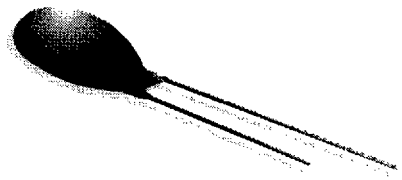
Resin-Dipped Type Tantalum Solid Electrolytic Capacitors

Series: **EF**

Type: **F** (Resin-Dipped Type)

IECQ Certified



■ Features

- Compact size and wide capacitance range
- Excellent frequency and temperature characteristics
- Available for direct mounting on thin circuit boards
- Washable in organic solvents after soldering
- IEC pub. 384-15 approved

■ Recommended Applications

- Television, audio, and compact-size electronic equipment

■ Explanation of Part Numbers

1	2	3	4	5	6	7	8	9	10	11	12
E	C	S	F			E					
Product Code			Style	Rated Working Voltage Code		Series Code	N. Capacitance Code			Option	

0G	4	1E	25
0J	6.3	1V	35
1A	10	1H	50
1C	16		

Example:

474	470,000 pF = 0.47 µF
475	4,700,000 pF = 4.7 µF

■ Specifications

Operating temperature range	–55 to +85 °C (W.V. ≥10 V.DC –55 to +105 °C
Rated working voltage	4 to 50 V DC
Nominal capacitance range	0.1 to 220 µF
Capacitance tolerance	+20%, (120 Hz/+20 °C)
DC leakage current	I ≤ 0.008 CV or 0.05 (µA) after 2 minutes application of rated working voltage at +20 °C (whichever greater)
tan δ	≤ 1µF.....0.04 max. ≤1.5 to 68 µF.....0.06 max. ≥100 µF.....0.08 max.

Moisture resistance: After 500 hours exposure at +40 °C and 90 to 95% R.H. without load, the capacitor shall meet the following limits:

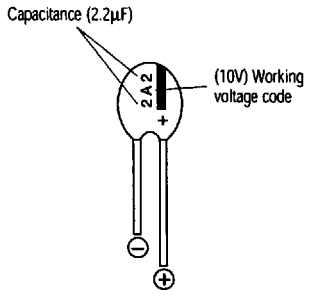
Capacitance change	± 10% of initial measured value
tan δ	≤ 150% of initial specified value
DC leakage current	0.012 CV or 0.75 (µA) max., whichever greater

Endurance: After 2,000 hours application of rated DC working voltage at +105 °C with derated voltage for 10 to 50 W.V., the capacitor shall meet the following limits:

Capacitance change	± 10% of initial measured value
tan δ	≤ initial specified value
DC leakage current	0.01 CV or 0.625 (µA) max., whichever greater

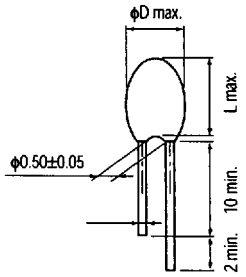
■ Marking

For straight-lead products under size codes A–C, some (products with the • in case size table) will have the markings below the voltage (10V) code. This also represents a decimal point.



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

■ Dimensions in mm (not to scale)



Size Code	φD	L	F
A	3.3	5.0	2.5±0.5
B	3.3	5.5	2.5±0.5
C	3.5	5.5	2.5±0.5
D	3.7	6.5	2.5±0.5
E	4.0	7.0	$2.5^{+1.0}_{-0.5}$
F	4.5	7.0	$2.5^{+1.0}_{-0.5}$
G	4.7	8.0	$2.5^{+1.0}_{-0.5}$
H	5.2	8.5	$2.5^{+1.0}_{-0.5}$
I	5.5	9.5	$2.5^{+1.0}_{-0.5}$
J	6.0	11.0	$2.5^{+1.0}_{-0.5}$
K	7.5	12.5	5.0±0.5

■ Case Size

Capacitance (μF)	Working Voltage (V DC)						
	4 (0G)	6.3 (0J)	10 (1A)	16 (1C)	25 (1E)	35 (1V)	50 (1H)
0.10 (104)						•A	•A
0.15 (154)						•A	•A
0.22 (224)						•A	•B
0.33 (334)						•B	•C
0.47 (474)						•B	D
0.68 (684)						•B	D
1.0 (105)				•A	•B	C	E
1.5 (155)				•B	C	C	F
2.2 (225)			•B	•C	C	D	G
3.3 (335)			•C	C	D	E	H
4.7 (475)		•C	C	D	E	F	I
6.8 (685)	•C	C	D	E	F	H	
10 (106)	C	D	E	F	H	I	
15 (156)	D	E	F	G	I	J	
22 (226)	E	F	G	H	J	K	
33 (336)	F	G	H	I	K		
47 (476)	G	H	I	J			
68 (686)	H	I	J	K			
100 (107)	I	J	K				
150 (157)	J	K					
220 (227)	K						

1. ( ) shows W.V. and capacitance code.
2. Products designated by (•) have the voltage code on body.
3. When selecting W.V., see page ••.

