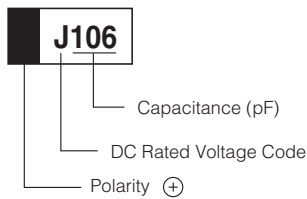
[P case] (ex. 1  $\mu$ F / 10 V)



[P case Marking Code]

$\mu$ F \ U <sub>R</sub>	2.5 V	4 V	6.3 V	10 V	16 V	20V	25V
0.47					CS		
0.68					CW		
1				AA	CA		EA
1.5			JE	AE			
2.2				AJ	CJ	DJ	
3.3		GN		AN	CN		
4.7			JS	AS			
6.8			JW				
10		GĀ	JĀ	ĀĀ			
15		GĒ	JĒ				
22	eJ	GJ	JJ				
33	eN	GN					
47	eS	GS					

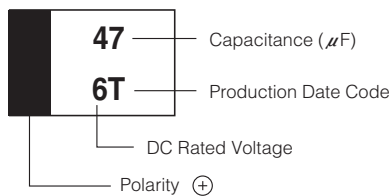
[A2, A cases] (ex. 10  $\mu$ F / 6.3 V)



[P, A2, A, cases DC Rated Voltage code]

Code	e	G	J	A	C	D	E	V
Rated Voltage	2.5 V	4 V	6.3 V	10 V	16 V	20 V	25 V	35V

[B3, B2 cases] (ex. 47  $\mu$ F / 6.3 V)

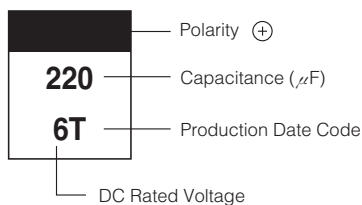


[B3, B2, C2, C, V, D cases Production date code]

Y \ M	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
2007	a	b	c	d	e	f	g	h	j	k	l	m
2008	n	p	q	r	s	t	u	v	w	x	y	z
2009	A	B	C	D	E	F	G	H	J	K	L	M
2010	N	P	Q	R	S	T	U	V	W	X	Y	Z

NOTE: Production date code will resume beginning in 2011.

[C2, C, V, D cases] (ex. 220  $\mu$ F / 6.3 V)



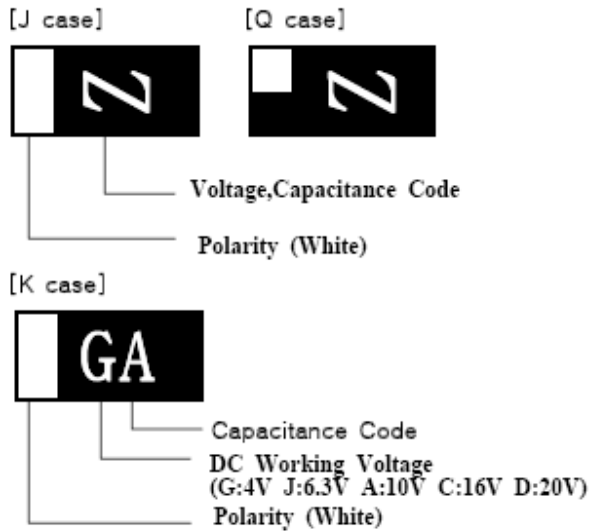
Manganese dioxide type



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## PACKAGING

1608size(SCM series)



J,Q(low-profile) cases Code Reference

V $\mu$ F	4	6.3	10	16
1.0		a	B	C
1.5	D	E	F	G
2.2	I	J	K	L
3.3	M	N	O	P
4.7	R	S	T	U
6.8	V	W	X	Y
10	Z	A	b	

K case Code Reference

V $\mu$ F	4	6.3	10	16
1.0				
1.5				
2.2				
3.3				
4.7		JS		
6.8				
10	GA			

## PACKAGING

### MARKING

#### P,R CASES

[SCS series]



[SCL series]



Capacitance Code  
(A:1.0 E:1.5 J:2.2 N:3.3 S:4.7 W:6.8)  
DC Working Voltage  
(G:4V J:6.3V A:10V C:16V D:20V)

Polarity (White)

Capacitance Range	1 DIGIT	2 DIGIT
$< 1.0 \mu\text{F}$	A Small Letter	A Small Letter
$1.0 \mu\text{F} \leq \text{Cap.} < 10 \mu\text{F}$	A Capital Letter	A Small Letter
$\geq 10 \mu\text{F}$	A Capital Letter	A Capital Letter

