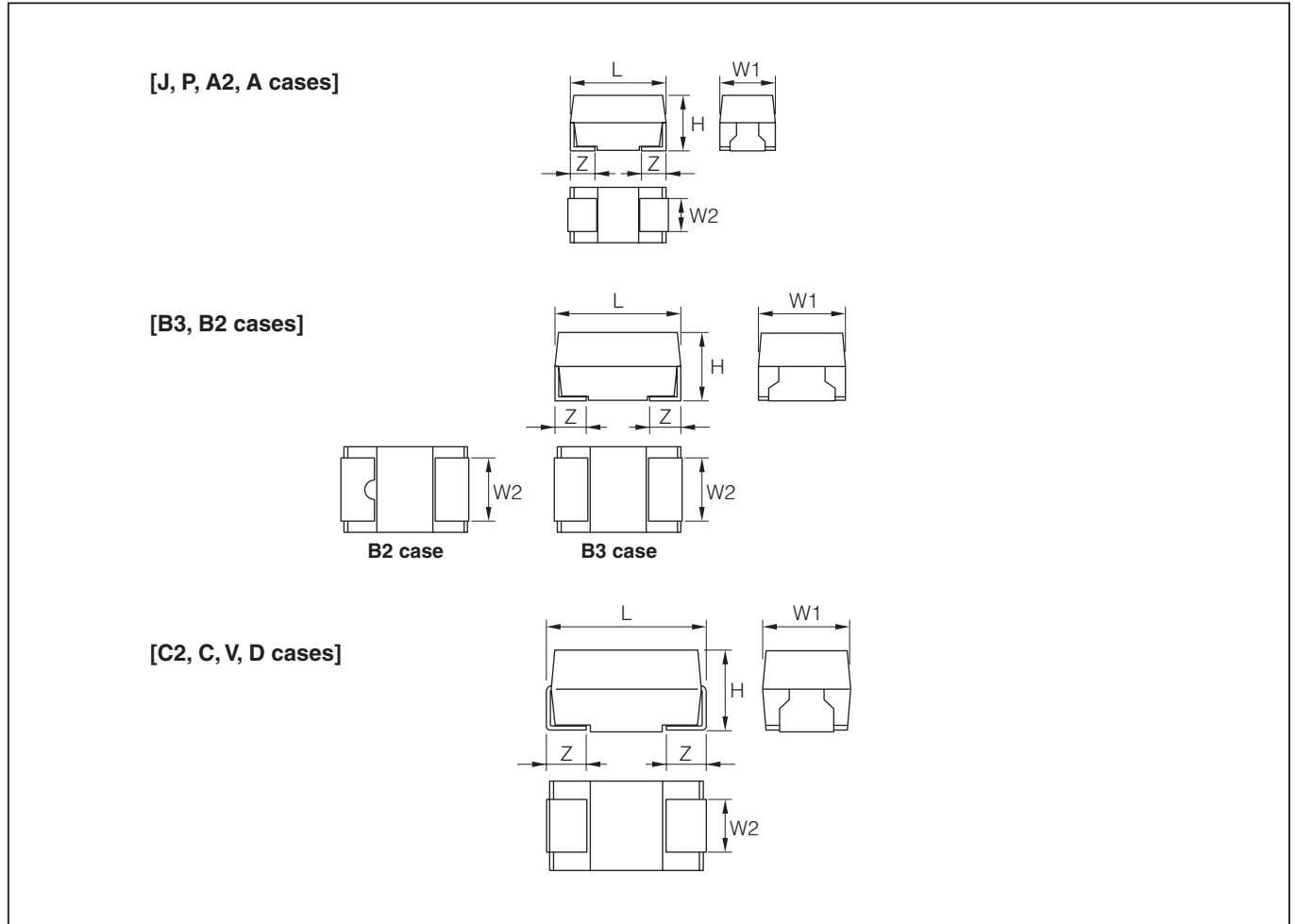


#### ■ FEATURES

- Lead-free Type. RoHS Compliant.
- Offer a range of small, high-capacity models.
- Succeed to the latest technology plus outstanding performance.

#### ■ DIMENSIONS [mm]



(Unit: mm)

