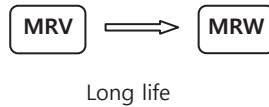


MRW series

- Long Life
- High-Ripple current
- RoHS compliant

- 105°C 15,000Hrs assured.
- Long life, High ripple
- For Ballaster, LED power
- RoHS compliant
- Halogen-free capacitors are also available.

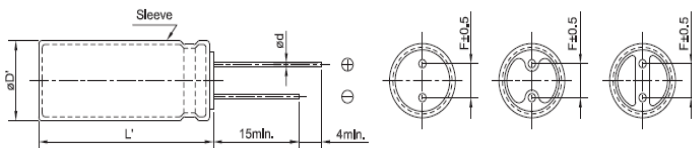


Specifications

Item	Characteristics															
Rated Voltage Range	160 ~ 400 Vdc		450 ~ 500 Vdc													
Operating Temperature Range	-40 ~ +105°C		-25 ~ +105°C													
Capacitance Tolerance	±20% (M)		(at 20°C, 120Hz)													
Leakage Current	I=0.02CV+10(µA) at 160~400Vdc (at 20°C, 2min) I=0.03CV+10(µA) at 450, 500Vdc (at 20°C, 2min) Where, I:Max. Leakage current(µA), C:Nominal capacitance(µF), V:Rated voltage(Vdc)															
Dissipation Factor(Tanδ)	<table border="1"> <tr> <td>Rated voltage (Vdc)</td> <td>160 ~ 400</td> <td>450</td> <td>500</td> </tr> <tr> <td>Tanδ (max.)</td> <td>0.08</td> <td>0.10</td> <td>0.20</td> </tr> </table> (at 20°C, 120Hz)				Rated voltage (Vdc)	160 ~ 400	450	500	Tanδ (max.)	0.08	0.10	0.20				
Rated voltage (Vdc)	160 ~ 400	450	500													
Tanδ (max.)	0.08	0.10	0.20													
Temperature characteristics (Max,impedance ratio)	<table border="1"> <tr> <td>Rated voltage (Vdc)</td> <td>160 ~ 250</td> <td>350 ~ 400</td> <td>450 ~ 500</td> </tr> <tr> <td>Z(-25°C)/Z(20°C)</td> <td>3</td> <td>5</td> <td>6</td> </tr> <tr> <td>Z(-40°C)/Z(20°C)</td> <td>6</td> <td>6</td> <td>-</td> </tr> </table> (at 120Hz)				Rated voltage (Vdc)	160 ~ 250	350 ~ 400	450 ~ 500	Z(-25°C)/Z(20°C)	3	5	6	Z(-40°C)/Z(20°C)	6	6	-
Rated voltage (Vdc)	160 ~ 250	350 ~ 400	450 ~ 500													
Z(-25°C)/Z(20°C)	3	5	6													
Z(-40°C)/Z(20°C)	6	6	-													
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°C15,000hrs. ( 10,000hrs for 500Vdc ) 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 ≤500%The initial specified value															

Dimensions

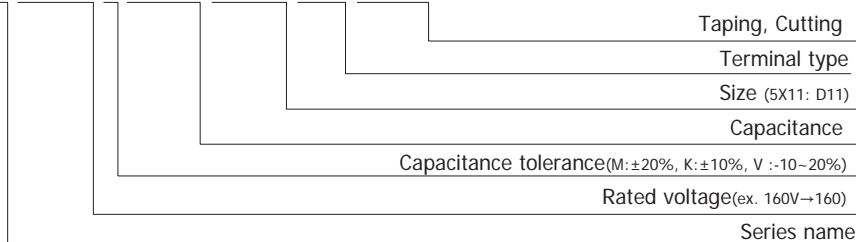
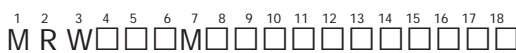
Unit(mm)



	6.3	8	10	12.5	16	18	20
ØD	6.3	8	10	12.5	16	18	20
Ød	0.5	0.5/0.6	0.6	0.6	0.8	0.8	0.8
F	2.5	3.5	5.0	5.0	7.5	7.5	7.5
ØD'	ØD+0.5 max.						
L'	L+2.0 max						

