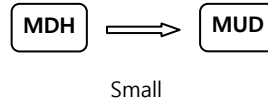




## MUD series

Small size    RoHS Compliant

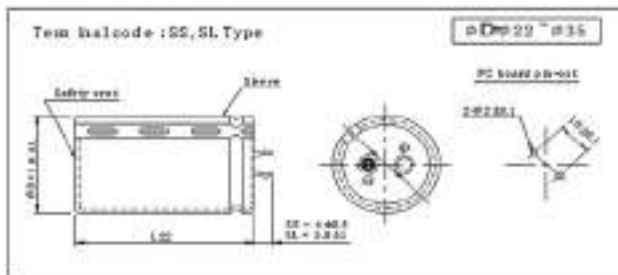
- 105°C 2,000Hrs assured.
- Ultra small size
- For SMPS, Inverter
- RoHS compliant
- Halogen-free capacitors are also available.



### Specifications

Item	Characteristics	
Rated Voltage Range	160 ~ 250 Vdc	400 ~ 450 Vdc
Operating Temperature Range	-40 ~ +105°C	-25 ~ +105°C
Capacitance Tolerance	±20% (M) (at 20°C, 120Hz)	
Leakage Current	I=0.03CV or 3mA whichever is smaller Where, I:Max. Leakage current(μA), C:Nominal capacitance(μF), V:Rated voltage(Vdc) (at 20°C, 5min)	
Dissipation Factor(Tanδ)	Rated voltage (Vdc)	160 ~ 400      420 ~ 500
	Tanδ (max.)	0.15      0.20
Temperature characteristics (Max,impedance ratio)	Rated voltage (Vdc)	160 ~ 250      350 ~ 500
	Z(-25°C)/Z(20°C)	4      8
	Z(-40°C)/Z(20°C)	6      -
	(at 120Hz)	
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°C2,000hrs. 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



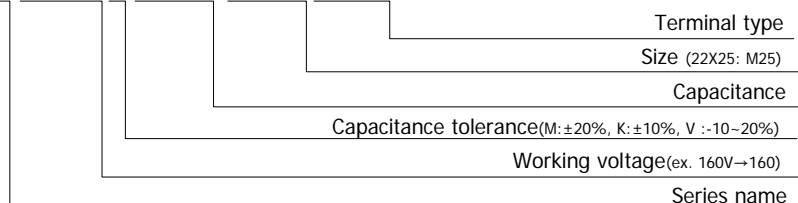
- Printed white color letter on brown sleeve
- The standard design has no bottom plate

### Rated ripple current multipliers

Vdc \ Freq.(Hz)	50	60	120	1K	10K	100K
160 ~ 250	0.81	0.85	1.00	1.32	1.45	1.50
350 ~ 500	0.77	0.82	1.00	1.30	1.41	1.43

