

FX Series

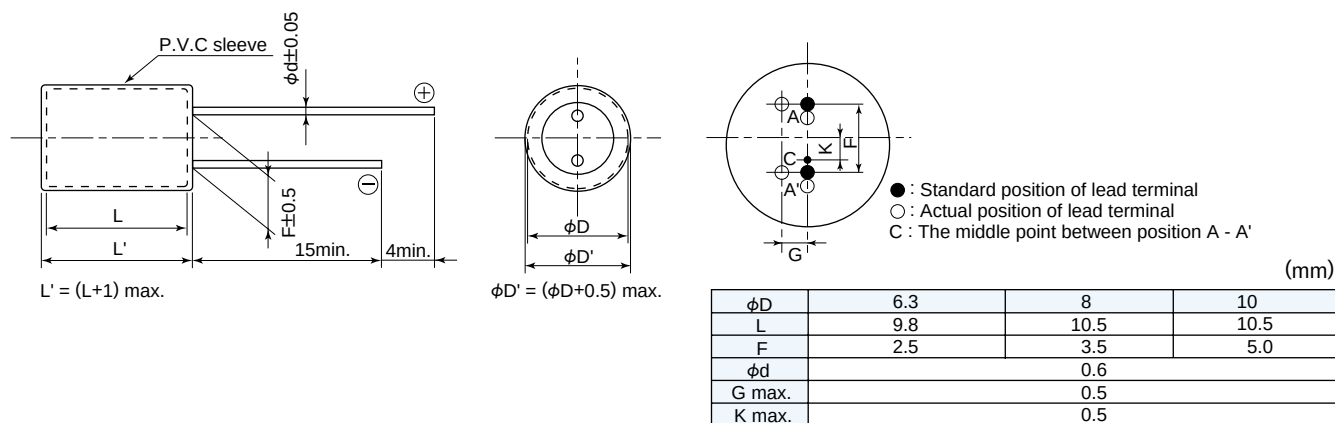
- 105°C, 1000 hours
- Larger capacitance than FP series
- Low ESR same as FP series
- For VRM and DC-DC converter



SPECIFICATIONS

Items	Performance Requirements		
Category	Temperature Range		
Temperature Range	-55 to +105°C		
Rated Voltage Range	4 to 20Vdc		
Rated Capacitance Range	82 to 1,200μF (at 20°C, 120Hz)		
Tolerance on Rated Capacitance	±20% (M) (at 20°C, 120Hz)		
Leakage Current	I = 0.05CV (max.) I : Leakage current (μA), C : Rated capacitance (μF), V : rated voltage (Vdc) (at 20°C, 2 min)		
Dissipation Factor (tanδ)	See STANDARD RATINGS table (at 20°C, 120Hz)		
Characteristics at High and Low Temperature	Z (-55°C) / Z (20°C)	0.75 to 1.25	(at 100Hz)
	Z (105°C) / Z (20°C)		
Endurance	After 1000hours with applying rated voltage at 105°C, shall not exceed or within following values at 20°C.		
	Capacitance change	Within ±20% of the initial value	
	tanδ	1.5 times of the initial specified value	
	Leakage current	The initial specified value	
Dump Heat, Steady State	After 1000hours with no load at 60°C, 90 to 95%RH, shall not exceed or within following values at 20°C. (after voltage treatment)		
	Capacitance change	Within ±20% of the initial value	
	tanδ	2.0 times of the initial specified value	
	Leakage current	The initial specified value	

DIMENSIONS



PART NUMBERING SYSTEM

6	FX	330	M	—	□																					
Rated voltage code	Series	Rated capacitance code	Tolerance on rated capacitance		Supplement code																					
	<table><tr><th>Voltage</th><th>Code</th></tr><tr><td>4</td><td>4</td></tr><tr><td>6.3</td><td>6</td></tr><tr><td>10</td><td>10</td></tr><tr><td>16</td><td>16</td></tr><tr><td>20</td><td>20</td></tr></table>	Voltage	Code	4	4	6.3	6	10	10	16	16	20	20		<table><tr><th>Capacitance</th><th>Code</th></tr><tr><td>82</td><td>82</td></tr><tr><td>220</td><td>220</td></tr><tr><td>1,200</td><td>1200</td></tr></table>	Capacitance	Code	82	82	220	220	1,200	1200		<table><tr><td>For lead configuration, taping and etc.</td></tr></table>	For lead configuration, taping and etc.
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◆STANDARD RATINGS

Part No.	Rated voltage	Rated capacitance	Max ESR	Rated ripple current	Max $\tan\delta$	Max leakage current	Case size
	(V _{dc})	(μ F) 1)	(m Ω) 2)	(mA rms) 3)		(μ A) 4)	ϕ D×L (mm)
4FX390M	4	390	24	3,300	0.11	78.0	6.3×9.8
4FX820M	4	820	14	4,200	0.12	164.0	8×10.5
4FX1200M	4	1,200	12	5,190	0.13	240.0	10×10.5
6FX330M	6.3	330	28	3,190	0.11	104.0	6.3×9.8
6FX680M	6.3	680	16	3,920	0.12	214.0	8×10.5
6FX1000M	6.3	1,000	13	4,935	0.13	315.0	10×10.5
10FX220M	10	220	30	3,080	0.09	110.0	6.3×9.8
10FX390M	10	390	18	3,710	0.10	195.0	8×10.5
10FX680M	10	680	15	4,735	0.11	340.0	10×10.5
16FX120M	16	120	32	2,985	0.08	96.0	6.3×9.8
16FX220M	16	220	20	3,510	0.08	176.0	8×10.5
16FX330M	16	330	18	4,530	0.09	264.0	10×10.5
20FX82M	20	82	34	2,880	0.07	82.0	6.3×9.8
20FX150M	20	150	24	3,200	0.08	150.0	8×10.5
20FX220M	20	220	20	4,405	0.09	220.0	10×10.5

Note 1) Tolerance on rated capacitance $\pm 20\%$ (M)

2) ESR : 100kHz to 300kHz

3) Rated ripple current : 100kHz, 45°C

4) Max. leakage current : After 2 minutes.

◆CASE SIZE

μ F \ V _{dc}	4	6.3	10	16	20
82					6.3×9.8
120				6.3×9.8	
150					8×10.5
220			6.3×9.8	8×10.5	10×10.5
330		6.3×9.8		10×10.5	
390	6.3×9.8		8×10.5		
680		8×10.5	10×10.5		
820	8×10.5				
1,000		10×10.5			
1,200	10×10.5				

◆TEMPERATURE MULTIPLYING FACTOR OF RATED RIPPLE CURRENT

Ambient temperature (°C)	to +45	to +65	to +85	to +95	to +105
Multiplying factor	1	0.85	0.7	0.4	0.25