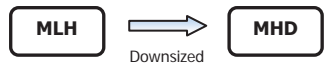


MHD series

- Standard
- Low Profile
- RoHS compliant
- Solvent Proof

- 105°C 1,000Hrs(∅5~∅8), 2,000hrs(∅10~∅22) assured.
- Solvent Proof (6.3Vdc~100Vdc), Non-solvent proof (160Vdc~500Vdc)
- Halogen-free capacitors are also available.

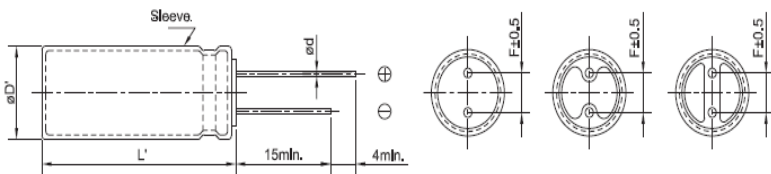


Specifications

Item	Characteristics																																											
Rated Voltage Range	6.3 ~ 100Vdc	160 ~ 250Vdc	350 ~ 500Vdc																																									
Operating Temperature Range	-55 ~ +105°C	-40 ~ +105°C	-25 ~ +105°C																																									
Capacitance Tolerance	±20% (M) (at 20°C, 120Hz)																																											
Leakage Current	After 1 minute: 0.03 CV(μA) or 4μA, whichever is greater																																											
	After 2 minute: 0.03 CV(μA) or 3μA, whichever is greater																																											
Where, C: Nominal capacitance(μF), V: Rated voltage(VDC) (at 20°C, 2 minutes)																																												
Dissipation Factor(Tanδ)	<table border="1"> <tr> <td>Rated Voltage(VDC)</td> <td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td><td>63</td><td>100</td><td>160</td><td>200~250</td><td>350~500</td> </tr> <tr> <td>Tanδ(Max.)</td> <td>0.30</td><td>0.24</td><td>0.20</td><td>0.16</td><td>0.14</td><td>0.12</td><td>0.10</td><td>0.09</td><td>0.20</td><td>0.24</td><td></td> </tr> </table>											Rated Voltage(VDC)	6.3	10	16	25	35	50	63	100	160	200~250	350~500	Tanδ(Max.)	0.30	0.24	0.20	0.16	0.14	0.12	0.10	0.09	0.20	0.24										
	Rated Voltage(VDC)	6.3	10	16	25	35	50	63	100	160	200~250	350~500																																
Tanδ(Max.)	0.30	0.24	0.20	0.16	0.14	0.12	0.10	0.09	0.20	0.24																																		
When the capacitance exceeds 1,000μF, 0.02 shall be added every 1,000μF increase. (at 20°C, 120Hz)																																												
Temperature characteristics (Max, impedance ratio)	<table border="1"> <tr> <td>Rated Voltage(VDC)</td> <td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td><td>63-100</td><td>160</td><td>200~250</td><td>350~500</td> </tr> <tr> <td>Z(-25°C)/Z(20°C)</td> <td>5</td><td>4</td><td>3</td><td>2</td><td>2</td><td>2</td><td>2</td><td>3</td><td>3</td><td>6</td> </tr> <tr> <td>Z(-40°C)/Z(20°C)</td> <td>12</td><td>10</td><td>8</td><td>5</td><td>4</td><td>3</td><td>4</td><td>4</td><td>4</td><td>-</td> </tr> </table>											Rated Voltage(VDC)	6.3	10	16	25	35	50	63-100	160	200~250	350~500	Z(-25°C)/Z(20°C)	5	4	3	2	2	2	2	3	3	6	Z(-40°C)/Z(20°C)	12	10	8	5	4	3	4	4	4	-
	Rated Voltage(VDC)	6.3	10	16	25	35	50	63-100	160	200~250	350~500																																	
	Z(-25°C)/Z(20°C)	5	4	3	2	2	2	2	3	3	6																																	
Z(-40°C)/Z(20°C)	12	10	8	5	4	3	4	4	4	-																																		
(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 2,000 hours at 105°C. (where 1,000hrs about ∅5~∅8) Capacitance change ≤ ±20% of the initial value Tanδ ≤ 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 (where, 200% for ≥ WV 160 VDC)																																											