### Code numbering system

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



Ø22	M
Ø25	N
Ø30	O
Ø35	P



MUD series

■ Standard Ratings Note1) Ripple current = mA rms/105°C, 120Hz

WV (Vdc)	Cap (uF)	Size ØxL (mm)	Tan δ	Ripple <sup>1)</sup>	Code No	
160	560	22 x 25	0.15	1,300	MUD160□561M25□□□	
		680	22 x 30	0.15	1,400	MUD160□681M30□□□
			25 x 25	0.15	1,600	MUD160□681N25□□□
	820	22 x 35	0.15	1,900	MUD160□821M35□□□	
		25 x 30	0.15	1,900	MUD160□821N30□□□	
	1,000	22 x 40	0.15	2,000	MUD160□102M40□□□	
		25 x 35	0.15	2,100	MUD160□102N35□□□	
		30 x 25	0.15	2,100	MUD160□102O25□□□	
	1,200	25 x 40	0.15	2,200	MUD160□122N40□□□	
		30 x 30	0.15	2,200	MUD160□122O30□□□	
		35 x 25	0.15	2,200	MUD160□122P25□□□	
	1,500	25 x 45	0.15	2,400	MUD160□152N45□□□	
		30 x 35	0.15	2,400	MUD160□152O35□□□	
		35 x 30	0.15	2,400	MUD160□152P30□□□	
	1,800	30 x 40	0.15	2,600	MUD160□182O40□□□	
		35 x 35	0.15	2,450	MUD160□182P35□□□	
	2,200	30 x 45	0.15	2,800	MUD160□222O45□□□	
		35 x 35	0.15	2,800	MUD160□222P35□□□	
2,700	35 x 40	0.15	2,900	MUD160□272P40□□□		
3,300	35 x 45	0.15	3,000	MUD160□332P45□□□		
180	470	22 x 25	0.15	1,200	MUD180□471M25□□□	
		560	22 x 30	0.15	1,400	MUD180□561M30□□□
			22 x 35	0.15	1,600	MUD180□681M35□□□
	680	25 x 30	0.15	1,600	MUD180□681N30□□□	
		22 x 40	0.15	1,900	MUD180□821M40□□□	
	820	25 x 35	0.15	1,900	MUD180□821N35□□□	
		30 x 25	0.15	1,900	MUD180□821O25□□□	
	1,000	22 x 45	0.15	2,000	MUD180□102M45□□□	
		25 x 35	0.15	1,950	MUD180□102N35□□□	
		30 x 30	0.15	2,100	MUD180□102O30□□□	
	1,200	22 x 50	0.15	2,050	MUD180□122M50□□□	
		25 x 40	0.15	2,050	MUD180□122N40□□□	
		30 x 35	0.15	2,200	MUD180□122O35□□□	
	1,500	35 x 25	0.15	2,050	MUD180□122P25□□□	
		25 x 50	0.15	2,300	MUD180□152N50□□□	
		30 x 40	0.15	2,400	MUD180□152O40□□□	
	1,800	35 x 30	0.15	2,250	MUD180□152P30□□□	
		30 x 45	0.15	2,600	MUD180□182O45□□□	
35 x 35		0.15	2,600	MUD180□182P35□□□		
2,200	30 x 50	0.15	2,800	MUD180□222O50□□□		
	35 x 40	0.15	2,800	MUD180□222P40□□□		
2,700	35 x 45	0.15	2,900	MUD180□272P45□□□		
3,300	35 x 50	0.15	3,000	MUD180□332P50□□□		
200	470	22 x 25	0.15	1,100	MUD200□471M25□□□	
		560	22 x 30	0.15	1,380	MUD200□561M30□□□
			25 x 25	0.15	1,380	MUD200□561N25□□□
	680	22 x 35	0.15	1,500	MUD200□681M35□□□	
		25 x 30	0.15	1,500	MUD200□681N30□□□	
	820	22 x 40	0.15	1,650	MUD200□821M40□□□	
		25 x 35	0.15	1,650	MUD200□821N35□□□	
		30 x 25	0.15	1,650	MUD200□821O25□□□	
	1,000	22 x 45	0.15	1,940	MUD200□102M45□□□	
		25 x 40	0.15	1,940	MUD200□102N40□□□	
		30 x 30	0.15	1,940	MUD200□102O30□□□	
	1,200	25 x 45	0.15	2,200	MUD200□122N45□□□	
		30 x 35	0.15	2,200	MUD200□122O35□□□	
		35 x 25	0.15	2,200	MUD200□122P25□□□	
	1,500	25 x 50	0.15	2,470	MUD200□152N50□□□	
		30 x 40	0.15	2,470	MUD200□152O40□□□	
		35 x 30	0.15	2,470	MUD200□152P30□□□	

