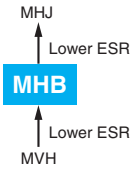
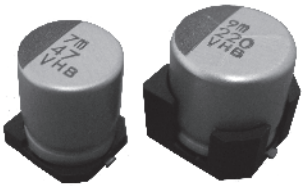
Alchip™-MHB Series





- ESR : Less than MVH
- Endurance : 1,500 to 3,000 hours at 125℃
- Rated voltage range : 10 to 100V
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- Vibration resistant structure
- RoHS2 Compliant
- AEC-Q200 compliant : Please contact Chemi-Con for more details, test data, information.

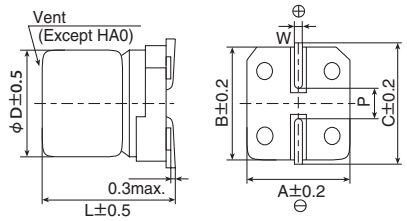
◆SPECIFICATIONS

Items	Characteristics									
Category Temperature Range	-40 to +125℃									
Rated Voltage Range	10 to 100V_{dc}									
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 (tan δ)	Rated Voltage (V_{dc})		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 (V_{dc})		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. (tan δ)	≦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. (tan δ)	≦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. (tan δ)	≦300% of the initial specified value								
	Leakage current	≦The initial specified value								

◆DIMENSIONS [mm]

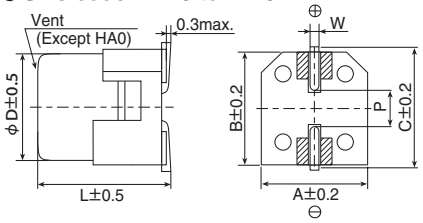
● Terminal Code : A

● Size code : HA0 to MN0



● Terminal Code : G(Vibration resistant structure)

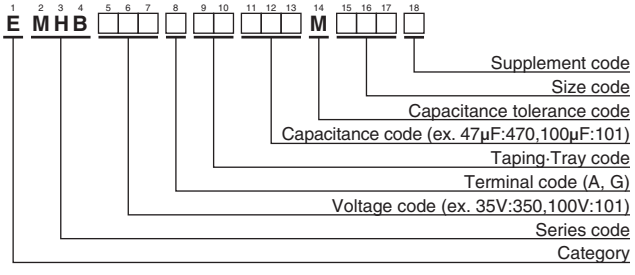
● Size code : HA0 to MN0



: 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 (V_{dc})	10	16	25	35
Symbol	A	C	E	V

