



- Standard
- 105°C 3,000h
- RoHS compliance, Halogen free

Specifications

Items	Specifications				
Size code	C6	E7	F8	E12	F13
Category temperature range	-55 to +105 °C				
Rated voltage range	2.5 to 20 V.DC				
Rated capacitance range	22 to 150 μ F	33 to 330 μ F	56 to 680 μ F	100 to 680 μ F	150 to 1500 μ F
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				
Endurance	105 °C, 3,000 h, rated voltage applied (2.5V 2,000h applied)				
	$\Delta C/C$	Within ± 20 % of the initial value			
	DF	≤ 1.5 times of the initial limit			
	LC	Within the initial limit			
Damp heat (Steady State)	60 °C, 90 to 95 %RH, 1,000 h, No-applied voltage				
	$\Delta C/C$	Within ± 20 % of the initial value			
	DF	≤ 1.5 times of the initial limit			
	LC	Within the initial limit (after voltage processing)			

Marking and dimensions

Technical drawing showing side and end views of the capacitor. Dimensions include diameter ϕD , length L , lead diameter ϕd , and lead length L . Marking details include polarity marking (-), Lot. No., Series, R. Capacitance, and R. Voltage. Lead lengths are specified as 15min., 4min., and 19min.

(unit : mm)

Size code	$\phi D \pm 0.5$	L max	F	$\phi d \pm 0.05$
C6	6.3	6.0	2.5 ± 0.5	0.45
E7	8.0	7.0	3.5 ± 0.5	0.45
F8	10.0	8.0	5.0 ± 0.5	0.50
E12	8.0	12.0	3.5 ± 0.5	0.60
F13	10.0	13.0	5.0 ± 0.5	0.60

Characteristics list

Series	Rated voltage (V.DC)	Rated capacitance (μ F)	Case size (mm)		Size code	Specifications				Part number
			ϕ D	L		Rated ripple current (mA rms) ※1	ESR ※2 (m Ω max.)	$\tan \delta$ ※3	LC ※4 (μ A)	
SEP	2.5	680	8.0	12.0	E12	4520	13	0.15	340	2R5SEP680M
		1500	10.0	13.0	F13	5440	12	0.18	750	2R5SEP1500M
	4.0	100	6.3	6.0	C6	1810	40	0.12	200	4SEP100M
		150	6.3	6.0	C6	1810	40	0.12	300	4SEP150M
		220	8.0	7.0	E7	2560	35	0.12	440	4SEP220M
		330	8.0	7.0	E7	2560	35	0.12	660	4SEP330M
		470	10.0	8.0	F8	3700	25	0.12	376	4SEP470M
		560	8.0	12.0	E12	4520	13	0.15	448	4SEP560M
		680	10.0	8.0	F8	3700	25	0.12	544	4SEP680M
		1200	10.0	13.0	F13	5440	12	0.18	960	4SEP1200M
	6.3	82	6.3	6.0	C6	1700	45	0.12	258	6SEP82M
		150	8.0	7.0	E7	2560	35	0.12	472	6SEP150M
		330	10.0	8.0	F8	3700	25	0.12	416	6SEP330M
		470	8.0	12.0	E12	4210	15	0.15	592	6SEP470M
		820	10.0	13.0	F13	5440	12	0.15	775	6SEP820M
	10	56	6.3	6.0	C6	1700	45	0.12	280	10SEP56M
		120	8.0	7.0	E7	2560	35	0.12	600	10SEP120M
		270	10.0	8.0	F8	3700	25	0.12	540	10SEP270M
		330	8.0	12.0	E12	3950	17	0.15	660	10SEP330M
		560	10.0	13.0	F13	5230	13	0.15	840	10SEP560M
	16	39	6.3	6.0	C6	1620	50	0.10	312	16SEP39M
		82	8.0	7.0	E7	2120	40	0.12	656	16SEP82M
		150	10.0	8.0	F8	3020	30	0.12	480	16SEP150M
		180	8.0	12.0	E12	3640	20	0.15	576	16SEP180M
		330	10.0	13.0	F13	4720	16	0.15	792	16SEP330M
	20	22	6.3	6.0	C6	1450	60	0.10	220	20SEP22M
		33	8.0	7.0	E7	1890	45	0.12	330	20SEP33M
		47	8.0	7.0	E7	1890	45	0.12	470	20SEP47M
		56	10.0	8.0	F8	2400	40	0.12	224	20SEP56M
		68	10.0	8.0	F8	2400	40	0.12	272	20SEP68M
		100	10.0	8.0	F8	2570	35	0.12	400	20SEP100MX
			8.0	12.0	E12	3320	24	0.15	400	20SEP100M
	150	10.0	13.0	F13	4320	20	0.15	600	20SEP150M	

※1: Rated ripple current (100 kHz/ +105 °C), ※2: ESR (100 kHz to 300 kHz/+20 °C) ※3: $\tan \delta$ (120 Hz/+20 °C) ※4: After 2 minutes

◆Please refer to each page in this catalog for "Flow conditions" and "Packing specifications".

Frequency Correction factor for ripple current

Frequency	120 Hz \leq f < 1 kHz	1 kHz \leq f < 10 kHz	10 kHz \leq f < 100 kHz	100 kHz \leq f \leq 500 kHz
Coefficient	0.05	0.3	0.7	1