FL Series

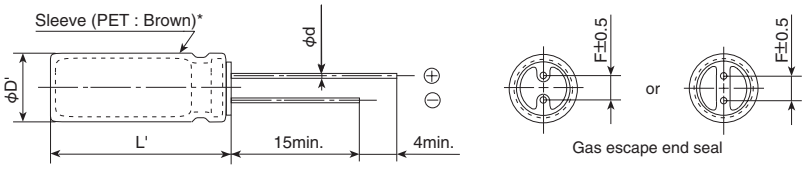
- Long life and high reliability for φ4×5L to φ8×7L mm range
- Endurance with ripple current : 3,000 hours at 105℃
- Suitable for long life and high reliability products
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- **RoHS Compliant**

◆SPECIFICATIONS

Items	Characteristics							
Category Temperature Range	−40 to +105℃							
Rated Voltage Range	6.3 to 50Vdc							
Capacitance Tolerance	±20% (M)							(at 20℃, 120Hz)
Leakage Current	I=0.03CV or 3μA, whichever is greater. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)							(at 20℃ after 2 minutes)
Dissipation Factor (tanδ)	Rated voltage (Vdc)	6.3V	10V	16V	25V	35V	50V	
	tanδ (Max.)	0.50	0.40	0.35	0.30	0.25	0.25	(at 20℃, 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 3,000 hours at 105℃.							
	Capacitance change	≦±30% of the initial value						
	D.F. (tanδ)	≦300% of the initial specified value						
	Leakage current	≦The initial specified value						
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.							
	Capacitance change	≦±20% of the initial value						
	D.F. (tanδ)	≦200% of the initial specified value						
	Leakage current	≦The initial specified value						

◆DIMENSIONS [mm]

●Terminal Code : E



* φ8×5L : Coating case

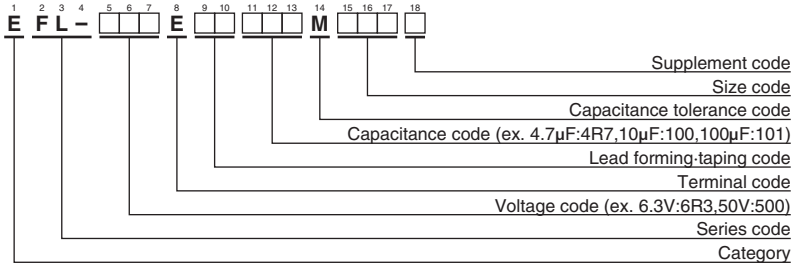
5mm Height

φD	4	5	6.3	8
φd	0.45	0.45	0.45	0.45
F	1.5	2.0	2.5	2.5
φD'	φD+0.5max.			
L'	L+1.0max.			

7mm Height

φD	4	5	6.3	8
φd	0.45	0.45	0.45	0.45
F	1.5	2.0	2.5	3.5
φD'	φD+0.5max.			
L'	L+1.0max.			

◆PART NUMBERING SYSTEM



Please refer to "Product code guide (radial lead type)"

FL Series

◆STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	tanδ	Impedance (Ωmax/20℃, 100kHz)	Rated ripple current (mArms/105℃,100kHz)	Part No.
6.3	33	4×5	0.50	5.4	37	EFL-6R3E□□330MD05D
	47	4×7	0.50	4.5	44	EFL-6R3E□□470MD07D
	56	5×5	0.50	3.1	57	EFL-6R3E□□560ME05D
	82	5×7	0.50	2.5	70	EFL-6R3E□□820ME07D
	100	6.3×5	0.50	1.7	82	EFL-6R3E□□101MF05D
	150	6.3×7	0.50	1.3	116	EFL-6R3E□□151MF07D
	220	8×5	0.50	1.5	110	EFL-6R3E□□221MH05G
	270	8×7	0.50	0.90	162	EFL-6R3E□□271MH07D
10	22	4×5	0.40	5.4	37	EFL-100E□□220MD05D
	33	4×7	0.40	4.5	44	EFL-100E□□330MD07D
	33	5×5	0.40	3.1	57	EFL-100E□□330ME05D
	47	5×7	0.40	2.5	70	EFL-100E□□470ME07D
	68	6.3×5	0.40	1.7	82	EFL-100E□□680MF05D
	100	6.3×7	0.40	1.3	116	EFL-100E□□101MF07D
	150	8×5	0.40	1.5	110	EFL-100E□□151MH05G
	220	8×7	0.40	0.90	162	EFL-100E□□221MH07D
16	15	4×5	0.35	5.4	37	EFL-160E□□150MD05D
	22	4×7	0.35	4.5	44	EFL-160E□□220MD07D
	22	5×5	0.35	3.1	57	EFL-160E□□220ME05D
	33	5×7	0.35	2.5	70	EFL-160E□□330ME07D
	47	6.3×5	0.35	1.7	82	EFL-160E□□470MF05D
	68	6.3×7	0.35	1.3	116	EFL-160E□□680MF07D
	100	8×5	0.35	1.5	110	EFL-160E□□101MH05G
	150	8×7	0.35	0.90	162	EFL-160E□□151MH07D
25	10	4×5	0.30	5.4	37	EFL-250E□□100MD05D
	15	4×7	0.30	4.5	44	EFL-250E□□150MD07D
	15	5×5	0.30	3.1	57	EFL-250E□□150ME05D
	22	5×7	0.30	2.5	70	EFL-250E□□220ME07D
	33	6.3×5	0.30	1.7	82	EFL-250E□□330MF05D
	56	6.3×7	0.30	1.3	116	EFL-250E□□560MF07D
	68	8×5	0.30	1.5	110	EFL-250E□□680MH05G
	100	8×7	0.30	0.90	162	EFL-250E□□101MH07D
35	4.7	4×5	0.25	5.4	37	EFL-350E□□4R7MD05D
	6.8	4×7	0.25	4.5	44	EFL-350E□□6R8MD07D
	10	5×5	0.25	3.1	57	EFL-350E□□100ME05D
	10	5×7	0.25	2.5	70	EFL-350E□□100ME07D
	22	6.3×5	0.25	1.7	82	EFL-350E□□220MF05D
	22	6.3×7	0.25	1.3	116	EFL-350E□□220MF07D
	33	8×5	0.25	1.5	110	EFL-350E□□330MH05G
	47	8×7	0.25	0.90	162	EFL-350E□□470MH07D
50	1.0	4×5	0.25	19	18	EFL-500E□□1R0MD05D
	2.2	4×5	0.25	14	22	EFL-500E□□2R2MD05D
	3.3	4×5	0.25	11	26	EFL-500E□□3R3MD05D
	4.7	4×7	0.25	9.0	30	EFL-500E□□4R7MD07D
	4.7	5×5	0.25	6.0	40	EFL-500E□□4R7ME05D
	6.8	5×7	0.25	4.8	50	EFL-500E□□6R8ME07D
	10	6.3×5	0.25	2.9	63	EFL-500E□□100MF05D
	15	6.3×7	0.25	2.2	90	EFL-500E□□150MF07D
	22	8×5	0.25	2.6	84	EFL-500E□□220MH05G
	22	8×7	0.25	1.6	120	EFL-500E□□220MH07D

□□ : Enter the appropriate lead forming or taping code.

◆RATED RIPPLE CURRENT MULTIPLIERS

●Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
to 3.3	0.20	0.66	0.90	1.00
4.7 to 6.8	0.35	0.70	0.90	1.00
10 to 150	0.40	0.75	0.90	1.00
220 to 270	0.50	0.85	0.94	1.00

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced.