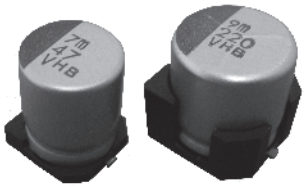
Alchip™-MHB Upgrade! Series

- ESR : Less than MVH
- Endurance : 1,500 to 3,000 hours at 125℃
- Rated voltage range : 10 to 100V
- Nominal capacitance range : 47 to 3,300μF
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- Vibration resistant structure
- **RoHS Compliant**

MHB
↑ Lower ESR
MVH P94



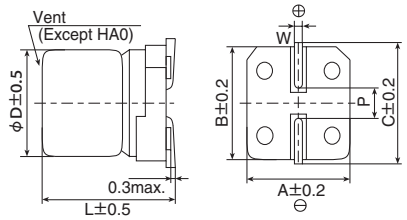
◆SPECIFICATIONS

Items	Characteristics									
Category Temperature Range	-40 to +125℃									
Rated Voltage Range	10 to 100Vdc									
Capacitance Tolerance	±20%(M)									(at 20℃, 120Hz)
Leakage Current	HA0 & JA0	I=0.01CV								
	KE0 to MN0	I=0.03CV								
	Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)									(at 20℃ after 2 minutes)
Dissipation Factor (tanδ)	Rated Voltage (Vdc)		10V	16V	25V	35V	50V	63V	80V	100V
	tanδ (Max.)	HA0 & JA0	0.24	0.20	0.16	0.14	–	–	–	–
		KE0 to MN0	–	–	0.14	0.12	0.10	0.10	0.08	0.08
	When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase.									(at 20℃, 120Hz)
Low Temperature Characteristics (Max. impedance Ratio)	Rated Voltage (Vdc)		10V	16V	25V	35V	50V	63V	80V	100V
	HA0 & JA0	Z(-25℃)/Z(+20℃)	3	2	2	2	–	–	–	–
		Z(-40℃)/Z(+20℃)	4	3	3	3	–	–	–	–
	KE0 to MN0	Z(-25℃)/Z(+20℃)	–	–	2	2	2	2	2	2
		Z(-40℃)/Z(+20℃)	–	–	4	4	4	4	4	4 (at 120Hz)
Endurance	HA0 & JA0	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 2,000 hours at 125℃.								
		Capacitance change	≦±30% of the initial value							
		D.F. (tanδ)	≦300% of the initial specified value							
		Leakage current	≦The initial specified value							
	KE0 to MN0	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for the specified period of time at 125℃.								
		Time	KE0 & KG5 : 1,500hours LH0 & MH0 : 2,000hours KN0 & LN0 & MN0 : 3,000hours							
		Capacitance change	≦±30% of the initial value							
		D.F. (tanδ)	≦300% 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℃ after exposing them for 1,000 hours at 125℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.									
	Capacitance change	≦±30% of the initial value								
	D.F. (tanδ)	≦300% of the initial specified value								
	Leakage current	≦The initial specified value								

◆DIMENSIONS [mm]

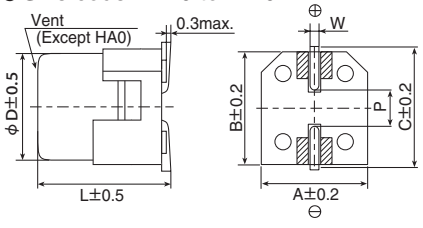
● Terminal Code : A

● Size code : HA0 to MN0



● Terminal Code : G(Vibration resistant structure)