#### 【Code Reference】

$\mu\text{F}$ \ V	4	6.3	10	16	20
0.22	gj	jj	aj	cj	
0.33					
0.47	gs	js	as	cs	ds
0.68	gw	jw	aw	cw	dw
1.0	Ga	Ja	Aa	Ca	
1.5					
2.2	Gj	Jj	Aj	Cj	
3.3	Gn	Jn	An		
4.7	Gs	Js	As	Cs	
6.8	Gw	Jw			
10	GA	JA	AA		
15					
22	GJ	JJ			

## PACKAGING

### MARKING

#### A,S CASES

[SCN,SCS,SCE series]



[SCL, series]



Capacitance Code in pF

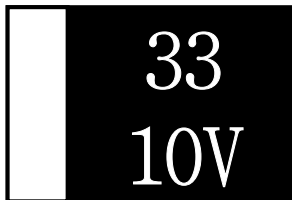
DC Working Voltage

(G:4V J:6.3V A:10V C:16V D:20V E:25V V:35V)

Polarity(White)

#### B,T CASES

[SCN,SCS,SCE series]

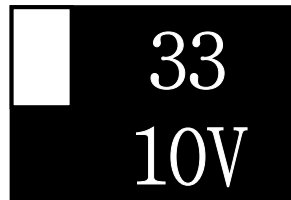


Capacitance Code in  $\mu$ F

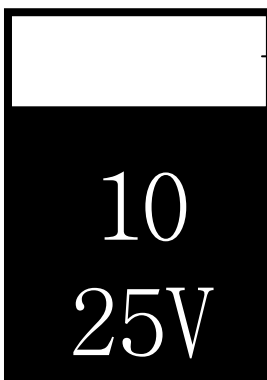
DC Working Voltage

Polarity(White)

[SCL series]



#### C,D CASES



Polarity(White)

Capacitance Code in  $\mu$ F

DC Working Voltage

**MARKING**

<p><b>A Case</b></p>	<b>“A” CASE VOLTAGE CODE</b>		<p><b>B, C, D, E, V Cases</b></p>
	<b>VOLTS</b>	<b>CODE</b>	
	4.0	G	
	6.3	J	
	10	A	
	16	C	
	20	D	
	25	E	
	35	V	
50	T		
75	S		

**Marking**

Capacitor marking includes an anode (+) polarity band, capacitance in microfarads and the voltage rating. “A” case capacitors use a letter code for the voltage and EIA capacitance code.

The Vishay identification marking is included if space permits. Vishay marking (“circled 2”) may show additives in the form of short lines, depicting actual manufacturing facility. For A case capacitors discontinuation in polarity bar maybe used as actual manufacturing facility designation. Capacitors rated at 6.3 V are marked 6 V.

A manufacturing date code is marked on all capacitors, for details see FAQ: [www.vishay.com/doc?40110](http://www.vishay.com/doc?40110).

Capacitors may bear TP3 marking scheme if parts are substituted with high performance automotive grade TP3 family products.

This includes, for example, letter “P” as shown below.

Call the factory for further explanation.

**TP3 MARKING EXAMPLE**

<p><b>A Case</b></p>	<p><b>B, C, D, E Cases</b></p>
----------------------	--------------------------------

**Note**

(1) Capital letter indicates lead (Pb)-free

**STANDARD RATINGS**

CAPACITANCE ( $\mu\text{F}$ )	CASE CODE	PART NUMBER	MAX. DCL AT +25 °C ( $\mu\text{A}$ )	MAX. DF AT +25 °C 120 Hz (%)	MAX. ESR AT +25 °C 100 kHz ( $\Omega$ )	MAX. RIPPLE 100 kHz $I_{\text{RMS}}$ (A)
<b>4 V<sub>DC</sub> AT +85 °C; 2.7 V<sub>DC</sub> AT +125 °C</b>						
2.2	A	293D225(1)004A(2)	0.5	6	7.60	0.10
3.3	A	293D335(1)004A(2)	0.5	6	7.60	0.10
4.7	A	293D475(1)004A(2)	0.5	6	6.30	0.11
4.7	B	293D475(1)004B(2)	0.5	6	7.00	0.11
6.8	A	293D685(1)004A(2)	0.5	6	5.50	0.12
6.8	B	293D685(1)004B(2)	0.5	6	3.40	0.16
10	A	293D106(1)004A(2)	0.5	6	5.10	0.12
10	B	293D106(1)004B(2)	0.5	6	3.50	0.16
15	A	293D156(1)004A(2)	0.6	6	3.40	0.15
15	B	293D156(1)004B(2)	0.6	6	2.90	0.17
15	C	293D156(1)004C(2)	0.6	6	2.80	0.20