Dimension (CE04 Type)

Unit (mm)

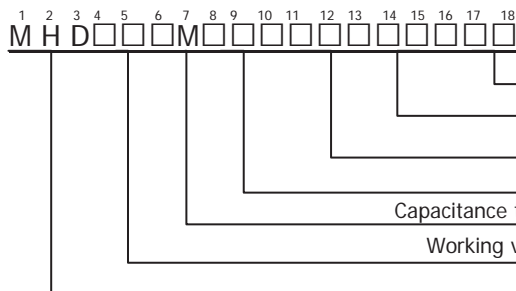


∅D	5	6.3	8	10	12.5	16	18	22
∅d	0.5	0.5	0.6	0.6	0.6	0.8	0.8	0.8
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5	10.0
∅D'	∅D+0.5 max.							
L'	L+1.5 max.				L+2.0 max.			

• Printed white color letter on PET/PVC brown sleeve

※ ∅8 X 9L, ∅D' ≤ D+0.5 and L ≤ L+1.0

Code numbering system



- Taping, Cutting
- Terminal type
- Size (3x5 : A05)
- Capacitance
- Capacitance tolerance (M: ±20%, K: ±10%, V: -10~20%)
- Working voltage (ex. 6.3V→6R3, 10V→010, 50V→050)
- Series name

∅5	D
∅6.3	E
∅8	F
∅10	G
∅12.5	X
∅16	J
∅18	K
∅20	L
∅22	M

MHDSERIES ■ Standard Ratings

WV (Vdc)	Cap (uF)	Size ØxL (mm)	Tanδ	Ripple Current (mA _{RMS} /105°C,120Hz)	Code No
6.3	1,000	8x 11.5	0.30	390	MHD6R3□102F12CS□□□
	2,200	10 x16	0.32	635	MHD6R3□222G16CS□□□
	3,300	10 x 20	0.34	840	MHD6R3□332G20CS□□□
	4,700	12.5 x 20	0.34	1,090	MHD6R3□472X20CS□□□
	6,800	12.5 x 25	0.38	1,350	MHD6R3□682X25CS□□□
	10,000	16 x 25	0.46	1,650	MHD6R3□103J25CS□□□
	15,000	16 x 31.5	0.56	1,820	MHD6R3□153J32CS□□□
	22,000	18 x 35.5	0.70	2,280	MHD6R3□223K36CS□□□
	33,000	20 x 40	0.90	2,500	MHD6R3□333L40CS□□□
	47,000	22 x 50	1.20	2,780	MHD6R3□473M50CS□□□
10	220	5 x 11	0.24	155	MHD010□221D11CS□□□
	330	6.3 x 11	0.24	210	MHD010□331E11CS□□□
	470	6.3 x 11	0.24	250	MHD010□471E11CS□□□
	680	8 x 11.5	0.24	340	MHD010□681F12CS□□□
	1,000	10 x 12.5	0.24	460	MHD010□102G13CS□□□
	2,200	10 x16	0.26	705	MHD010□222G16CS□□□
	3,300	12.5 x 20	0.28	1,000	MHD010□332X20CS□□□
	4,700	12.5 x 25	0.30	1,260	MHD010□472X25CS□□□
	6,800	16x25	0.34	1,570	MHD010□682J25CS□□□
	10,000	16 x 31.5	0.42	1,820	MHD010□103J32CS□□□
	15,000	16x 35.5	0.52	2,050	MHD010□153J36CS□□□