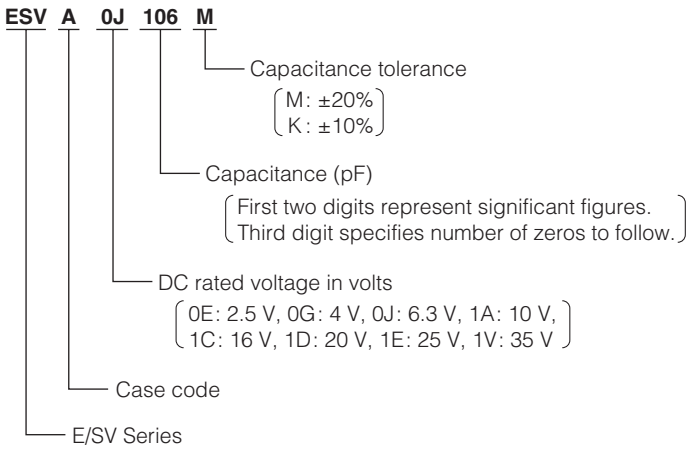
Case Code	EIA code	L	W <sub>1</sub>	W <sub>2</sub>	H	Z
J	—	1.6 ± 0.1	0.8 ± 0.1	0.6 ± 0.1	0.8 ± 0.1	0.3 ± 0.15
P	2012	2.0 ± 0.2	1.25 ± 0.2	0.9 ± 0.1	1.1 ± 0.1	0.5 ± 0.1
A2 (U)	3216L	3.2 ± 0.2	1.6 ± 0.2	1.2 ± 0.1	1.1 ± 0.1	0.8 ± 0.2
A	3216	3.2 ± 0.2	1.6 ± 0.2	1.2 ± 0.1	1.6 ± 0.2	0.8 ± 0.2
B3 (W)	3528L	3.5 ± 0.2	2.8 ± 0.2	2.2 ± 0.1	1.1 ± 0.1	0.8 ± 0.2
B2 (S)	3528	3.5 ± 0.2	2.8 ± 0.2	2.2 ± 0.1	1.9 ± 0.2	0.8 ± 0.2
C2	—	6.0 ± 0.2	3.2 ± 0.2	2.2 ± 0.1	1.4 ± 0.1	1.3 ± 0.2
C	6032	6.0 ± 0.2	3.2 ± 0.2	2.2 ± 0.1	2.5 ± 0.2	1.3 ± 0.2
V	—	7.3 ± 0.2	4.3 ± 0.2	2.4 ± 0.1	1.9 ± 0.1	1.3 ± 0.2
D	7343	7.3 ± 0.2	4.3 ± 0.2	2.4 ± 0.1	2.8 ± 0.2	1.3 ± 0.2

■ STANDARD C-V VALUE REFERENCE BY CASE CODE

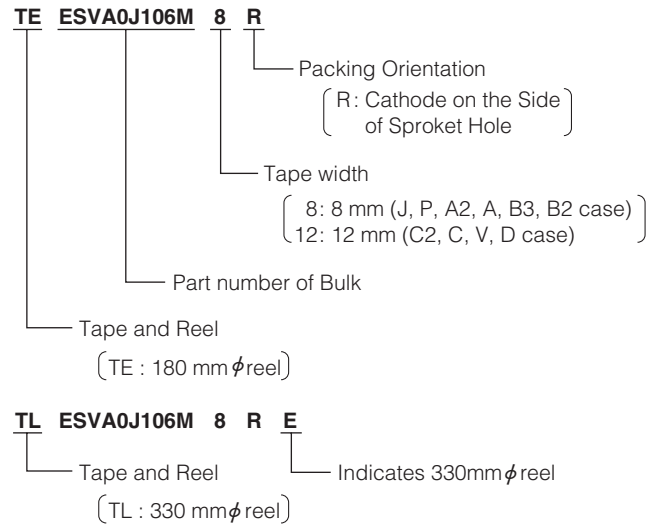
μF \ U <sub>R</sub>		2.5V	4V	6.3V	10V	16V	20V	25V	35V
		0E	0G	0J	1A	1C	1D	1E	1V
0.47	474					P	A2	A	A
0.68	684					P	A2	A	A
1.0	105				P	J, P	A2	P, A2, A	A2, A
1.5	155			P	J, P	J, A	A2		A
2.2	225			J	J, P	P, A2, A	P, A2, A	A	A, B2
3.3	335		P	J	J, P, A2	P, A2, A	A2, A, B3	A	B3, B2
4.7	475			J, P, A	J, P, A2, A	A2, A	A2, A, B3, B2	B3, B2	C
6.8	685		J	J, P, A2	A2, A	A, B3	B3, B2	B2	C
10	106	J	J, P	J, P, A2, A	P, A2, A, B2	A, B3, B2	B2	C2, C	C, D
15	156	J	P	P, A2, A	A2, B3	A, B2	C	C	D
22	226	P, A2	P, A2, A	P, A2, A, B3, B2	A, B3, B2	B3, B2, C	C2, C, D	D	
33	336	P, A2	P, A2, A	A2, A, B3	B3, B2	B2, C2, C	D	D	
47	476	P, A2, A	P, A2, A, B3	A, B3, B2, C	B2, C2, C	C, D	D		
68	686	A	A, B3	A, B3, B2, C2	B2, C2, C	C, D			
100	107	A, B3, B2	A, B3, B2, C2	A, B3, B2, C2, C	C2, C, V, D	D			
150	157	A, B3, C2	B2, C2	B2, C	V, D				
220	227	B3, B2, C2	B2, C	C, V, D	D				
330	337	B2, C	C, V	V, D					
470	477	B2, C, D	D	D					
680	687		D						

■ PART NUMBER SYSTEM

[Bulk]



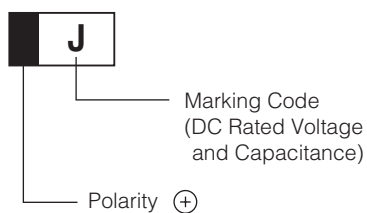
[Tape and Reel]



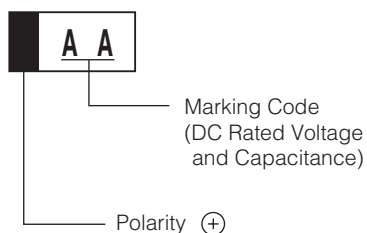
MARKINGS

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

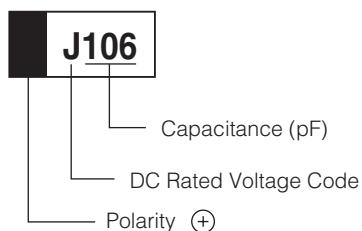
[J case] (ex. 4.7  $\mu$ F / 6.3 V)



