



### MSP series

- High ripple
- Long life
- RoHS Compliant

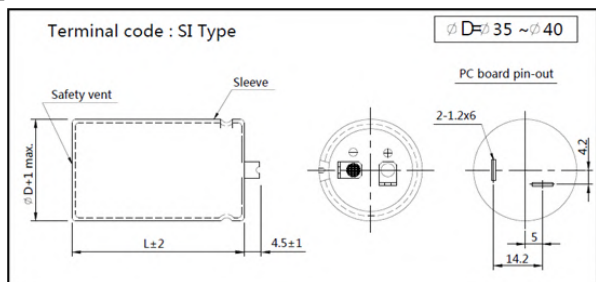
- 85°C 8,000Hrs assured.
- High ripple, Permissible Spike test (450, 500Vdc)
- For air conditioning system
- RoHS compliant
- Halogen-free capacitors are also available.



### Specifications

Item	Characteristics						
Rated Voltage Range	400 ~ 500 Vdc						
Operating Temperature Range	-25 ~ +105°C						
Capacitance Tolerance	±20% (M) (at 20°C, 120Hz)						
Leakage Current	$I = 3\sqrt{CV}(\mu A)$ Where, I:Max. Leakage current(μA), C:Nominal capacitance(μF), V:Rated voltage(Vdc) (at 20°C, 5min)						
Dissipation Factor(Tanδ)	<table border="1" style="width: 100%;"> <tr> <td>Rated voltage (Vdc)</td> <td>400</td> <td>450-500</td> </tr> <tr> <td>Tanδ (max.)</td> <td>0.15</td> <td>0.20</td> </tr> </table> (at 20°C, 120Hz)	Rated voltage (Vdc)	400	450-500	Tanδ (max.)	0.15	0.20
Rated voltage (Vdc)	400	450-500					
Tanδ (max.)	0.15	0.20					
Load life	The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for specified life times at 105°C 8,000hrs. Capacitance change ≤±20%of the initial value Tan δ ≤200% 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°C after exposing them for 1,000 hours at 105°C without voltage applied. The rated voltage shall be applied to the capacitors for a minimum of 30 minutes at least 24 hours and not more than 48 hours before the measurements. Capacitance change ≤±20% of the initial value Tanδ ≤200% of the initial specified value Leakage current ≤The initial specified value						

### Dimensions



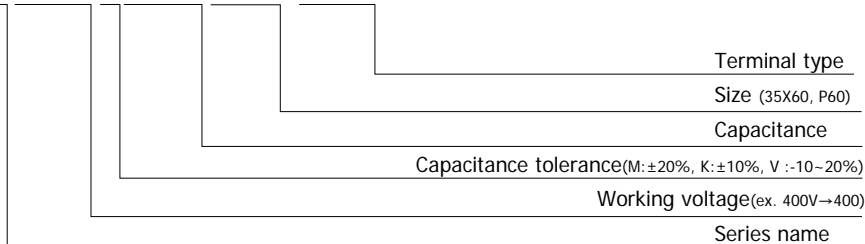
### Rated ripple current multipliers

Freq. (Hz)	60	120	300	1K	10K~
Vdc					
400~500	0.77	1.00	1.16	1.30	1.41

- Printed silver color letter on black sleeve
- The standard design has no bottom plate

### Code numbering system

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16  
 M S P □ □ □ M □ □ □ □ □ □ □ □ □ □



Ø22	M
Ø25	N
Ø30	O
Ø35	P

## MSP series

### Standard Ratings

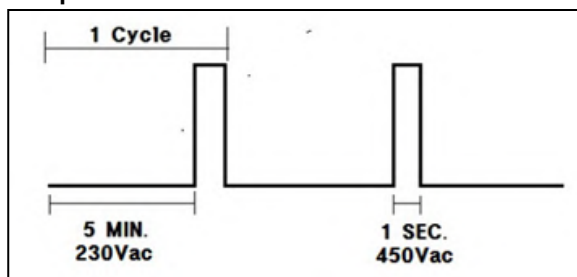
Note1) Ripple current = Arms/85°C, 120Hz

WV (Vdc)	Cap (uF)	Size ØxL (mm)	Tan δ	Ripple <sup>1)</sup>	Code No
400	220	30 x 30	0.15	1.18	MSP400□221O30□□□
		30 x 35	0.15	1.54	MSP400□271O35□□□
	270	35 x 30	0.15	1.54	MSP400□271P30□□□
		30 x 40	0.15	1.62	MSP400□331O40□□□
	330	35 x 30	0.15	1.62	MSP400□331P30□□□
		30 x 45	0.15	1.86	MSP400□391M45□□□
	390	35 x 35	0.15	1.86	MSP400□391P35□□□
		30 x 50	0.15	2.13	MSP400□471O50□□□
	470	35 x 40	0.15	2.13	MSP400□471P40□□□
		560	35 x 45	0.15	2.37
680	35 x 55	0.15	2.84	MSP400□681P55□□□	
	820	35 x 65	0.15	3.36	MSP400□821P65□□□
450	330	30 x 50	0.20	2.30	MSP450□331O50□□□
		35 x 35	0.20	2.35	MSP450□331P35□□□
	390	35 x 40	0.20	2.69	MSP450□391P40□□□
	470	35 x 45	0.20	3.25	MSP450□471P45□□□
	560	35 x 50	0.20	4.00	MSP450□561P50□□□
	680	35 x 60	0.20	4.51	MSP450□681P60□□□
820	35 x 70	0.20	5.39	MSP450□821P70□□□	
	470	35 x 50	0.20	3.05	MSP500□471P50□□□
500	560	35 x 60	0.20	4.00	MSP500□561P60□□□
	680	35 x 70	0.20	4.40	MSP500□681P70□□□

### Spike Test Method

- Avoid abnormal feature's change by applying abnormal voltage to following conditions.

#### Spike Test conditions



Applied Voltage	Times	Cycles
230Vac	5 Minutes	216 cycle
450Vac	1 seconds	