	22,000	18 x 40	0.66	2,420	MHD010□223K40CS□□□
	33,000	22 x 40	0.88	3,210	MHD010□333M40CS□□□
16	220	6.3 x 11	0.20	190	MHD016□221E11CS□□□
	330	6.3 x 11	0.20	225	MHD016□331E11CS□□□
	470	8 x 11.5	0.20	315	MHD016□471F12CS□□□
	680	8 x 16	0.20	420	MHD016□681F16CS□□□
	1,000	10 x12.5	0.20	500	MHD016□102G13CS□□□
	2,200	10 x 20	0.20	710	MHD016□222G20CS□□□
	3,300	12.5 x 25	0.24	1,170	MHD016□332X25CS□□□
	4,700	16 x 25	0.26	1,500	MHD016□472J25CS□□□
	6,800	16 x 25	0.30	1,600	MHD016□682J25CS□□□
	10,000	16 x 35.5	0.38	1,930	MHD016□103J36CS□□□
	15,000	18 X 40	0.48	2,210	MHD016□153K40CS□□□
	22,000	22 x 40	0.62	2,700	MHD016□223M40CS□□□
	25	100	5 x 11	0.16	125
220		6.3 x 11	0.16	200	MHD025□221E11CS□□□
330		8 x 11.5	0.16	310	MHD025□331F12CS□□□
470		10x 12.5	0.16	380	MHD025□471G13CS□□□
680		10 x 16	0.16	480	MHD025□681G16CS□□□
1,000		10 x 20	0.16	610	MHD025□102G20CS□□□
2,200		12.5 x 25	0.18	1,090	MHD025□222X25CS□□□
3,300		16 x 25	0.20	1,400	MHD025□332J25CS□□□
4,700		16 x 25	0.22	1,570	MHD025□472J25CS□□□
6,800		16 x 35.5	0.26	1,850	MHD025□682J36CS□□□
10,000		18 x 40	0.34	2,000	MHD025□103K40CS□□□
15,000	22 x 40	0.44	2,750	MHD025□153M40CS□□□	
35	47	5 x 11	0.14	93	MHD035□470D11CS□□□
	68	6.3 x 11	0.14	110	MHD035□680E11CS□□□
	100	6.3 x 11	0.14	150	MHD035□101E11CS□□□
	220	8 x 11.5	0.14	270	MHD035□221F12CS□□□
	330	10 x 12.5	0.14	350	MHD035□331G13CS□□□
	470	10 x 16	0.14	460	MHD035□471G16CS□□□
	680	10 x 20	0.14	680	MHD035□681G20CS□□□
	1,000	12.5 x 20	0.14	810	MHD035□102X20CS□□□
	2,200	16 x 25	0.16	1,260	MHD035□222J25CS□□□
	3,300	16 x 31.5	0.18	1,500	MHD035□332J32CS□□□
	4,700	16 x 35.5	0.20	1,780	MHD035□472J36CS□□□
	6,800	18 x 40	0.24	2,000	MHD035□682K40CS□□□
	10,000	22 x 50	0.32	2,650	MHD035□103M50CS□□□