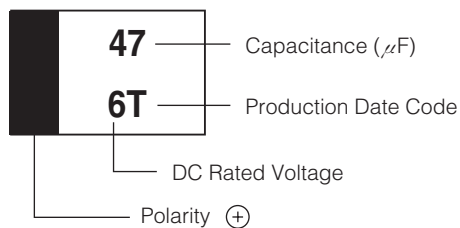
[P case] (ex. 1  $\mu$ F / 10 V)



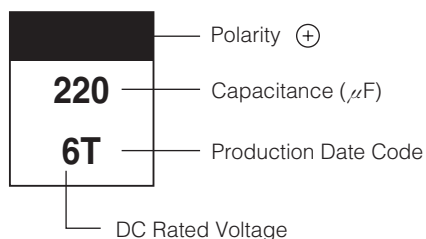
[A2, A cases] (ex. 10  $\mu$ F / 6.3 V)



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



[C2, C, V, D cases] (ex. 220  $\mu$ 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			∩	∧	
3.3			∩	∧	
4.7			J	∇	
6.8		G	∩		
10	e	⊙	∩		
15	⊙				

[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		GE	JĒ				
22	eĴ	GĴ	JĴ				
33	eN	GN					
47	eS	GS					

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

y \ M	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
2005	A	B	C	D	E	F	G	H	J	K	L	M
2006	N	P	Q	R	S	T	U	V	W	X	Y	Z
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

Note : Production date code will resume beginning in 2009

## ■ PERFORMANCE CHARACTERISTICS

Test Conditions : Conform to IEC 60384-1

ITEM		PERFORMANCE							TEST CONDITION	
Operating temperature		-55°C to +125°C							Derate voltage at 85°C at more	
Rated voltage (V.dc)		2.5V	4V	6.3V	10V	16V	20V	25V	35V	at 85°C
Derated voltage (V.dc)		1.6V	2.5V	4V	6.3V	10V	13V	16V	22V	at 125°C
Surge voltage (V.dc)		3.3V	5.2V	8V	13V	20V	26V	33V	46V	at 85°C
Capacitance		0.47 $\mu$ F to 680 $\mu$ F							at 120 Hz	
Capacitance tolerance		$\pm 20\%$ or $\pm 10\%$ (P,J case: $\pm 20\%$ )								
DC Leakage Current (L.C)		0.01C $\cdot$ V( $\mu$ A) or 0.5 $\mu$ A, whichever is greater							Voltage: Rated voltage for 5min.	
Dissipation Factor		Refer to Standard Ratings							at 120 Hz	
Equivalent Series Resistance		Refer to Standard Ratings							at 100 kHz	
		Capacitance change	DF(%)			L.C				
Surge voltage test		Refer to Standard Ratings	Lower than initial specification			Lower than initial specification			Temperature : 85 $\pm$ 2°C Applied voltage : Surge voltage Series resistance : 33 ohm Duration of surge : 30 $\pm$ 5 sec Time between surge : 5.5min. Number of cycle : 1000	
Characteristic at high and low temperature	-55°C	Not to exceed -20% (P, J case) or -12%	Refer to Standard Ratings			-----			Step 1: 25 $\pm$ 2°C Step 2: -55 $\frac{0}{3}$ °C Step 3: 25 $\pm$ 2°C Step 4: 125 $\frac{0}{3}$ °C	
	+85°C	Not to exceed +20% (P, J case) or +12%	Lower than initial specification			0.1C $\cdot$ V( $\mu$ A) or 5 $\mu$ A, which ever is greater				
	+125°C	Not to exceed +20% (P, J case) or +15%	Refer to Standard Ratings			0.125C $\cdot$ V( $\mu$ A) or 6.25 $\mu$ A, which ever is greater				
Rapid change of temperature		Refer to Standard Ratings	Lower than initial specification			Lower than initial specification			Parts shall be temperature cycled over a temperature range of -55 to +125°C, five times continuously as follow. Step 1: -55 $\frac{0}{3}$ °C, 30 $\pm$ 3min. Step 2: room temp., 10 to 15min. Step 3: 125 $\frac{0}{3}$ °C, 30 $\pm$ 3min. Step 4: room temp, 10 to 15min.	
Resistance to Soldering heat		Refer to Standard Ratings	Lower than initial specification			Lower than initial specification			solder dip : 260°C, 5sec solder reflow : 260°C, 10sec	
Damp heat		Refer to Standard Ratings	Lower than 1.5 times initial specification			Lower than initial specification			at 40°C at 90 to 95% RH 500 hour	
Endurance		Refer to Standard Ratings	Lower than initial specification			Lower than 2 times initial specification (P, J case) or 1.25 times initial specification			at 85°C: Rated voltage at 125°C: Derated voltage 2000 hour	
Failure Rate		$\lambda_0=1\%$ / 1000 hour							at 85°C: Rated voltage at 125°C: Derated voltage 2000 hour	
Terminal Strength		Visual: There shall be no evidence of mechanical damage							Strength : 4.9N Time : 10 $\pm$ 0.5sec. (two directions)	