- Printed black color letter on PET red sleeve

Code numbering system



Ø6.3	F
Ø8	G
Ø10	X
Ø12.5	J
Ø16	K
Ø18	L



**MRW series**

**Standard Ratings**

Note1) Ripple current = mArms/105°C, 100kHz

WV (Vdc)	Cap (uF)	Size ØxL(mm)	Tan δ	Ripple <sup>1)</sup>	Code No
160	1.0	6.3 x 12	0.08	45	MRW160□1R0E12CS□□□
	1.5	6.3 x 12	0.08	50	MRW160□1R5E12CS□□□
	1.8	6.3 x 12	0.08	55	MRW160□1R8E12CS□□□
	2.2	6.3 x 12	0.08	61	MRW160□2R2E12CS□□□
	2.8	6.3 x 12	0.08	78	MRW160□2R8E12CS□□□
	3.3	6.3 x 12	0.08	92	MRW160□3R3E12CS□□□
	4.7	8 x 12	0.08	100	MRW160□4R7F12CS□□□
	5.6	8 x 12	0.08	107	MRW160□5R6F12CS□□□
	6.8	8 x 16	0.08	115	MRW160□6E8F16CS□□□
	8.2	8 x 16	0.08	189	MRW160□8R2F16CS□□□
	10	8 x 16	0.08	300	MRW160□100F16CS□□□
	15	8 x 20	0.08	350	MRW160□150F20CS□□□
	22	10 x 20	0.08	500	MRW160□220G20CS□□□
	33	10 x 20	0.08	650	MRW160□330G20CS□□□
	47	10 x 33	0.08	750	MRW160□470G33CS□□□
	68	12.5 x 20	0.08	1,180	MRW160□680X20CS□□□
100	12.5 x 25	0.08	1,410	MRW160□101X25CS□□□	
150	16 x 25	0.08	1,890	MRW160□151J25CS□□□	
220	18 x 25	0.08	2,380	MRW160□221K25CS□□□	
200	1.0	6.3 x 12	0.08	62	MRW200□1R0E12CS□□□
	1.5	6.3 x 12	0.08	66	MRW200□1R5E12CS□□□
	1.8	6.3 x 12	0.08	74	MRW200□1R8E12CS□□□
	2.2	6.3 x 12	0.08	81	MRW200□2R2E12CS□□□
	2.8	6.3 x 12	0.08	96	MRW200□2R8E12CS□□□
	3.3	6.3 x 12	0.08	112	MRW200□3R3E12CS□□□
	4.7	8 x 11.5	0.08	160	MRW200□4R7F12CS□□□
	5.6	8 x 11.5	0.08	190	MRW200□5R6F12CS□□□
	6.8	8 x 16	0.08	232	MRW200□6R8F16CS□□□
	8.2	8 x 16	0.08	279	MRW200□8R2F16CS□□□
	10	8 x 16	0.08	300	MRW200□100F16CS□□□
	10	10 x 16	0.08	320	MRW200□100G16CS□□□
	15	8 x 20	0.08	358	MRW200□150F20CS□□□
	22	10 x 16	0.08	500	MRW200□220G16CS□□□
	22	10 x 20	0.08	526	MRW200□220G20CS□□□
	33	10 x 20	0.08	652	MRW200□330G20CS□□□
47	12.5 x 20	0.08	984	MRW200□470X20CS□□□	
68	12.5 x 25	0.08	1,300	MRW200□680X25CS□□□	
68	16 x 20	0.08	1,280	MRW200□680J20CS□□□	
82	16 x 20	0.08	1,380	MRW200□820J20CS□□□	
100	16 x 20	0.08	1,420	MRW200□101J20CS□□□	
100	16 x 25	0.08	1,494	MRW200□101J25CS□□□	
150	16 x 25	0.08	1,890	MRW200□151J25CS□□□	
150	16 x 30	0.08	1,989	MRW200□151J30CS□□□	
250	1.0	6.3 x 12	0.08	62	MRW250□1R0E12CS□□□
	1.5	6.3 x 12	0.08	66	MRW250□1R5E12CS□□□
	1.8	6.3 x 12	0.08	72	MRW250□1R8E12CS□□□
	2.2	6.3 x 12	0.08	81	MRW250□2R2E12CS□□□
	2.8	6.3 x 12	0.08	95	MRW250□2R8E12CS□□□
	3.3	6.3 x 12	0.08	112	MRW250□3R3E12CS□□□
	4.7	8 x 11.5	0.08	160	MRW250□4R7F12CS□□□
	5.6	8 x 11.5	0.08	190	MRW250□5R6F12CS□□□
	6.8	8 x 16	0.08	226	MRW250□6R8F16CS□□□
	8.2	8 x 20	0.08	288	MRW250□8R2F20CS□□□
	10	8 x 20	0.08	320	MRW250□100F20CS□□□
	15	8 x 20	0.08	422	MRW250□150F20CS□□□
	22	10 x 16	0.08	470	MRW250□220G16CS□□□
	22	10 x 20	0.08	552	MRW250□220G20CS□□□
	33	12.5 x 16	0.08	764	MRW250□330X16CS□□□
	33	12.5 x 20	0.08	802	MRW250□330X20CS□□□
47	12.5 x 20	0.08	982	MRW250□470X20CS□□□	
56	12.5 x 25	0.08	1,080	MRW250□560X25CS□□□	

