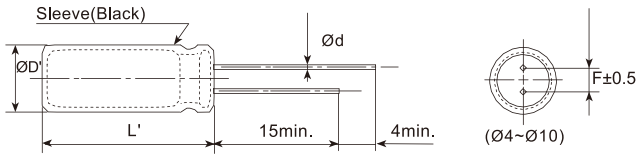
ML series

- Long life with 5mm to 9mm height.
- Endurance +105°C 3,000~5,000 hours
- **RoHS Compliant**

SPECIFICATIONS

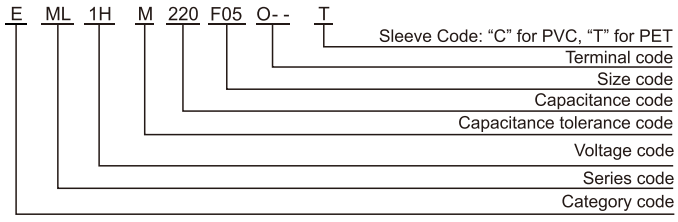
Items	Characteristics
Category Temperature Range	-40~+105°C
Rated Voltage Range	6.3~50 Vdc
Capacitance Tolerance	±20%(M) (at 20°C,120Hz)
Leakage Current	I 0.01CV or 3μA, whichever is greater. Where, I:Max.leakage current (μA),C:Nominal capacitance (μF),V: Rated voltage (V) (at 20°C after 2 minutes)
Dissipation Factor (tanδ)	Rated Voltage(Vdc) 6.3 10 16 25 35 50 tanδ (max.) 0.40 0.35 0.30 0.25 0.20 0.20 When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20°C,120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated Voltage(Vdc) 6.3 10 16 25 35 50 Z(-25°C)/Z(+20°C) 6 4 4 3 2 2 Z(-40°C)/Z(+20°C) 12 10 8 6 4 4 (at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20°C after DC voltage plus the rated ripple current is applied for a specified period of time at 105°C. Capacitance Change ≤±30% of the initial value D.F. (tanδ) ≤300% of the initial specified value Leakage Current ≤The initial specified value Size: Load life (hours) L 4 5mm: 3,000 L 7mm: 5,000
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 105°C without voltage applied. Capacitance Change ≤±30% of the initial value D.F. (tanδ) ≤300% of the initial specified value Leakage Current ≤200% of the initial specified value

DIMENSIONS[mm]



ØD	4	5	6.3		8			10×9
			6.3×5	6.3×7	8×5	8×7	8×9	
Ød	0.45	0.45	0.45	0.5	0.45	0.5	0.5	0.6
F	1.5	2.0	2.5	2.5	3.5	3.5	3.5	5.0
ØD'	ØD+0.5max.							
L'	L+2max.							

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

Cap.(μF) \ Freq.(Hz)	60(50)	120	500	1k	10k
Cap.<2.2	0.50	1.00	1.20	1.30	1.50
2.2 Cap.<10	0.65	1.00	1.20	1.30	1.50
10 Cap.<100	0.80	1.00	1.20	1.30	1.50
Cap. 100	0.80	1.00	1.10	1.15	1.20