Series: **EF**
Type: **F (Resin Dipped Type)**

Resin Dipped Type Tantalum Solid Electrolytic Capacitors

Japan

IECQ Certificated

■ Features

- Compact size and wide capacitance range
- Excellent frequency and temperature characteristics
- Available for direct mounting on thin circuit boards
- Washable in organic solvents after soldering
- IEC pub. 384-15 approved

■ Recommended Applications

- TV, Audio, Compact size electronic equipment

■ Specifications

Operating Temp. Range	−55 to +85 °C (W.V. ≧ 10 V.DC ····· −55 to +105 °C)
Rated W.V. Range	4 to 50 V.DC
Nominal Cap. Range	0.1 to 220 µF
Capacitance Tolerance	±20 %, (120 Hz/+20 °C)
DC Leakage Current	I ≦ 0.008 CV or 0.05 (µA) after 2 minutes application of rated working voltage at +20 °C (Whichever, greater)
tan δ	≦ 1 µF ····· 0.04 max. 1.5 to 68 µF ····· 0.06 max. 4 W.V. ····· 0.1 max. (120 Hz/+20 °C) ≧ 100 µF ····· 0.08 max.
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
tan δ	≦ 150 % of initial specified value
DC leakage current	0.012 CV or 0.75 (µA) max. whichever, greater

Endurance	After 2000 hours application of rated DC working voltage at +85 °C or 1000 hours at +105 °C with derated voltage for 10 to 50 W.V., the capacitor shall meet the following limits.

Capacitance change	±10 % of initial measured value
tan δ	≦ Initial specified value
DC leakage current	0.01 CV or 0.625 (µA) max. whichever, greater

■ Explanation of Part Numbers

1	2	3	4	5	6	7	8	9	10	11	12
E	C	S	F			E					

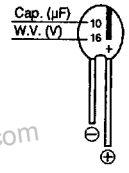
Product Code | Style | R.W. Voltage Code | Series Code | N.Capacitance Code | Option

W.V. code	0G	0J	1A	1C	1E	1V	1H
W.V.(V)	4	6.3	10	16	25	35	50

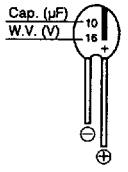
Example:

Capacitance code	Capacitance
474	470000 pF=0.47 µF
475	4700000 pF=4.7 µF

■ Marking



For straight-lead products under size codes A-C, some will have the makings below (products with ● in size table) Voltage (10 V) code and this also represents a decimal point.

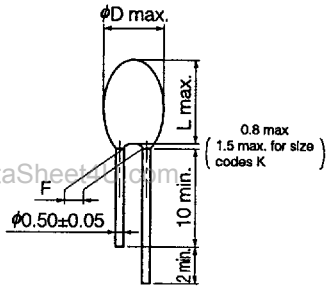


* (for 6.3 W.V. abbreviated to 6)

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

■ Dimensions in mm (not to scale)

Straight-lead-products



Size code	φD	L	F
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C	3.5	5.5	2.5±0.5
D	3.7	6.5	2.5±0.5
E	4.0	7.0	$2.5^{+1.0}_{-0.5}$
F	4.5	7.0	$2.5^{+1.0}_{-0.5}$
G	4.7	8.0	$2.5^{+1.0}_{-0.5}$
H	5.2	8.5	$2.5^{+1.0}_{-0.5}$
I	5.5	9.5	$2.5^{+1.0}_{-0.5}$
J	6.0	11.0	$2.5^{+1.0}_{-0.5}$
K	7.5	12.5	5.0±0.5

■ Case size

Cap.(µF) \ W.V.(V.DC)	4 (0G)	6.3 (0J)	10 (1A)	16 (1C)	25 (1E)	35 (1V)	50 (1H)
0.10 (104)						●A	●A
0.15 (154)						●A	●A
0.22 (224)						●A	●B
0.33 (334)						●A	●C
0.47 (474)						●B	D
0.68 (684)						●B	D
1.0 (105)				●A	●B	C	E
1.5 (155)				●B	C	C	F
2.2 (225)			●B	●C	C	D	G
3.3 (335)			●C	C	D	E	H
4.7 (475)		●C	C	D	E	F	I
6.8 (685)	●C	C	D	E	F	H	
10 (106)	C	D	E	F	H	I	
15 (156)	D	E	F	G	I	J	
22 (226)	E	F	G	H	J	K	
33 (336)	F	G	H	I	K		
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220 (227)	K						

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2. Products designated by (●) have the voltage code on the body.
3. When selecting W.V., see the page 153.