Reference : Derated voltage (85 to 125°C)

$$[U_T] = [U_R] - \frac{[U_R] - [U_C]}{40} (T-85)$$

[U<sub>T</sub>] : Derated voltage at operating temperature[U<sub>R</sub>] : Rated voltage[U<sub>C</sub>] : Derated voltage at 125°C

T : Ambient temperature

■ STANDARD RATINGS

Rated Voltage (V)	Capacitance ( $\mu$ F)	Case Code	Part Number (Bulk)	Leakage Current ( $\mu$ A)	DF (%)	ESR ( $\Omega$ )	DF (%)		Capacitance Change	
							-55°C	+125°C	at Surge Voltage at Damp Heat at Resistance to Soldering Heat	at Endurance
2.5	10	J	ESVJ0E106M	0.5	20	6.5	30	30	$\pm 20\%$	$\pm 20\%$
	15	J	ESVJ0E156M	0.5	20	8	30	30	$\pm 20\%$	$\pm 20\%$
	22	P	ESVP0E226M	0.5	20	4	30	30	$\pm 20\%$	$\pm 20\%$
	22	A2	ESVA20E226M	0.5	12	3	20	14	$\pm 12\%$	$\pm 12\%$
	33	A2	ESVA20E336M	0.8	12	4	22	14	$\pm 12\%$	$\pm 12\%$
	33	P	ESVP0E336M	0.8	20	4	30	30	$\pm 20\%$	$\pm 20\%$
	47	P	ESVP0E476M	1.1	30	6	60	40	$\pm 20\%$	$\pm 20\%$
	47	A2	ESVA20E476M	1.1	12	4.5	22	14	$\pm 12\%$	$\pm 12\%$
	47	A	ESVA0E476M	1.1	12	4.5	22	16	$\pm 12\%$	$\pm 12\%$
	68	A	ESVA0E686M	1.7	18	4.5	34	20	$\pm 12\%$	$\pm 12\%$
	100	A	ESVA0E107M	2.5	30	2	60	40	$\pm 20\%$	$\pm 20\%$
	100	B3	ESVB30E107M	2.5	18	1.3	34	20	$\pm 15\%$	$\pm 15\%$
	100	B2	ESVB20E107M	2.5	8	1	14	10	$\pm 12\%$	$\pm 12\%$
	150	A	ESVA0E157M	3.7	30	2	60	40	$\pm 20\%$	$\pm 20\%$
	150	B3	ESVB30E157M	3.7	20	1	40	30	$\pm 15\%$	$\pm 15\%$
	150	C2	ESVC20E157M	3.7	12	0.8	26	18	$\pm 12\%$	$\pm 12\%$
	220	B3	ESVB30E227M	5.5	30	1	60	40	$\pm 15\%$	$\pm 15\%$
	220	B2	ESVB20E227M	5.5	18	0.6	34	20	$\pm 12\%$	$\pm 12\%$
	220	C2	ESVC20E227M	5.5	12	0.8	26	18	$\pm 12\%$	$\pm 12\%$
	330	B2	ESVB20E337M	8.2	25	0.6	50	30	$\pm 12\%$	$\pm 20\%$
330	C	ESVC0E337M	8.2	16	0.3	34	18	$\pm 12\%$	$\pm 12\%$	
470	B2	ESVB20E477M	11.7	35	0.6	70	50	$\pm 20\%$	$\pm 20\%$	
470	C	ESVC0E477M	11.7	18	1.5	34	20	$\pm 12\%$	$\pm 12\%$	
470	D	ESVD0E477M	11.7	14	0.5	18	16	$\pm 12\%$	$\pm 12\%$	
4	3.3	P	ESVP0G335M	0.5	20	20	30	30	$\pm 20\%$	$\pm 20\%$
	6.8	J	ESVJ0G685M	0.5	20	7.5	30	30	$\pm 20\%$	$\pm 20\%$
	10	J	ESVJ0G106M	0.5	20	6.5	30	30	$\pm 20\%$	$\pm 20\%$
	10	P	ESVP0G106M	0.5	20	6	30	30	$\pm 20\%$	$\pm 20\%$
	15	P	ESVP0G156M	0.6	20	5	30	30	$\pm 20\%$	$\pm 20\%$
	22	P	ESVP0G226M	0.8	20	4	30	30	$\pm 20\%$	$\pm 20\%$
	22	A2	ESVA20G226M	0.8	12	2.8	22	16	$\pm 12\%$	$\pm 12\%$
	22	A	ESVA0G226M	0.8	8	2.5	12	10	$\pm 12\%$	$\pm 12\%$
	33	P	ESVP0G336M	1.3	20	4	30	30	$\pm 20\%$	$\pm 20\%$
	33	A2	ESVA20G336M	1.3	8	4.5	14	10	$\pm 12\%$	$\pm 12\%$
	33	A	ESVA0G336M	1.3	10	3	14	12	$\pm 12\%$	$\pm 12\%$
	47	P	ESVP0G476M	1.8	30	3	60	40	$\pm 20\%$	$\pm 20\%$
	47	A2	ESVA20G476M	1.8	15	4.5	30	20	$\pm 12\%$	$\pm 12\%$
	47	A	ESVA0G476M	1.8	12	2.5	22	14	$\pm 12\%$	$\pm 12\%$
	47	B3	ESVB30G476M	1.8	12	1.7	18	15	$\pm 15\%$	$\pm 15\%$
	68	A	ESVA0G686M	2.7	12	2.5	22	14	$\pm 12\%$	$\pm 12\%$
	68	B3	ESVB30G686M	2.7	15	1.5	28	17	$\pm 15\%$	$\pm 15\%$
	100	A	ESVA0G107M	4	30	2	60	40	$\pm 20\%$	$\pm 20\%$
	100	B3	ESVB30G107M	4	20	1.3	38	22	$\pm 15\%$	$\pm 15\%$
	100	B2	ESVB20G107M	4	12	0.8	22	14	$\pm 12\%$	$\pm 12\%$
100	C2	ESVC20G107M	4	10	0.8	18	12	$\pm 12\%$	$\pm 12\%$	
150	B2	ESVB20G157M	6	18	0.7	34	20	$\pm 12\%$	$\pm 12\%$	
150	C2	ESVC20G157M	6	10	0.8	18	12	$\pm 12\%$	$\pm 12\%$	
220	B2	ESVB20G227M	8.8	18	0.5	34	20	$\pm 12\%$	$\pm 12\%$	
220	C	ESVC0G227M	8.8	12	0.6	22	14	$\pm 12\%$	$\pm 12\%$	
330	C	ESVC0G337M	13.2	14	0.2	26	16	$\pm 12\%$	$\pm 12\%$	
330	V	ESVV0G337M	13.2	12	0.5	18	14	$\pm 12\%$	$\pm 12\%$	
470	D	ESVD0G477M	18.8	16	0.3	30	18	$\pm 12\%$	$\pm 12\%$	
680	D	ESVD0G687M	27.2	24	0.3	46	26	$\pm 12\%$	$\pm 12\%$	
6.3	1.5	P	ESVP0J155M	0.5	10	25	15	15	$\pm 20\%$	$\pm 20\%$
	2.2	J	ESVJ0J225M	0.5	20	17.5	30	30	$\pm 20\%$	$\pm 20\%$
	3.3	J	ESVJ0J335M	0.5	20	13.5	30	30	$\pm 20\%$	$\pm 20\%$
	4.7	J	ESVJ0J475M	0.5	20	8.5	30	30	$\pm 20\%$	$\pm 20\%$
	4.7	P	ESVP0J475M	0.5	20	10	30	30	$\pm 20\%$	$\pm 20\%$
	4.7	A	ESVA0J475M	0.5	8	5.5	12	10	$\pm 5\%$	$\pm 10\%$
	6.8	J	ESVJ0J685M	0.5	20	7	30	30	$\pm 20\%$	$\pm 20\%$
	6.8	P	ESVP0J685M	0.5	20	7	30	30	$\pm 20\%$	$\pm 20\%$
	6.8	A2	ESVA20J685M	0.5	8	6.5	12	10	$\pm 12\%$	$\pm 12\%$
	10	J	ESVJ0J106M	0.6	20	8	38	22	$\pm 20\%$	$\pm 20\%$