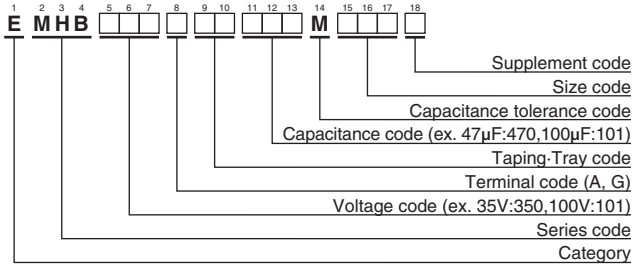
● Size code : HA0 to MN0



: Dummy terminals

Size code	φD	L	A	B	C	W	P
HA0	8	10.0	8.3	8.3	9.0	0.7 to 1.1	3.1
JA0	10	10.0	10.3	10.3	11.0	0.7 to 1.1	4.5
KE0	12.5	13.5	13.0	13.0	13.7	1.0 to 1.3	4.2
KG5	12.5	16.0	13.0	13.0	13.7	1.0 to 1.3	4.2
KN0	12.5	21.5	13.0	13.0	13.7	1.0 to 1.3	4.2
LH0	16	16.5	17.0	17.0	18.0	1.0 to 1.3	6.5
LN0	16	21.5	17.0	17.0	18.0	1.0 to 1.3	6.5
MH0	18	16.5	19.0	19.0	20.0	1.0 to 1.3	6.5
MN0	18	21.5	19.0	19.0	20.0	1.0 to 1.3	6.5

◆PART NUMBERING SYSTEM



Please refer to "Product code guide (surface mount type)"

◆MARKING

HA0, JA0
EX) 16V220μF



KE0 to MN0
EX) 35V1,000μF



●Rated voltage symbol (HA0, JA0)

Rated voltage (Vdc)	10	16	25	35
Symbol	A	C	E	V

Product specifications in this catalog are subject to change without notice.Request our product specifications before purchase and/or use. Please use our products based on the information contained in this catalog and product specifications.