WV (Vdc)	Cap (uF)	Size ØxL (mm)	Tanδ	Ripple Current (mA _{RMS} /105°C,120Hz)	Code No
50	1.0	5 x 11	0.12	13	MHD050□1R0D11CS□□□
	2.2	5 x 11	0.12	20	MHD050□2R2D11CS□□□
	3.3	5 x 11	0.12	25	MHD050□3R3D11CS□□□
	4.7	5 x 11	0.12	30	MHD050□4R7D11CS□□□
	10	5 x 11	0.12	46	MHD050□100D11CS□□□
	22	5 x 11	0.12	68	MHD050□220D11CS□□□
	33	5 x 11	0.12	90	MHD050□330D11CS□□□
	47	6.3 x 11	0.12	115	MHD050□470E11CS□□□
	68	6.3 x 11	0.12	150	MHD050□680E11CS□□□
	100	8 x 11.5	0.12	190	MHD050□101F12CS□□□
	220	10 x 12.5	0.12	300	MHD050□221G13CS□□□
	330	10 x 16	0.12	410	MHD050□331G16CS□□□
	470	10 x 20	0.12	540	MHD050□471G20CS□□□
	1,000	12.5 x 25	0.12	950	MHD050□102X25CS□□□
	2,200	16 x 31.5	0.14	1,410	MHD050□222J32CS□□□
	3,300	18 x 35.5	0.16	1,770	MHD050□332K36CS□□□
	4,700	20 x 40	0.18	2,100	MHD050□472L40CS□□□
6,800	22 x 50	0.22	2,500	MHD050□682M50CS□□□	
63	22	5x 11	0.10	71	MHD063□220D11CS□□□
	33	6.3x 11	0.10	100	MHD063□330E11CS□□□
	47	6.3 x 11	0.10	120	MHD063□470E11CS□□□
	68	8 x 11.5	0.10	155	MHD063□680F12CS□□□
	100	8 x 11.5	0.10	200	MHD063□101F12CS□□□
	220	10 x16	0.10	335	MHD063□221G16CS□□□
	330	10 x 20	0.10	510	MHD063□331G20CS□□□
	470	12.5 x 20	0.10	640	MHD063□471X20CS□□□
	1,000	16 x25	0.10	930	MHD063□102J25CS□□□
	2,200	18 x 35.5	0.11	1,650	MHD063□222K36CS□□□
	3,300	20 x 40	0.13	1,950	MHD063□332L40CS□□□
	4,700	22 x 50	0.15	2,450	MHD063□472M50CS□□□
	100	1.0	5 x 11	0.08	15
2.2		5 x 11	0.08	21	MHD100□2R2D11CS□□□
3.3		5 x 11	0.08	29	MHD100□3R3D11CS□□□
4.7		5 x 11	0.08	32	MHD100□4R7D11CS□□□
6.8		5 x 11	0.08	41	MHD100□6R8D11CS□□□
10		5 x 11	0.08	50	MHD100□100D11CS□□□
22		6.3x 11	0.08	93	MHD100□220E11CS□□□
33		8 x 11.5	0.08	130	MHD100□330F12CS□□□
47		8 x 11.5	0.08	140	MHD100□470F12CS□□□
68		10 x 12.5	0.08	190	MHD100□680G13CS□□□
100		10 x 16	0.08	240	MHD100□101G16CS□□□
220		12.5 x 20	0.08	390	MHD100□221X20CS□□□
330		12.5 x 25	0.08	540	MHD100□331X25CS□□□
470		16 x 25	0.08	715	MHD100□471J25CS□□□
680		16 x 31.5	0.08	820	MHD100□681J32CS□□□
1,000		18 x 35.5	0.08	960	MHD100□102K36CS□□□
2,200		22x50	0.10	1,750	MHD100□222M50CS□□□
160	10	8 x 11.5	0.20	41	MHD160□100F12CS□□□
	22	10 x 12.5	0.20	92	MHD160□220G13CS□□□
	33	10 x 16	0.20	125	MHD160□330G16CS□□□
	47	10 x 20	0.20	150	MHD160□470G20CS□□□
	68	12.5 x 20	0.20	250	MHD160□680X20CS□□□
	100	12.5 x 25	0.20	310	MHD160□101X25CS□□□
	220	16 x 31.5	0.20	540	MHD160□221J32CS□□□
	330	18 x 35.5	0.20	705	MHD160□331K36CS□□□
	470	18 x 40	0.20	855	MHD160□471K40CS□□□
	200	1.0	6.3x 11	0.20	16
2.2		6.3x 11	0.20	25	MHD200□2R2E11CS□□□
3.3		6.3x 11	0.20	30	MHD200□3R3E11CS□□□
4.7		6.3x 11	0.20	35	MHD200□4R7E11CS□□□
10		8x 11.5	0.20	57	MHD200□100F12CS□□□
22		10 x 16	0.20	105	MHD200□220G16CS□□□
33		10 x 20	0.20	140	MHD200□330G20CS□□□
47		12.5 x 20	0.20	195	MHD200□470X20CS□□□
68		12.5 x 25	0.20	250	MHD200□680X25CS□□□