Rated Voltage (V)	Capacitance (μF)	Case Code	Part Number (Bulk)	Leakage Current (μA)	DF (%)	ESR (Ω)	DF (%)		Capacitance Change	
							-55°C	+125°C	at Surge Voltage at Damp Heat at Resistance to Soldering Heat	at Endurance
6.3	10	P	ESVP0J106M	0.6	20	6	30	30	±20%	±20%
	10	A2	ESVA20J106M	0.6	8	4.5	12	10	±12%	±12%
	10	A	ESVA0J106M	0.6	8	3.2	12	10	±12%	±12%
	15	P	ESVP0J156M	0.9	20	5	30	30	±20%	±20%
	15	A2	ESVA20J156M	0.9	12	4	22	14	±12%	±12%
	15	A	ESVA0J156M	0.9	8	3	12	10	±12%	±12%
	22	P	ESVP0J226M	1.3	20	4	38	22	±20%	±20%
	22	A2	ESVA20J226M	1.3	12	2.8	22	14	±12%	±12%
	22	A	ESVA0J226M	1.3	10	3	14	12	±12%	±12%
	22	B3	ESVB30J226M	1.3	8	2	12	10	±15%	±15%
	22	B2	ESVB20J226M	1.3	8	1.6	12	10	±5%	±10%
	33	A2	ESVA20J336M	2	18	3	34	20	±20%	±20%
	33	A	ESVA0J336M	2	12	2.5	22	14	±12%	±12%
	33	B3	ESVB30J336M	2	12	1.7	18	15	±15%	±15%
	47	A	ESVA0J476M	2.9	12	2	22	14	±12%	±12%
	47	B3	ESVB30J476M	2.9	12	1.7	18	15	±15%	±15%
	47	B2	ESVB20J476M	2.9	8	1.3	12	10	±5%	±10%
	47	C	ESVC0J476M	2.9	8	0.9	12	10	±5%	±10%
	68	A	ESVA0J686M	4.2	30	2	60	40	±12%	±12%
	68	B3	ESVB30J686M	4.2	20	2	38	22	±15%	±15%
	68	B2	ESVB20J686M	4.2	10	1	18	12	±12%	±12%
	68	C2	ESVC20J686M	4.2	10	0.8	14	12	±12%	±12%
	100	A	ESVA0J107M	6.3	25	2	60	40	±20%	±20%
	100	B3	ESVB30J107M	6.3	20	1.3	38	22	±15%	±15%
	100	B2	ESVB20J107M	6.3	12	0.9	22	14	±12%	±12%
	100	C2	ESVC20J107M	6.3	10	0.8	18	12	±12%	±12%
	100	C	ESVC0J107M	6.3	10	0.6	14	12	±12%	±12%
	150	B2	ESVB20J157M	9.4	12	1	22	14	±12%	±12%
	150	C	ESVC0J157M	9.4	10	0.6	18	12	±12%	±12%
	220	C	ESVC0J227M	13.8	14	1.2	26	16	±12%	±12%
	220	V	ESV0J227M	13.8	12	0.5	18	14	±12%	±12%
	220	D	ESVD0J227M	13.8	12	0.5	18	14	±12%	±12%
	330	V	ESV0J337M	20.7	14	0.5	26	16	±5%	±10%
330	D	ESVD0J337M	20.7	14	0.5	26	16	±12%	±12%	
470	D	ESVD0J477M	29.6	20	0.3	38	22	±20%	±20%	
10	1	P	ESVP1A105M	0.5	10	25	15	15	±20%	±20%
	1.5	J	ESVJ1A155M	0.5	20	25.5	30	30	±20%	±20%
	1.5	P	ESVP1A155M	0.5	20	25	30	30	±20%	±20%
	2.2	J	ESVJ1A225M	0.5	20	17.5	30	30	±20%	±20%
	2.2	P	ESVP1A225M	0.5	20	19	30	30	±20%	±20%
	3.3	J	ESVJ1A335M	0.5	20	25	30	30	±20%	±20%
	3.3	P	ESVP1A335M	0.5	20	13	30	30	±20%	±20%
	3.3	A2	ESVA21A335M	0.5	8	8	12	10	±12%	±12%
	4.7	J	ESVJ1A475M	0.5	20	10	30	30	±20%	±20%
	4.7	P	ESVP1A475M	0.5	20	6	30	30	±20%	±20%
	4.7	A2	ESVA21A475M	0.5	8	8	12	10	±12%	±12%
	4.7	A	ESVA1A475M	0.5	8	4.5	12	10	±12%	±12%
	6.8	A2	ESVA21A685M	0.6	8	8	12	10	±12%	±12%
	6.8	A	ESVA1A685M	0.6	8	4.5	12	10	±12%	±12%
	10	P	ESVP1A106M	1	20	6	30	30	±20%	±20%
	10	A2	ESVA21A106M	1	8	8	12	10	±12%	±12%
	10	A	ESVA1A106M	1	8	3.2	12	10	±12%	±12%
	10	B2	ESVB21A106M	1	8	2.4	12	10	±5%	±10%
	15	A2	ESVA21A156M	1.5	12	3	22	14	±12%	±12%
	15	B3	ESVB31A156M	1.5	8	2.7	12	10	±15%	±15%
	22	A	ESVA1A226M	2.2	12	2.5	22	14	±12%	±12%
	22	B3	ESVB31A226M	2.2	8	1.9	12	10	±15%	±15%
	22	B2	ESVB21A226M	2.2	8	1.4	12	10	±5%	±10%
	33	B3	ESVB31A336M	3.3	12	1.7	18	15	±15%	±15%
	33	B2	ESVB21A336M	3.3	8	1.4	12	10	±5%	±10%
	47	B2	ESVB21A476M	4.7	8	1	12	10	±12%	±12%
	47	C2	ESVC21A476M	4.7	8	1	14	10	±12%	±12%
47	C	ESVC1A476M	4.7	8	0.9	12	10	±5%	±10%	