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Alchip™-MHB Series

◆STANDARD RATINGS

WV (V_{dc})	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	EMHB100□RA331MHA0G
	470	JA0	0.2	2.0	–	–	4.5	330	EMHB100□RA471MJA0G
16	100	HA0	0.3	3.0	–	–	6.0	240	EMHB160□RA101MHA0G
	220	HA0	0.3	3.0	–	–	6.0	240	EMHB160□RA221MHA0G
25	100	HA0	0.3	3.0	–	–	6.0	240	EMHB250□RA101MHA0G
	220	HA0	0.3	3.0	–	–	6.0	240	EMHB250□RA221MHA0G
	330	JA0	0.2	2.0	–	–	4.5	330	EMHB250□RA331MJA0G
	820	KE0	0.060	0.30	0.30	3.7	–	1,320	EMHB250□RA821MKE0S
	1,100	KG5	0.056	0.28	0.28	3.4	–	1,470	EMHB250□RA112MKG5S
	(1,500)	(KN0)	(0.044)	(0.22)	(0.18)	(2.2)	–	(1,620)	(EMHB250□TR152MKN0S)
	1,600	LH0	0.047	0.24	0.24	2.9	–	1,820	EMHB250□RA162MLH0S
	2,200	MH0	0.045	0.23	0.23	2.8	–	2,000	EMHB250□RA222MMH0S
	2,700	LN0	0.034	0.17	0.10	1.3	–	2,280	EMHB250□RA272MLN0S
	3,300	MN0	0.032	0.16	0.090	0.60	–	2,490	EMHB250□RA332MMN0S
35	47	HA0	0.3	3.0	–	–	6.0	240	EMHB350□RA470MHA0G
	100	HA0	0.3	3.0	–	–	6.0	240	EMHB350□RA101MHA0G
	100	JA0	0.2	2.0	–	–	4.5	330	EMHB350□RA101MJA0G
	220	JA0	0.2	2.0	–	–	4.5	330	EMHB350□RA221MJA0G
	560	KE0	0.060	0.30	0.30	3.7	–	1,320	EMHB350□RA561MKE0S
	680	KG5	0.056	0.28	0.28	3.4	–	1,470	EMHB350□RA681MKG5S
	(910)	(KN0)	(0.044)	(0.22)	(0.18)	(2.2)	–	(1,620)	(EMHB350□TR911MKN0S)
	1,000	LH0	0.047	0.24	0.24	2.9	–	1,820	EMHB350□RA102MLH0S
	1,300	MH0	0.045	0.23	0.23	2.8	–	2,000	EMHB350□RA132MMH0S
	1,600	LN0	0.034	0.17	0.10	1.3	–	2,280	EMHB350□RA162MLN0S
	2,200	MN0	0.032	0.16	0.090	0.60	–	2,490	EMHB350□RA222MMN0S
50	270	KE0	0.11	0.55	0.55	6.6	–	980	EMHB500□RA271MKE0S
	360	KG5	0.10	0.50	0.50	6.0	–	1,090	EMHB500□RA361MKG5S
	(470)	(KN0)	(0.076)	(0.38)	(0.38)	(4.6)	–	(1,200)	(EMHB500□TR471MKN0S)
	510	LH0	0.087	0.44	0.44	5.2	–	1,320	EMHB500□RA511MLH0S
	680	MH0	0.087	0.44	0.44	5.2	–	1,420	EMHB500□RA681MMH0S
	820	LN0	0.050	0.25	0.25	3.0	–	2,040	EMHB500□RA821MLN0S
	1,100	MN0	0.050	0.25	0.25	3.0	–	2,240	EMHB500□RA112MMN0S
63	200	KE0	0.22	1.54	0.88	14	–	540	EMHB630□RA201MKE0S
	270	KG5	0.17	1.19	0.68	11	–	650	EMHB630□RA271MKG5S
	(330)	(KN0)	(0.13)	(0.94)	(0.53)	(8.5)	–	(830)	(EMHB630□TR331MKN0S)
	360	LH0	0.15	1.05	0.60	9.6	–	780	EMHB630□RA361MLH0S
	470	MH0	0.12	0.84	0.48	7.7	–	940	EMHB630□RA471MMH0S
	560	LN0	0.085	0.58	0.19	3.0	–	1,790	EMHB630□RA561MLN0S
	750	MN0	0.070	0.49	0.19	3.0	–	1,910	EMHB630□RA751MMN0S
80	130	KE0	0.22	1.54	0.88	14	–	540	EMHB800□RA131MKE0S
	160	KG5	0.17	1.19	0.68	11	–	650	EMHB800□RA161MKG5S
	(220)	(KN0)	(0.13)	(0.94)	(0.53)	(8.5)	–	(830)	(EMHB800□TR221MKN0S)
	240	LH0	0.15	1.05	0.60	9.6	–	780	EMHB800□RA241MLH0S
	330	MH0	0.12	0.84	0.48	7.7	–	940	EMHB800□RA331MMH0S
	390	LN0	0.085	0.58	0.19	3.0	–	1,790	EMHB800□RA391MLN0S
	510	MN0	0.070	0.49	0.19	3.0	–	1,910	EMHB800□RA511MMN0S
100	75	KE0	0.28	2.24	1.1	22	–	480	EMHB101□RA750MKE0S
	100	KG5	0.21	1.68	0.84	17	–	580	EMHB101□RA101MKG5S
	(130)	(KN0)	(0.17)	(1.32)	(0.66)	(13)	–	(740)	(EMHB101□TR131MKN0S)
	130	LH0	0.18	1.44	0.72	14	–	720	EMHB101□RA131MLH0S
	180	MH0	0.15	1.20	0.60	12	–	840	EMHB101□RA181MMH0S
	220	LN0	0.11	0.88	0.25	3.9	–	1,580	EMHB101□RA221MLN0S
	300	MN0	0.091	0.73	0.22	3.9	–	1,690	EMHB101□RA301MMN0S

□ : Enter the appropriate terminal code.
( ) :Second standard

◆RATED RIPPLE CURRENT MULTIPLIERS

●Frequency Multipliers

Size code	Capacitance(μF) \ Frequency(Hz)	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 deterioration of aluminum electrolytic capacitors accelerates their life due to the internal heating produced by ripple current. For details, refer to Section "5-3 Ripple Current Effect on Lifetime" in the catalog, Technical Note.

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■ Always read "Notes on Use" before using the product in order to enable you to use the product correctly and prevent any faults and accidents from occurring.

■ Request the Product Specification on the product of NIPPON CHEMI-CON CORPORATION to refer to it as well as this brochure prior to the order of the products. Some specific notes on use of the ordered product may be described in the specifications.

■ The products listed in this catalog are designed and manufactured for general electronics equipment use and are not intended for use in applications that can adversely affect human life; where the malfunction of equipment may cause damage to life or property. In addition, our products are not intended to be used in specific applications that may cause a major social impact. Please consult with us in advance of usage of our products in the following listed applications. ① Aerospace equipment ② Power generation equipment such as thermal power, nuclear power etc. ③ Medical equipment ④ Transport equipment (automobiles, trains, ships, etc.) ⑤ Transportation control equipment ⑥ Disaster prevention / crime prevention equipment ⑦ Highly publicized information processing equipment ⑧ Submarine equipment ⑨ Other applications that are not considered general-purpose applications.

■ The circuits described as examples in this catalog and the "delivery specifications" are featured in order to show the operations and usage of our products, however, this fact does not guarantee that the circuits are available to function in your equipment systems. We are not in any case responsible for any failures or damage caused by the use of information contained herein. You should examine our products, of which the characteristics are described in the "delivery specifications" and other documents, and determine whether or not our products suit your requirements according to the specifications of your equipment systems. Therefore, you bear final responsibility regarding the use of our products.
Please make sure that you take appropriate safety measures such as use of redundant design and malfunction prevention measures in order to prevent fatal accidents and/or fires in the event any of our products malfunction.

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■ We reserve the right to discontinue production and delivery of products. We do not guarantee that all the products included in this catalog will be available in the future.
The aforementioned does not apply in the case of individual agreements deviating from the foregoing for customer-specific products

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In addition, we have an established system with enhanced traceability, therefore we will limit the applicable lot items for any potential compensation.

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