WV (Vdc)	Cap (uF)	Size ØxL (mm)	Tan δ	Ripple <sup>1)</sup>	Code No	
200	1,800	30 x 45	0.15	2,580	MUD200□182O45□□□	
		35 x 35	0.15	2,580	MUD200□182P35□□□	
	2,200	30 x 50	0.15	2,820	MUD200□222O50□□□	
		35 x 40	0.15	2,820	MUD200□222P40□□□	
2,700	35 x 45	0.15	3,170	MUD200□272P45□□□		
220	330	22 x 25	0.15	1,160	MUD220□331M25□□□	
		390	22 x 30	0.15	1,240	MUD220□391M30□□□
	470	22 x 35	0.15	1,380	MUD220□471M35□□□	
		25 x 25	0.15	1,300	MUD220□471N25□□□	
	560	22 x 35	0.15	1,340	MUD220□561M35□□□	
		25 x 30	0.15	1,340	MUD220□561N30□□□	
	680	22 x 40	0.15	1,550	MUD220□681M40□□□	
		25 x 35	0.15	1,680	MUD220□681N35□□□	
		30 x 25	0.15	1,550	MUD220□681O25□□□	
	820	22 x 50	0.15	1,830	MUD220□821M50□□□	
		25 x 40	0.15	1,830	MUD220□821N40□□□	
		30 x 30	0.15	1,750	MUD220□821O30□□□	
		35 x 25	0.15	1,830	MUD220□821P25□□□	
	1,000	25 x 45	0.15	2,050	MUD220□102N45□□□	
		30 x 35	0.15	2,230	MUD220□102O35□□□	
		35 x 30	0.15	2,230	MUD220□102P30□□□	
	1,200	30 x 40	0.15	2,400	MUD220□122O40□□□	
		35 x 30	0.15	2,250	MUD220□122P30□□□	
1,500	30 x 45	0.15	2,450	MUD220□152O45□□□		
	35 x 35	0.15	2,400	MUD220□152P35□□□		
1,800	35 x 40	0.15	2,600	MUD220□182P40□□□		
	2,200	35 x 50	0.15	2,850	MUD220□222P50□□□	
250	390	22 x 30	0.15	1,100	MUD250□391M30□□□	
		25 x 25	0.15	1,100	MUD250□391N25□□□	
	470	22 x 35	0.15	1,200	MUD250□471M35□□□	
		25 x 30	0.15	1,200	MUD250□471N30□□□	
	560	22 x 40	0.15	1,300	MUD250□561M40□□□	
		25 x 35	0.15	1,400	MUD250□561N35□□□	
	680	30 x 25	0.15	1,300	MUD250□561O25□□□	
		22 x 45	0.15	1,400	MUD250□681M45□□□	
		25 x 40	0.15	1,600	MUD250□681N40□□□	
	820	30 x 30	0.15	1,600	MUD250□681O30□□□	
		25 x 45	0.15	1,900	MUD250□821M45□□□	
		30 x 35	0.15	1,900	MUD250□821O35□□□	
	1,000	35 x 30	0.15	1,900	MUD250□821P30□□□	
		25 x 50	0.15	2,100	MUD250□102N50□□□	
		30 x 40	0.15	2,100	MUD250□102O40□□□	
	1,200	35 x 30	0.15	2,100	MUD250□102P30□□□	
		30 x 45	0.15	2,200	MUD250□122O45□□□	
		35 x 35	0.15	2,200	MUD250□122P35□□□	
1,500	30 x 50	0.15	2,250	MUD250□152O50□□□		
	35 x 40	0.15	2,250	MUD250□152P40□□□		
1,800	35 x 45	0.15	2,450	MUD250□182P45□□□		
400	120	22 x 25	0.15	580	MUD400□121M25□□□	
		180	22 x 30	0.15	680	MUD400□181M30□□□
			25 x 25	0.15	680	MUD400□181N25□□□
	220	22 x 35	0.15	770	MUD400□221M35□□□	
		25 x 30	0.15	770	MUD400□221N30□□□	
		22 x 40	0.15	920	MUD400□271M40□□□	
	270	25 x 35	0.15	920	MUD400□271N35□□□	
		30 x 25	0.15	920	MUD400□271O25□□□	
		22 x 50	0.15	1,100	MUD400□331M50□□□	
	330	25 x 40	0.15	1,100	MUD400□331N40□□□	
		30 x 30	0.15	1,100	MUD400□331O30□□□	
		35 x 25	0.15	1,100	MUD400□331P25□□□	

