ELCON

Conductive Polymer Aluminum Solid Electrolytic Capacitors

HMB

105℃ Standard Series (Hybrid)

- 105℃ Standard.
- Load life of 5000 hours at 105℃.
- SMD type:Lead free reflow soldering condition at 260℃ peak correspondence.
- RoHS Compliance(2011/65/EU)

■SPECIFICATIONS

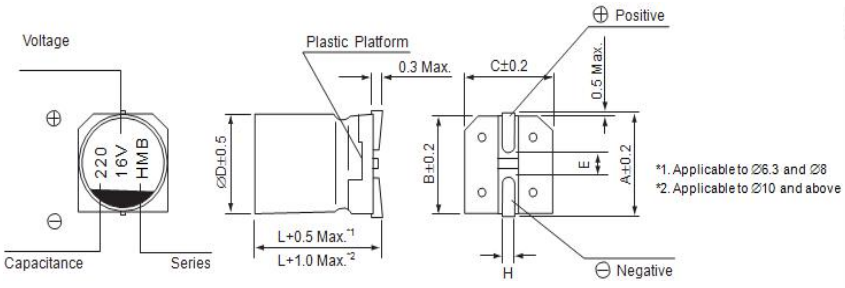
Items	Performance Characteristics		
Category Temperature Rang	-55 ~ +105℃		
Rated Voltage Range	16 ~ 100V		
Rated Capacitance Range	22 ~ 1500μF		
Capacitance Tolerance	± 20 % (at 120Hz , 20℃)		
Tangent of Loss Angle (tan δ	Less than or equal to the specified value at 120Hz, 20℃		
ESR(※1)	Less than or equal to the specified value at 100KHz, 20℃		
Leakage Current(※2)	Leakage current ≤ 0.01CV, (after 2 minutes application of rated voltage at 20°C).		
Temperature Characteristics (Max.	Z -25℃ / Z+20℃ ≤1.5 (100kHz) Z- 55℃ / Z+20℃ ≤2.0		
Endurance	The specifications listed at right shall be met when the capacitors are restored to 20 ℃ after the rated voltage is applied for 5000 hours at 105 ℃	Capacitance change	Within ±30% of the initial capacitance value(※3
		tan δ	200% or less than the initial specified value
		ESR(※1)	200% or less than the initial specified value
		Leakage current(※2)	Less than or equal to the initial specified value
Damp Heat (Steady State)	The specifications listed at right shall be met when the capacitors are restored to 20 ℃ after the rated voltage is applied for 2000 hours at 85℃, 85% RH.	Capacitance change	Within ±30% of the initial capacitance value(※3
		tan δ	200% or less than the initial specified value
		ESR(※1)	200% or less than the initial specified value
		Leakage current(※2)	Less than or equal to the initial specified value
Resistance to Soldering Heat	The following specifications shall be satisfied when the capacitors are restored to 20 ℃ after the soldering.	Capacitance change	Within ±10% of the initial capacitance value(※3
		tan δ	Less than or equal to the initial specified value
		ESR(※1)	Less than or equal to the initial specified value
		Leakage current(※2)	Less than or equal to the initial specified value
Sheif Life	After 1000 hours application of the rated voltage at 105°C, they meet the characteristics listed below.	Capacitance change	Within ±30% of the initial capacitance value(※3
		tan δ	200% or less than the initial specified value
		ESR(※1)	200% or less than the initial specified value
		Leakage current(※2)	Less than or equal to the initial specified value
Marking	Red print on the case top		

※1 ESR should be measured at both of the terminal ends closest where the terminals protrude through the plastic platform

※2 Conditioning: If any doubt arises, measure the leakage current after the voltage treatment of applying DC rated voltage continuously to the capacitor for 120 minuters at 105 ℃

※3 Initial value: The value before test of examination of resistance to soldering.

■ Dimensions



Type numbering system(Exp: 16V 220μF)

Φ x L(mm)

Size	6.3x6.0	6.3x7.7	8x10.5	8x12.5	10x10.5	10x12.5
ΦD	6.3	6.3	8.0	8.0	10.0	10.0
L	6.0	7.7	10.5	12.5	10.5	12.5
A	7.3	7.3	9.0	9.0	11.0	11.0
B	6.6	6.6	8.3	8.3	10.3	10.3
C	6.6	6.6	8.3	8.3	10.3	10.3
E	1.9	1.9	3.1	3.1	4.7	4.7
H	0.5-0.8	0.5-0.8	0.8-1.1	0.8-1.1	0.8-1.1	0.8-1.1

Voltage

V	16	25	35	50	63	80	100
Code	1C	1E	1V	1H	1J	1K	2A

■ FREQUENCY COEFFICIENT OF ALLOWABLE RIPPLE CURRENT

Frequency	120Hz≤f≤1KHz	1KHz≤f≤10KHz	10KHz≤f≤100KHz	100KHz≤f≤300KHz
Coefficient	0.10	0.40	0.70	1.00