Alchip™-MHB Upgrade! Series

◆STANDARD RATINGS

WV (Vdc)	Cap (μF)	Size code	ESR(Initial) (Ω max/100k to 400kHz)		ESR(End of life) (Ω max)			Rated ripple current (mArms/125℃, 100k to 400kHz)	Part No.
					100kHz		400kHz		
			20℃	-40℃	20℃	-40℃	-40℃		
10	330	HA0	0.3	3.0	–	–	6.0	240	EMHB100ADA331MHA0G
	470	JA0	0.2	2.0	–	–	4.5	330	EMHB100ADA471MJA0G
16	100	HA0	0.3	3.0	–	–	6.0	240	EMHB160ADA101MHA0G
	220	HA0	0.3	3.0	–	–	6.0	240	EMHB160ADA221MHA0G
25	100	HA0	0.3	3.0	–	–	6.0	240	EMHB250ADA101MHA0G
	220	HA0	0.3	3.0	–	–	6.0	240	EMHB250ADA221MHA0G
	330	JA0	0.2	2.0	–	–	4.5	330	EMHB250ADA331MJA0G
	820	KE0	0.060	0.30	0.30	3.7	–	1,320	EMHB250ARA821MKE0S
	1,100	KG5	0.056	0.28	0.28	3.4	–	1,470	EMHB250ARA112MKG5S
	(1,500)	(KN0)	(0.044)	(0.22)	(0.18)	(2.2)	–	(1,620)	(EMHB250ATR152MKN0S)
	1,600	LH0	0.047	0.24	0.24	2.9	–	1,820	EMHB250 □ DA162MLH0S
	2,200	MH0	0.045	0.23	0.23	2.8	–	2,000	EMHB250 □ DA222MMH0S
	2,700	LN0	0.034	0.17	0.10	1.3	–	2,280	EMHB250 □ DA272MLN0S
	3,300	MN0	0.032	0.16	0.090	0.60	–	2,490	EMHB250 □ DA332MMN0S
35	47	HA0	0.3	3.0	–	–	6.0	240	EMHB350ADA470MHA0G
	100	HA0	0.3	3.0	–	–	6.0	240	EMHB350ADA101MHA0G
	100	JA0	0.2	2.0	–	–	4.5	330	EMHB350ADA101MJA0G
	220	JA0	0.2	2.0	–	–	4.5	330	EMHB350ADA221MJA0G
	560	KE0	0.060	0.30	0.30	3.7	–	1,320	EMHB350ARA561MKE0S
	680	KG5	0.056	0.28	0.28	3.4	–	1,470	EMHB350ARA681MKG5S
	(910)	(KN0)	(0.044)	(0.22)	(0.18)	(2.2)	–	(1,620)	(EMHB350ATR911MKN0S)
	1,000	LH0	0.047	0.24	0.24	2.9	–	1,820	EMHB350 □ DA102MLH0S
	1,300	MH0	0.045	0.23	0.23	2.8	–	2,000	EMHB350 □ DA132MMH0S
	1,600	LN0	0.034	0.17	0.10	1.3	–	2,280	EMHB350 □ DA162MLN0S
	2,200	MN0	0.032	0.16	0.090	0.60	–	2,490	EMHB350 □ DA222MMN0S
50	270	KE0	0.11	0.55	0.55	6.6	–	980	EMHB500ARA271MKE0S
	360	KG5	0.10	0.50	0.50	6.0	–	1,090	EMHB500ARA361MKG5S
	(470)	(KN0)	(0.076)	(0.38)	(0.38)	(4.6)	–	(1,200)	(EMHB500ATR471MKN0S)
	510	LH0	0.087	0.44	0.44	5.2	–	1,320	EMHB500 □ DA511MLH0S
	680	MH0	0.087	0.44	0.44	5.2	–	1,420	EMHB500 □ DA681MMH0S
	820	LN0	0.050	0.25	0.25	3.0	–	2,040	EMHB500 □ DA821MLN0S
	1,100	MN0	0.050	0.25	0.25	3.0	–	2,240	EMHB500 □ DA112MMN0S
63	200	KE0	0.22	1.54	0.88	14	–	540	EMHB630ARA201MKE0S
	270	KG5	0.17	1.19	0.68	11	–	650	EMHB630ARA271MKG5S
	(330)	(KN0)	(0.13)	(0.94)	(0.53)	(8.5)	–	(830)	(EMHB630ATR331MKN0S)
	360	LH0	0.15	1.05	0.60	9.6	–	780	EMHB630 □ DA361MLH0S
	470	MH0	0.12	0.84	0.48	7.7	–	940	EMHB630 □ DA471MMH0S
	560	LN0	0.085	0.58	0.19	3.0	–	1,790	EMHB630 □ DA561MLN0S
	750	MN0	0.070	0.49	0.19	3.0	–	1,910	EMHB630 □ DA751MMN0S
80	130	KE0	0.22	1.54	0.88	14	–	540	EMHB800ARA131MKE0S
	160	KG5	0.17	1.19	0.68	11	–	650	EMHB800ARA161MKG5S
	(220)	(KN0)	(0.13)	(0.94)	(0.53)	(8.5)	–	(830)	(EMHB800ATR221MKN0S)
	240	LH0	0.15	1.05	0.60	9.6	–	780	EMHB800 □ DA241MLH0S
	330	MH0	0.12	0.84	0.48	7.7	–	940	EMHB800 □ DA331MMH0S
	390	LN0	0.085	0.58	0.19	3.0	–	1,790	EMHB800 □ DA391MLN0S
	510	MN0	0.070	0.49	0.19	3.0	–	1,910	EMHB800 □ DA511MMN0S
100	75	KE0	0.28	2.24	1.1	22	–	480	EMHB101ARA750MKE0S
	100	KG5	0.21	1.68	0.84	17	–	580	EMHB101ARA101MKG5S
	(130)	(KN0)	(0.17)	(1.32)	(0.66)	(13)	–	(740)	(EMHB101ATR131MKN0S)
	130	LH0	0.18	1.44	0.72	14	–	720	EMHB101 □ DA131MLH0S
	180	MH0	0.15	1.20	0.60	12	–	840	EMHB101 □ DA181MMH0S
	220	LN0	0.11	0.88	0.25	3.9	–	1,580	EMHB101 □ DA221MLN0S
	300	MN0	0.091	0.73	0.22	3.9	–	1,690	EMHB101 □ DA301MMN0S

□ : Enter the appropriate terminal code.

( ) :Second standard

◆RATED RIPPLE CURRENT MULTIPLIERS

❶Frequency Multipliers

Size code	Frequency(Hz) / Capacitance(μF)	120	1k	10k	100k
HA0 to JA0	47 to 470	0.93	0.97	1.00	1.00
KE0 to MN0	75 to 200	0.40	0.75	0.90	1.00
	220 to 560	0.50	0.85	0.94	1.00
	680 to 1,600	0.60	0.87	0.95	1.00
	2,200 to 3,300	0.75	0.90	0.95	1.00

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

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