MUD series

Standard Ratings

Note1) Ripple current = mArms/105°C, 120Hz

WV (Vdc)	Cap (µF)	Size ØxL (mm)	Tan δ	Ripple <sup>1)</sup>	Code No
400	390	25 x 45	0.15	1,350	MUD400□391N45□□□
		30 x 35	0.15	1,350	MUD400□391O35□□□
		35 x 30	0.15	1,500	MUD400□391P30□□□
	470	25 x 50	0.15	1,500	MUD400□471N50□□□
		30 x 40	0.15	1,500	MUD400□471O40□□□
		35 x 30	0.15	1,500	MUD400□471P30□□□
	560	30 x 45	0.15	1,600	MUD400□561O45□□□
		35 x 35	0.15	1,600	MUD400□561P35□□□
	680	30 x 50	0.15	1,750	MUD400□681O50□□□
		35 x 40	0.15	1,750	MUD400□681P40□□□
	820	35 x 45	0.15	1,900	MUD400□821P45□□□
	1,000	35 x 50	0.15	2,100	MUD400□102P50□□□
420	120	22 x 30	0.20	750	MUD420□121M30□□□
		22 x 35	0.20	800	MUD420□151M35□□□
	150	25 x 25	0.20	780	MUD420□151N25□□□
		22 x 35	0.20	810	MUD420□181M35□□□
	180	25 x 30	0.20	880	MUD420□181N30□□□
		22 x 40	0.20	900	MUD420□221M40□□□
	220	25 x 35	0.20	1,000	MUD420□221N35□□□
		30 x 25	0.20	900	MUD420□221O25□□□
		22 x 50	0.20	1,100	MUD420□271M50□□□
	270	25 x 40	0.20	1,200	MUD420□271N40□□□
		30 x 30	0.20	1,200	MUD420□271O30□□□
		25 x 45	0.20	1,300	MUD420□331N45□□□
	330	30 x 35	0.20	1,380	MUD420□331O35□□□
		35 x 30	0.20	1,380	MUD420□331P30□□□
		25 x 50	0.20	1,390	MUD420□391N50□□□
	390	30 x 40	0.20	1,520	MUD420□391O40□□□
		35 x 30	0.20	1,400	MUD420□391P30□□□
		30 x 45	0.20	1,800	MUD420□471O45□□□
	470	35 x 35	0.20	1,600	MUD420□471P35□□□
		35 x 40	0.20	1,800	MUD420□561P40□□□
	680	35 x 45	0.20	1,900	MUD420□681P45□□□
450	100	22 x 25	0.20	620	MUD450□101M25□□□
		22 x 30	0.20	670	MUD450□121M30□□□
	120	25 x 25	0.20	670	MUD450□121N25□□□
		22 x 35	0.20	700	MUD450□151M35□□□
	150	25 x 30	0.20	770	MUD450□151N30□□□
		22 x 40	0.20	770	MUD450□181M40□□□
	180	25 x 30	0.20	770	MUD450□181N30□□□
		22 x 45	0.20	850	MUD450□221M45□□□
	220	25 x 35	0.20	850	MUD450□221N35□□□
		30 x 30	0.20	760	MUD450□221O30□□□
		22 x 50	0.20	950	MUD450□271M50□□□
	270	25 x 40	0.20	950	MUD450□271N40□□□
		30 x 30	0.20	950	MUD450□271O30□□□
		35 x 25	0.20	950	MUD450□271P25□□□
		25 x 50	0.20	1,100	MUD450□331N50□□□
	330	30 x 35	0.20	1,100	MUD450□331O35□□□
		35 x 30	0.20	1,100	MUD450□331P30□□□
		30 x 40	0.20	1,300	MUD450□391O40□□□
	390	35 x 35	0.20	1,300	MUD450□391P35□□□
		30 x 45	0.20	1,440	MUD450□471O45□□□
	470	35 x 40	0.20	1,440	MUD450□471P40□□□
		35 x 45	0.20	1,600	MUD450□561P45□□□
	680	35 x 50	0.20	1,850	MUD450□681P50□□□