WV (Vdc)	Cap (uF)	Size ØxL(mm)	Tan δ	Ripple <sup>1)</sup>	Code No
250	68	16 x 25	0.08	1,370	MRW250□680J25CS□□□
	82	12.5 x 30	0.08	1,510	MRW250□820X30CS□□□
	100	16 x 30	0.08	1,610	MRW250□101J30CS□□□
	150	16 x 35	0.08	1,770	MRW250□151J35CS□□□
350	1.0	6.3 x 12	0.08	64	MRW350□1R0E12CS□□□
	1.5	6.3 x 12	0.08	75	MRW350□1R5E12CS□□□
	1.8	6.3 x 12	0.08	86	MRW350□1R8E12CS□□□
	2.2	8 x 11.5	0.08	96	MRW350□2R2F12CS□□□
	2.8	8 x 11.5	0.08	100	MRW350□2R8F12CS□□□
	3.3	8 x 11.5	0.08	118	MRW350□3R3F12CS□□□
	4.7	8 x 16	0.08	136	MRW350□4R7F16CS□□□
	5.6	8 x 16	0.08	164	MRW350□5R6F16CS□□□
	6.8	8 x 20	0.08	254	MRW350□6R8F20CS□□□
	6.8	10 x 16	0.08	254	MRW350□6R8G16CS□□□
	8.2	8 x 20	0.08	280	MRW350□8R2F20CS□□□
	10	8 x 20	0.08	320	MRW350□100F20CS□□□
	10	10 x 20	0.08	350	MRW350□100G20CS□□□
	15	10 x 20	0.08	450	MRW350□150G20CS□□□
	22	12.5 x 20	0.08	650	MRW350□220X20CS□□□
	33	12.5 x 20	0.08	856	MRW350□330X20CS□□□
33	16 x 20	0.08	900	MRW350□330J20CS□□□	
47	16 x 20	0.08	1,080	MRW350□470J20CS□□□	
68	18 x 20	0.08	1,176	MRW350□680K20CS□□□	
68	18 x 25	0.08	1,474	MRW350□680K25CS□□□	
82	18 x 25	0.08	1,532	MRW350□820K25CS□□□	
100	18 x 30	0.08	1,702	MRW350□101K30CS□□□	
400	1.0	8 x 11.5	0.08	72	MRW400□1R0F12CS□□□
	1.5	8 x 11.5	0.08	90	MRW400□1R5F12CS□□□
	1.5	8 x 16	0.08	102	MRW400□1R5F16CS□□□
	1.8	8 x 11.5	0.08	96	MRW400□1R8F12CS□□□
	1.8	8 x 16	0.08	120	MRW400□1R8F16CS□□□
	2.2	8 x 11.5	0.08	100	MRW400□2R2F11CS□□□
	2.2	8 x 16	0.08	140	MRW400□2R2F16CS□□□
	2.8	8 x 16	0.08	146	MRW400□2R8F16CS□□□
	3.3	8 x 16	0.08	150	MRW400□3R3F16CS□□□
	3.3	10 x 16	0.08	180	MRW400□3R3G16CS□□□
	4.7	8 x 20	0.08	198	MRW400□4R7F20CS□□□
	4.7	10 x 16	0.08	222	MRW400□4R7G16CS□□□
	5.6	8 x 20	0.08	226	MRW400□5R6F20CS□□□
	5.6	10 x 16	0.08	250	MRW400□5R6G16CS□□□
	6.8	8 x 20	0.08	252	MRW400□6R8F20CS□□□
	6.8	10 x 16	0.08	266	MRW400□6R8G16CS□□□
8.2	10 x 16	0.08	280	MRW400□8R2G16CS□□□	
8.2	10 x 20	0.08	294	MRW400□8R2G20CS□□□	
10	10 x 20	0.08	350	MRW400□100G20CS□□□	
15	12.5 x 20	0.08	550	MRW400□150X20CS□□□	
22	12.5 x 25	0.08	760	MRW400□220X25CS□□□	
22	16 x 20	0.08	756	MRW400□220J20CS□□□	
33	16 x 20	0.08	900	MRW400□330J20CS□□□	
33	16 x 25	0.08	1,125	MRW400□330J25CS□□□	
47	16 x 30	0.08	1,180	MRW400□470J30CS□□□	
47	18 x 25	0.08	1,180	MRW400□470K25CS□□□	
56	18 x 25	0.08	1,476	MRW400□560K25CS□□□	
68	18 x 30	0.08	1,548	MRW400□680K30CS□□□	
100	18 x 40	0.08	1,720	MRW400□101K40CS□□□	
450	1.0	8 x 11.5	0.10	82	MRW450□1R0F12CS□□□
	1.5	8 x 11.5	0.10	88	MRW450□1R5F12CS□□□
	1.8	8 x 11.5	0.10	90	MRW450□1R8F12CS□□□
	2.2	8 x 16	0.10	96	MRW450□2R2F16CS□□□
	2.8	8 x 16	0.10	120	MRW450□2R8F16CS□□□
3.3	8 x 16	0.10	128	MRW450□3R3F16CS□□□	



# MRW series

## Standard Ratings Note1) Ripple current = mA rms/105°C, 100kHz

WV (Vdc)	Cap (µF)	Size ØxL (mm)	Tan δ	Ripple <sup>1)</sup>	Code No
450	4.7	10 x 16	0.10	180	MRW450□4R7G16CS□□□
	5.6	10 x 20	0.10	250	MRW450□5R6G20CS□□□
	6.8	10 x 20	0.10	265	MRW450□6R8G20CS□□□
	8.2	10 x 20	0.10	280	MRW450□8R2G20CS□□□
	10	10 x 25	0.10	330	MRW450□100G25CS□□□
	15	12.5 x 20	0.10	450	MRW450□150X20CS□□□
		12.5 x 25	0.10	600	MRW450□220X25CS□□□
	22	16 x 20	0.10	730	MRW450□220G20CS□□□
		16 x 25	0.10	980	MRW450□330J25CS□□□
	47	16 x 35	0.10	1,080	MRW450□470J35CS□□□
		18 x 25	0.10	1,202	MRW450□470K25CS□□□
	56	18 x 30	0.10	1,430	MRW450□560K30CS□□□
	68	18 x 35	0.10	1,502	MRW450□680K35CS□□□
100	18 x 45	0.10	1,668	MRW450□101K45CS□□□	
500	10	12.5 x 20	0.20	320	MRW500□100X20CS□□□
		12.5 x 25	0.20	336	MRW500□100X25CS□□□
	15	12.5 x 25	0.20	440	MRW500□150X25CS□□□
		16 x 20	0.20	440	MRW500□150J20CS□□□
	22	12.5 x 35	0.20	560	MRW500□220X35CS□□□
		16 x 25	0.20	560	MRW500□220J25CS□□□
	33	18 x 25	0.20	700	MRW500□330K25CS□□□
	47	18 x 30	0.20	880	MRW500□470K30CS□□□
	56	18 x 35	0.20	960	MRW500□560K35CS□□□
	68	18 x 40	0.20	1,100	MRW500□680K40CS□□□

### Rated ripple current multipliers

Freq. (Hz) Cap. (µF)	120	1K	10K	50K	100K
1 ~ 5.6	0.20	0.40	0.80	0.90	1.00
6.8 ~ 15	0.30	0.60	0.90	0.95	1.00
22 ~ 82	0.40	0.70	0.90	0.95	1.00
100 ~	0.45	0.75	0.90	0.95	1.00