HMB Series (Hybrid)

■STANDARD RATINGS

Rated voltage (V)(code)	Surge Voltage (V)	Rated Cpacitance (μF)	Case Size ΦD x L(mm)	tan δ	Leakage Current (μA)	ESR(mΩ) (at 100kHz 20℃)	Rated Ripple (mArms)	Part Number
16 (1C)	18.4	100	6.3x6.0	0.16	16	45	1600	EPHMB1C101M6306TR
		220	6.3x7.7	0.16	35.2	27	2200	EPHMB1C221M6377TR
		270	8x10.5	0.16	43.2	22	2500	EPHMB1C271M0810TR
		470	8x10.5	0.16	75.2	22	2500	EPHMB1C471M0810TR
		820	8x12.5	0.16	131.2	20	2700	EPHMB1C821M0812TR
		470	10x10.5	0.16	75.2	18	2600	EPHMB1C471M1010TR
		820	10x10.5	0.16	131.2	18	2600	EPHMB1C821M1012TR
		1500	10x12.5	0.16	240	14	3400	EPHMB1C152M1012TR
25 (1E)	28.7	68	6.3x6.0	0.14	17	50	1300	EPHMB1E680M6306TR
		100	6.3x7.7	0.14	25	30	2000	EPHMB1E101M6377TR
		150	6.3x7.7	0.14	37.5	30	2000	EPHMB1E151M6377TR
		220	8x10.5	0.14	55	27	2300	EPHMB1E221M0810TR
		330	8x10.5	0.14	82.5	27	2300	EPHMB1E331M0810TR
		470	8x12.5	0.14	117.5	23	2600	EPHMB1E471M0812TR
		330	10x10.5	0.14	82.5	20	2500	EPHMB1E331M1010TR
		470	10x10.5	0.14	117.5	20	2500	EPHMB1E471M1010TR
		680	10x12.5	0.14	170	15	3000	EPHMB1E681M1012TR
35 (1V)	40.2	68	6.3x6.0	0.12	23.8	60	1300	EPHMB1V680M6306TR
		100	6.3x7.7	0.12	35	35	2000	EPHMB1V101M6377TR
		150	8x10.5	0.12	52.5	27	2300	EPHMB1V151M0810TR
		180	8x10.5	0.12	63	27	2300	EPHMB1V181M0810TR
		220	8x12.5	0.12	77	24	2500	EPHMB1V221M0812TR
		270	10x10.5	0.12	94.5	20	2500	EPHMB1V271M1010TR
		330	10x10.5	0.12	115.5	20	2500	EPHMB1V331M1010TR
		470	10x12.5	0.12	164.5	16	2900	EPHMB1V471M1012TR
50 (1H)	57.5	27	6.3x6.0	0.10	13.5	80	1100	EPHMB1H270M6306TR
		33	6.3x7.7	0.10	16.5	40	1600	EPHMB1H330M6377TR
		68	8x10.5	0.10	34	30	1800	EPHMB1H680M0810TR
		100	8x10.5	0.10	50	30	1800	EPHMB1H101M0810TR
		120	8x12.5	0.10	60	28	2000	EPHMB1H121M0812TR
		100	10x10.5	0.10	50	25	2000	EPHMB1H101M1010TR
		150	10x10.5	0.10	75	25	2000	EPHMB1H151M1010TR
		220	10x12.5	0.10	110	23	2200	EPHMB1H221M1012TR
63 (1J)	72.4	22	6.3x7.7	0.08	13.86	80	1500	EPHMB1J220M6377TR
		33	8x10.5	0.08	20.79	40	1600	EPHMB1J330M0810TR
		47	8x10.5	0.08	29.61	40	1600	EPHMB1J470M0810TR
		100	8x12.5	0.08	63	36	1800	EPHMB1J101M0812TR
		56	10x10.5	0.08	35.28	30	1800	EPHMB1J560M1010TR
		100	10x10.5	0.08	63	30	1800	EPHMB1J101M1010TR
		150	10x12.5	0.08	94.5	26	2000	EPHMB1J151M1012TR
80 (1K)	92	22	8x10.5	0.08	17.6	45	1600	EPHMB1K220M0810TR
		33	8x10.5	0.08	26.4	45	1600	EPHMB1K330M0810TR
		47	8x12.5	0.08	37.6	42	1750	EPHMB1K470M0812TR
		47	10x10.5	0.08	37.6	36	1700	EPHMB1K470M1010TR
		56	10x10.5	0.08	44.8	36	1700	EPHMB1K560M1010TR
		82	10x12.5	0.08	65.6	33	1850	EPHMB1K820M1012TR
100(2A)	115	33	10x10.5	0.08	33	80	1400	EPHMB2A330M1010TR
		47	10x12.5	0.08	47	60	1600	EPHMB2A470M1012TR