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

ML series

STANDARD RATINGS

WV (Vdc)	Cap (μF)	Size DxL(mm)	tanδ	Rated ripple current (mArms/105°C, 120Hz)	Part Number
6.3(0J)	27	4×5	0.40	25	EML0JM270C05OT
	47	4×7	0.40	47	EML0JM470C07OT
	56	5×5	0.40	50	EML0JM560D05OT
	82	5×7	0.40	75	EML0JM820D07OT
	120	6.3×5	0.40	80	EML0JM121E05OT
	180	6.3×7	0.40	110	EML0JM181E07OT
	220	8×5	0.40	125	EML0JM221F05OT
	270	8×7	0.40	165	EML0JM271F07OT
	470	8×7	0.40	190	EML0JM471F07OT
	560	8×9	0.40	230	EML0JM561F09OT
	1000	10×9	0.40	480	EML0JM102G09OT
10(1A)	22	4×5	0.35	22	EML1AM220C05OT
	33	4×7	0.35	43	EML1AM330C07OT
	47	5×5	0.35	48	EML1AM470D05OT
	56	5×7	0.35	68	EML1AM560D07OT
	100	6.3×5	0.35	75	EML1AM101E05OT
	120	6.3×7	0.35	100	EML1AM121E07OT
	180	8×5	0.35	120	EML1AM181F05OT
	220	8×7	0.35	160	EML1AM221F07OT
	330	8×7	0.35	180	EML1AM331F07OT
	470	8×9	0.35	210	EML1AM471F09OT
	680	10×9	0.35	470	EML1AM681G09OT
16(1C)	18	4×5	0.30	20	EML1CM180C05OT
	22	4×7	0.30	40	EML1CM220C07OT
	33	5×5	0.30	45	EML1CM330D05OT
	39	5×7	0.30	65	EML1CM390D07OT
	68	6.3×5	0.30	70	EML1CM680E05OT
	100	6.3×7	0.30	95	EML1CM101E07OT
	120	8×5	0.30	110	EML1CM121F05OT
	150	8×7	0.30	125	EML1CM151F07OT
	220	8×7	0.30	170	EML1CM221F07OT
	330	8×9	0.30	195	EML1CM331F09OT
	470	10×9	0.30	460	EML1CM471G09OT
25(1E)	10	4×5	0.25	18	EML1EM100C05OT
	15	4×7	0.25	35	EML1EM150C07OT
	22	5×5	0.25	42	EML1EM220D05OT
	27	5×7	0.25	57	EML1EM270D07OT
	47	6.3×5	0.25	65	EML1EM470E05OT
	56	6.3×7	0.25	85	EML1EM560E07OT
	82	8×5	0.25	100	EML1EM820F05OT
	100	8×7	0.25	112	EML1EM101F07OT
	150	8×7	0.25	140	EML1EM151F07OT
	220	8×9	0.25	190	EML1EM221F09OT
	330	10×9	0.25	450	EML1EM331G09OT

WV (Vdc)	Cap (μF)	Size DxL(mm)	tanδ	Rated ripple current (mArms/105°C, 120Hz)	Part Number
35(1V)	6.8	4×5	0.20	17	EML1VM6R8C05OT
	10	4×7	0.20	28	EML1VM100C07OT
	12	5×5	0.20	34	EML1VM120D05OT
	18	5×7	0.20	48	EML1VM180D07OT
	27	6.3×5	0.20	58	EML1VM270E05OT
	39	6.3×7	0.20	76	EML1VM390E07OT
	47	8×5	0.20	80	EML1VM470F05OT
	56	8×7	0.20	105	EML1VM560F07OT
	100	8×7	0.20	125	EML1VM101F07OT
	150	8×9	0.20	180	EML1VM151F09OT
	220	10×9	0.20	360	EML1VM221G09OT
50(1H)	1	4×5	0.20	8	EML1HM010C05OT
	2.2	4×5	0.20	11	EML1HM2R2C05OT
	3.3	4×5	0.20	14	EML1HM3R3C05OT
	4.7	4×7	0.20	23	EML1HM4R7C07OT
	6.8	5×5	0.20	25	EML1HM6R8D05OT
	10	5×7	0.20	30	EML1HM100D07OT
	12	6.3×5	0.20	37	EML1HM120E05OT
	18	6.3×7	0.20	50	EML1HM180E07OT
	22	8×5	0.20	62	EML1HM220F05OT
	33	8×7	0.20	75	EML1HM330F07OT
	56	8×7	0.20	115	EML1HM560F07OT
	82	8×9	0.20	160	EML1HM820F09OT
	120	10×9	0.20	315	EML1HM121G09OT