Rated Voltage (V)	Capacitance ( $\mu$ F)	Case Code	Part Number (Bulk)	Leakage Current ( $\mu$ A)	DF (%)	ESR ( $\Omega$ )	DF (%)		Capacitance Change	
							-55°C	+125°C	at Surge Voltage at Damp Heat at Resistance to Soldering Heat	at Endurance
10	68	B2	ESVB21A686M	6.8	12	0.9	14	14	$\pm 12\%$	$\pm 12\%$
	68	C2	ESVC21A686M	6.8	10	1	18	14	$\pm 12\%$	$\pm 12\%$
	68	C	ESVC1A686M	6.8	8	0.7	12	10	$\pm 12\%$	$\pm 12\%$
	100	C2	ESVC21A107M	10	10	0.8	18	14	$\pm 12\%$	$\pm 12\%$
	100	C	ESVC1A107M	10	10	0.5	18	12	$\pm 12\%$	$\pm 12\%$
	100	V	ESVV1A107M	10	8	0.5	18	10	$\pm 12\%$	$\pm 12\%$
	100	D	ESVD1A107M	10	8	0.6	18	10	$\pm 5\%$	$\pm 10\%$
	150	V	ESVV1A157M	15	8	0.5	18	10	$\pm 12\%$	$\pm 12\%$
	150	D	ESVD1A157M	15	10	0.6	18	12	$\pm 12\%$	$\pm 12\%$
220	D	ESVD1A227M	22	12	0.6	22	14	$\pm 12\%$	$\pm 12\%$	
16	0.47	P	ESVP1C474M	0.5	10	35	15	15	$\pm 20\%$	$\pm 20\%$
	0.68	P	ESVP1C684M	0.5	10	25	15	15	$\pm 20\%$	$\pm 20\%$
	1	J	ESVJ1C105M	0.5	10	25.5	30	15	$\pm 20\%$	$\pm 20\%$
	1	P	ESVP1C105M	0.5	10	20	15	15	$\pm 20\%$	$\pm 20\%$
	1.5	J	ESVJ1C155M	0.5	10	25	20	15	$\pm 20\%$	$\pm 20\%$
	1.5	A	ESVA1C155M	0.5	4	6	8	6	$\pm 5\%$	$\pm 10\%$
	2.2	P	ESVP1C225M	0.5	10	19	15	15	$\pm 20\%$	$\pm 20\%$
	2.2	A2	ESVA21C225M	0.5	6	10	10	8	$\pm 12\%$	$\pm 12\%$
	2.2	A	ESVA1C225M	0.5	6	6	10	8	$\pm 5\%$	$\pm 10\%$
	3.3	P	ESVP1C335M	0.5	10	8	15	15	$\pm 20\%$	$\pm 20\%$
	3.3	A2	ESVA21C335M	0.5	8	7	14	10	$\pm 12\%$	$\pm 12\%$
	3.3	A	ESVA1C335M	0.5	6	4.5	10	8	$\pm 12\%$	$\pm 12\%$
	4.7	A2	ESVA21C475M	0.7	8	4.5	14	10	$\pm 12\%$	$\pm 12\%$
	4.7	A	ESVA1C475M	0.7	6	4	10	8	$\pm 12\%$	$\pm 12\%$
	6.8	A	ESVA1C685M	1	6	4	10	8	$\pm 12\%$	$\pm 12\%$
	6.8	B3	ESVB31C685M	1	6	4.1	10	8	$\pm 15\%$	$\pm 15\%$
	10	A	ESVA1C106M	1.6	8	3.2	12	10	$\pm 12\%$	$\pm 12\%$
	10	B3	ESVB31C106M	1.6	8	3.5	14	10	$\pm 15\%$	$\pm 15\%$
	10	B2	ESVB21C106M	1.6	6	2	10	8	$\pm 5\%$	$\pm 10\%$
	15	A	ESVA1C156M	2.4	12	5	22	14	$\pm 12\%$	$\pm 12\%$
	15	B2	ESVB21C156M	2.4	6	2	10	8	$\pm 5\%$	$\pm 10\%$
	22	B3	ESVB31C226M	3.5	10	2.2	18	12	$\pm 15\%$	$\pm 15\%$
	22	B2	ESVB21C226M	3.5	6	2.2	10	8	$\pm 5\%$	$\pm 10\%$
	22	C	ESVC1C226M	3.5	6	1.5	10	8	$\pm 5\%$	$\pm 10\%$
	33	B2	ESVB21C336M	5.2	8	1.4	14	10	$\pm 5\%$	$\pm 10\%$
	33	C2	ESVC21C336M	5.2	6	1.4	10	8	$\pm 12\%$	$\pm 12\%$
	33	C	ESVC1C336M	5.2	6	1.1	10	8	$\pm 5\%$	$\pm 10\%$
47	C	ESVC1C476M	7.5	6	0.8	10	8	$\pm 12\%$	$\pm 12\%$	
47	D	ESVD1C476M	7.5	6	0.7	10	8	$\pm 5\%$	$\pm 10\%$	
68	C	ESVC1C686M	10.8	6	0.7	16	10	$\pm 12\%$	$\pm 12\%$	
68	D	ESVD1C686M	10.8	6	0.7	10	8	$\pm 5\%$	$\pm 10\%$	
100	D	ESVD1C107M	16	8	0.5	18	10	$\pm 12\%$	$\pm 12\%$	
20	0.47	A2	ESVA21D474M	0.5	6	25	10	8	$\pm 5\%$	$\pm 10\%$
	0.68	A2	ESVA21D684M	0.5	6	15	10	8	$\pm 5\%$	$\pm 10\%$
	1	A2	ESVA21D105M	0.5	6	12	10	8	$\pm 12\%$	$\pm 12\%$
	1.5	A2	ESVA21D155M	0.5	6	7.4	10	8	$\pm 12\%$	$\pm 12\%$
	2.2	P	ESVP1D225M	0.5	10	8	15	15	$\pm 20\%$	$\pm 20\%$
	2.2	A2	ESVA21D225M	0.5	6	7	10	8	$\pm 12\%$	$\pm 12\%$
	2.2	A	ESVA1D225M	0.5	6	6	10	8	$\pm 12\%$	$\pm 12\%$
	3.3	A2	ESVA21D335M	0.6	8	5	14	10	$\pm 12\%$	$\pm 12\%$
	3.3	A	ESVA1D335M	0.6	6	5	10	8	$\pm 12\%$	$\pm 12\%$
	3.3	B3	ESVB31D335M	0.6	6	3.9	10	8	$\pm 15\%$	$\pm 15\%$
	4.7	A2	ESVA21D475M	0.9	15	5	30	20	$\pm 12\%$	$\pm 12\%$
	4.7	A	ESVA1D475M	0.9	6	5	10	8	$\pm 12\%$	$\pm 12\%$
	4.7	B3	ESVB31D475M	0.9	6	3	10	8	$\pm 15\%$	$\pm 15\%$
	4.7	B2	ESVB21D475M	0.9	6	3	10	8	$\pm 5\%$	$\pm 10\%$
	6.8	B3	ESVB31D685M	1.3	6	3	10	8	$\pm 15\%$	$\pm 15\%$
	6.8	B2	ESVB21D685M	1.3	6	2.8	10	8	$\pm 5\%$	$\pm 10\%$
	10	B2	ESVB21D106M	2	6	2.5	10	8	$\pm 5\%$	$\pm 10\%$
	15	C	ESVC1D156M	3	6	1.7	10	8	$\pm 5\%$	$\pm 10\%$
22	C2	ESVC21D226M	4.4	6	1.4	10	8	$\pm 12\%$	$\pm 12\%$	
22	C	ESVC1D226M	4.4	6	1.4	10	8	$\pm 12\%$	$\pm 12\%$	
22	D	ESVD1D226M	4.4	6	0.8	10	8	$\pm 5\%$	$\pm 10\%$	