MHDSERIES

■ Standard Rating

WV (Vdc)	Cap (uF)	Size ØxL (mm)	Tanδ	Ripple Current (mA rms / 105°C, 120Hz)	Code No
200	100	16 x 25	0.20	335	MHD200□101J25CS□□□
	220	16 x 35.5	0.20	500	MHD200□221J36CS□□□
	330	18 x 40	0.20	675	MHD200□331K40CS□□□
250	3.3	6.3 x 11	0.20	28	MHD250□3R3E11CS□□□
	4.7	6.3 x 11	0.20	35	MHD250□4R7E11CS□□□
	10	10 x 12.5	0.20	71	MHD250□100G13CS□□□
	22	10 x 20	0.20	105	MHD250□220G20CS□□□
	33	10 x 20	0.20	140	MHD250□330G20CS□□□
	47	12.5 x 20	0.20	190	MHD250□470X20CS□□□
	68	16 x 25	0.20	270	MHD250□680J25CS□□□
	100	16 x 25	0.20	310	MHD250□101J25CS□□□
	220	18 x 35.5	0.20	485	MHD250□221K36CS□□□
350	2.2	6.3 x 11	0.24	21	MHD350□2R2E11CS□□□
	3.3	8 x 11.5	0.24	30	MHD350□3R3F12CS□□□
	4.7	8 x 11.5	0.24	39	MHD350□4R7F12CS□□□
	10	10 x 12.5	0.24	64	MHD350□100G13CS□□□
	22	12.5 x 20	0.24	130	MHD350□220X20CS□□□
	33	12.5 x 25	0.24	170	MHD350□330X25CS□□□
	47	16 x 25	0.24	230	MHD350□470J25CS□□□
	68	16 x 25	0.24	285	MHD350□680J25CS□□□
100	18 x 31.5	0.24	375	MHD350□101K32CS□□□	
400	1.0	6.3 x 11	0.24	15	MHD400□1R0E11CS□□□
	2.2	8 x 11.5	0.24	27	MHD400□2R2F12CS□□□
	3.3	8 x 11.5	0.24	34	MHD400□3R3F12CS□□□
	4.7	10 x 12.5	0.24	42	MHD400□4R7G13CS□□□
	6.8	10 x 16	0.24	52	MHD400□6R8G16CS□□□
	10	10 x 16	0.24	64	MHD400□100G16CS□□□
	22	12.5 x 25	0.24	145	MHD400□220X25CS□□□
	33	16 x 25	0.24	195	MHD400□330J25CS□□□
	47	16 x 25	0.24	200	MHD400□470J25CS□□□
	68	16 x 31.5	0.24	240	MHD400□680J32CS□□□
100	18 x 35.5	0.24	310	MHD400□101K36CS□□□	
450	2.2	8 x 11.5	0.24	20	MHD450□2R2F12CS□□□
	3.3	10 x 12.5	0.24	28	MHD450□3R3G13CS□□□
	4.7	10 x 12.5	0.24	32	MHD450□4R7G13CS□□□
	6.8	10 x 16	0.24	43	MHD450□6R8G16CS□□□
	10	10 x 20	0.24	56	MHD450□100G20CS□□□
	22	12.5 x 25	0.24	100	MHD450□220X25CS□□□
	33	16 x 25	0.24	125	MHD450□330J25CS□□□
	47	16 x 31.5	0.24	155	MHD450□470J32CS□□□
	68	18 x 35.5	0.24	185	MHD450□680K36CS□□□
100	18 x 40	0.24	200	MHD450□101K40CS□□□	

WV (Vdc)	Cap (uF)	Size ØxL (mm)	Tanδ	Ripple Current (mA rms / 105°C, 120Hz)	Code No
500	1.0	8 x 11.5	0.24	12	MHD500□1R0F11CS□□□
	2.2	8 x 16	0.24	18	MHD500□2R2F16CS□□□
	3.3	10 x 12.5	0.24	22	MHD500□3R3G13CS□□□
	4.7	10 x 16	0.24	26	MHD500□4R7G16CS□□□
	6.8	10 x 20	0.24	32	MHD500□6R8G20CS□□□
	10	12.5 x 20	0.24	42	MHD500□100X20CS□□□
	22	16 x 20	0.24	88	MHD500□220J20CS□□□
	33	16 x 31.5	0.24	108	MHD500□330J32CS□□□
	47	18 x 31.5	0.24	132	MHD500□470K32CS□□□
	68	18 x 35.5	0.24	158	MHD500□680K36CS□□□

■ RATED RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers (≤ 180)

Freq.(Hz) / Cap.(uF)	60	120	300	1k	10k ~
~6.8	0.65	1.00	1.35	1.75	2.30
10~68	0.75	1.00	1.25	1.50	1.75
100~1,000	0.80	1.00	1.15	1.30	1.40
2,000~	0.85	1.00	1.03	1.05	1.08

Frequency Multipliers (200 ≤)

Freq.(Hz) / Cap.(uF)	60	120	300	1k	10k ~
6.3 ~ 50	0.95	1.00	1.03	1.05	1.08
63 ~ 100	0.92	1.00	1.07	1.13	1.19