

FEATURES

- High ripple current and high reliability.
- Low equivalent series resistance ESR.
- Different case sizes available for each capacitance value.
- Load life with ripple current : 5,000 hours.



SPECIFICATIONS

Item	Performance Characteristics								
Operating Temperature Range	-40 to +105°C					-25 to +105°C			
Rated Working Voltage Range	10 to 100V					200 to 450V			
Nominal Capacitance Range	100 to 33000μF								
Capacitance Tolerance	±20% at 120Hz, +20°C								
Leakage Current	I ≤3√CV (μA) after 5 minutes application of rated working voltage at +20°C								
tan δ (120Hz, +20°C)	Working Voltage (V)	10	16	25	35	50	63~100	200~400	450
	tan δ (max.)	0.60	0.45	0.30	0.25	0.20	0.15	0.15	0.20
Low Temperature Characteristics	Impedance ratio max. at 120Hz								
	Working Voltage (V)	10	16	25	35	50	63~100		
	Z-25°C / Z+20°C	6	6	6	6	4	3		
	Z-40°C / Z+20°C	15	15	15	15	15	15		
	Working Voltage (V)	200	250	400	450				
	Z-25°C / Z+20°C	8	8	8	8				
High Temperature Loading	Test time : 5,000 hours				Post test requirements at +20°C				
	Test temperature : +105°C				Leakage current : ≤Initial specified value				
	Test conditions : Rated DC working voltage				Cap. change : ≤±20% of the initial measured value				
	with rated ripple current				tan δ : ≤200% of the initial specified value				
Shelf Life	At +105°C no voltage applied after 1,000 hours and then being stabilized at +20°C the capacitors shall meet the following limits								
	Leakage current : ≤Initial specified value								
	Cap. change : within ±15% of the initial measured value								
	tan δ : ≤150% of the initial specified value								
Industrial Standard	JIS C - 5101-4 (IEC 60384-4)								

RIPPLE CURRENT MULTIPLIER

Frequency Coefficient

Coefficient \ Freq. (Hz)	60	120	1k	10k~50k
Rated Voltage				
10~100V	0.90	1.00	1.15	1.25
160~250V	0.80	1.00	1.25	1.47
315~450V	0.80	1.00	1.30	1.47

PART NUMBER SYSTEM (EXAMPLE : 250V 330μF)

1	2 3	4 5 6	7	8 9	10	11 12	13 14
E	FP	337	M	2 E	P	3 0	S W

Type (Terminal Code)

Case Length (30mm)

Diameter (30mm)

Voltage (250V)

Tolerance (±20%)

Capacitance (330μF)

Series

E-CAP

STANDARD RATINGS

Voltage (Code)		10V (1A)			16V (1C)			25V (1E)		
Cap. (μF)	Code	Case Size	Impedance	Ripple Current	Case Size	Impedance	Ripple Current	Case Size	Impedance	Ripple Current
4700	478							22 x 30	57	1.6
								25 x 25	57	1.6
6800	688	22 x 25	78	1.4	22 x 30	49	1.8	25 x 30	43	1.9
10000	109	22 x 30	56	1.8	25 x 30	36	2.2	25 x 40	32	2.5
15000	159	22 x 40	39	2.3	25 x 40	26	2.8	30 x 40	23	3.2
22000	229	30 x 35	28	3.0	30 x 40	18	3.5			
33000	339	30 x 45	20	3.9						

Maximum Allowable Ripple Current (Arms) at 105°C 120Hz

Case Size ΦD x L (mm)

Maximum Impedance (mΩ) at 20°C 20kHz

Voltage (Code)		35V (1V)			50V (1H)			63V (1J)		
Cap. (μF)	Code	Case Size	Impedance	Ripple Current	Case Size	Impedance	Ripple Current	Case Size	Impedance	Ripple Current
1000	108							22 x 25	159	1.0
1500	158							22 x 35	106	1.4
								25 x 35	72	1.7
2200	228	22 x 25	90	1.1	22 x 35	90	1.4	30 x 30	85	1.8
3300	338	22 x 30	60	1.5	25 x 35	60	1.8	30 x 40	56	2.3
		25 x 25	60	1.5						
4700	478	22 x 40	48	1.9	30 x 35	45	2.2	35 x 35	45	2.7
6800	688	25 x 40	37	2.3	30 x 50	35	2.9	35 x 50	31	3.6
10000	109	30 x 40	28	2.9	35 x 45	26	3.6			
15000	159	35 x 40	20	3.8						
18000	189	35 x 45	18	4.3						

Maximum Allowable Ripple Current (Arms) at 105°C 120Hz

Case Size ΦD x L (mm)

Maximum Impedance (mΩ) at 20°C 20kHz

Voltage (Code)		80V (1K)			100V (2A)			200V (2D)		
Cap. (μF)	Code	Case Size	Impedance	Ripple Current	Case Size	Impedance	Ripple Current	Case Size	Impedance	Ripple Current
220	227							22 x 30	700	0.96
330	337							22 x 40	470	1.3
								25 x 40	330	1.7
470	477							30 x 30	330	1.7
560	567				25 x 25	190	1.0			
680	687				22 x 35	156	1.2	30 x 40	230	2.2
					25 x 35	106	1.4	35 x 45	160	3.1
1000	108	25 x 25	133	1.3	30 x 30	106	1.5			
1200	128	30 x 25	110	1.5						
1500	158	25 x 35	89	1.8	30 x 40	70	1.9	35 x 50	110	3.9
2200	228	30 x 35	60	2.0	30 x 50	60	2.3			
3300	338	35 x 35	48	2.8	35 x 50	40	3.0			
4700	478	35 x 45	34	3.4						

Maximum Allowable Ripple Current (Arms) at 105°C 120Hz

Case Size ΦD x L (mm)

Maximum Impedance (mΩ) at 20°C 20kHz

Voltage (Code)		250V (2E)			400V (2G)			450V (2W)		
Cap. (μF)	Code	Case Size	Impedance	Ripple Current	Case Size	Impedance	Ripple Current	Case Size	Impedance	Ripple Current
100	107				25 x 30	1090	0.7	22 x 45	1600	0.75
								30 x 30	1600	0.76
150	157				25 x 40	730	0.95	25 x 45	1070	1.0
					30 x 30	730	0.94	30 x 35	1070	0.99
					30 x 40	500	1.3	30 x 45	730	1.3
220	227	25 x 30	700	1.0	35 x 30	500	1.3	35 x 35	730	1.3
					30 x 50	330	1.7			
330	337	25 x 40	470	1.4	35 x 40	330	1.7	35 x 50	490	1.8
		30 x 30	470	1.4						
390	397				35 x 45	280	1.9	35 x 50	410	2.0
470	477	30 x 35	330	1.8	35 x 50	240	2.2			
680	687	30 x 45	230	2.3						
1000	108	35 x 45	160	3.1						

Maximum Allowable Ripple Current (Arms) at 105°C 120Hz

Case Size ΦD x L (mm)

Maximum Impedance (mΩ) at 20°C 20kHz

Specifications are subject to change without notice. Should a safety or technical concern arise regarding the product, please be sure to contact our sales offices or agents immediately.