Rated Voltage (V)	Capacitance ( $\mu$ F)	Case Code	Part Number (Bulk)	Leakage Current ( $\mu$ A)	DF (%)	ESR ( $\Omega$ )	DF (%)		Capacitance Change	
							-55°C	+125°C	at Surge Voltage at Damp Heat at Resistance to Soldering Heat	at Endurance
20	33	D	ESVD1D336M	6.6	6	0.8	10	8	$\pm 5\%$	$\pm 10\%$
	47	D	ESVD1D476M	9.4	6	0.7	10	8	$\pm 5\%$	$\pm 10\%$
25	0.47	A	ESVA1E474M	0.5	4	13	8	6	$\pm 5\%$	$\pm 10\%$
	0.68	A	ESVA1E684M	0.5	6	9	10	8	$\pm 5\%$	$\pm 10\%$
	1	P	ESVP1E105M	0.5	6	8	10	8	$\pm 20\%$	$\pm 20\%$
	1	A2	ESVA21E105M	0.5	6	13	10	8	$\pm 12\%$	$\pm 12\%$
	1	A	ESVA1E105M	0.5	6	8	10	8	$\pm 5\%$	$\pm 10\%$
	2.2	A	ESVA1E225M	0.5	6	7	10	8	$\pm 12\%$	$\pm 12\%$
	3.3	A	ESVA1E335M	0.8	6	7	10	8	$\pm 12\%$	$\pm 12\%$
	4.7	B3	ESVB31E475M	1.1	6	3	10	8	$\pm 15\%$	$\pm 15\%$
	4.7	B2	ESVB21E475M	1.1	6	3	10	8	$\pm 5\%$	$\pm 10\%$
	6.8	B2	ESVB21E685M	1.7	6	2.5	10	8	$\pm 5\%$	$\pm 10\%$
	10	C2	ESVC21E106M	2.5	6	2	10	8	$\pm 12\%$	$\pm 12\%$
	10	C	ESVC1E106M	2.5	6	1.5	10	8	$\pm 5\%$	$\pm 10\%$
	15	C	ESVC1E156M	3.7	6	1.5	10	8	$\pm 12\%$	$\pm 12\%$
	22	D	ESVD1E226M	5.5	6	0.8	10	8	$\pm 5\%$	$\pm 10\%$
33	D	ESVD1E336M	8.2	6	0.7	10	8	$\pm 5\%$	$\pm 10\%$	
35	0.47	A	ESVA1V474M	0.5	6	12	10	8	$\pm 5\%$	$\pm 10\%$
	0.68	A	ESVA1V684M	0.5	6	8	10	8	$\pm 5\%$	$\pm 10\%$
	1	A2	ESVA21V105M	0.5	6	13	10	8	$\pm 12\%$	$\pm 12\%$
	1	A	ESVA1V105M	0.5	6	7	10	8	$\pm 12\%$	$\pm 12\%$
	1.5	A	ESVA1V155M	0.5	6	7	10	8	$\pm 12\%$	$\pm 12\%$
	2.2	A	ESVA1V225M	0.7	6	5	10	8	$\pm 12\%$	$\pm 12\%$
	2.2	B2	ESVB21V225M	0.7	6	4	10	8	$\pm 5\%$	$\pm 10\%$
	3.3	B3	ESVB31V335M	1.1	6	3	10	8	$\pm 15\%$	$\pm 15\%$
	3.3	B2	ESVB21V335M	1.1	6	3.5	10	8	$\pm 5\%$	$\pm 10\%$
	4.7	C	ESVC1V475M	1.6	6	2.2	10	8	$\pm 5\%$	$\pm 10\%$
	6.8	C	ESVC1V685M	2.3	6	1.9	10	8	$\pm 5\%$	$\pm 10\%$
	10	C	ESVC1V106M	3.5	6	1.5	10	8	$\pm 5\%$	$\pm 10\%$
	10	D	ESVD1V106M	3.5	6	1	10	8	$\pm 5\%$	$\pm 10\%$
15	D	ESVD1V156M	5.2	6	0.9	10	8	$\pm 5\%$	$\pm 10\%$	