NIPPON CHEMI-CON

SURFACE MOUNT ALUMINUM ELECTROLYTIC CAPACITORS

High heat resistance, 125℃

Alchip™-MVH Series

Upgrade!

- Lower ESR, Higher ripple current
- Endurance : 1,000 to 5,000 hours at 125℃
- Suitable to fit for automotive equipment
- Solvent resistant type except 63 to 450Vdc (see PRECAUTIONS AND GUIDELINES)
- Vibration resistant structure
- RoHS2 Compliant
- AEC-Q200 compliant : Please contact Chemi-Con for more details, test data, information.

MVH
↑ 125℃
MVE

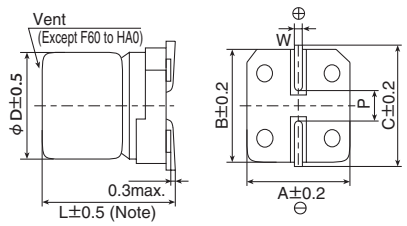
◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	-40 to +125℃
Rated Voltage Range	10 to 450Vdc
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Leakage Current	Rated voltage (Vdc): 10 to 100Vdc: F60 to JA0 I=0.01CV or 3μA, whichever is greater. KE0 to MN0 I=0.03CV or 4μA, whichever is greater. 160 to 450Vdc: I=0.04CV+100 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 (Vdc): 10V 16V 25V 35V 50V 63V 80V 100V 160 to 250V 400 & 450V tan δ (Max.) F60 to JA0: 0.24 0.20 0.16 0.14 0.14 0.12 0.12 0.10 — — tan δ (Max.) KE0 to MN0: 0.22 0.18 0.16 0.14 0.12 0.14 — 0.10 0.20 0.24 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 160 to 250V 400 & 450V F60 to JA0 Z(-25℃)/Z(+20℃): 3 2 2 2 2 2 2 2 — — F60 to JA0 Z(-40℃)/Z(+20℃): 6 4 4 3 3 3 3 3 — — KE0 to MN0 Z(-25℃)/Z(+20℃): 4 3 2 2 2 2 — 2 3 6 KE0 to MN0 Z(-40℃)/Z(+20℃): 8 6 4 3 3 3 — 3 6 10 (at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for the specified time at 125℃. Time: F60 to H63 (10 to 100Vdc) : 1,000hours; HA0 to JA0 (10 to 100Vdc) : 2,000hours; KE0 to MN0 (10 to 100Vdc) : 5,000hours; KE0 to MN0 (160 to 450Vdc) : 2,000hours 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 (500 hours for 400 to 450Vdc) 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. Rated voltage(Vdc): 10 to 50Vdc / 63 to 450Vdc Capacitance change: ≦±30% of the initial value / ≦±30% of the initial value D.F. (tan δ): ≦300% of the initial specified value / ≦300% of the initial specified value Leakage current: ≦The initial specified value / ≦500% of the initial specified value

◆DIMENSIONS [mm]

● Terminal Code : A

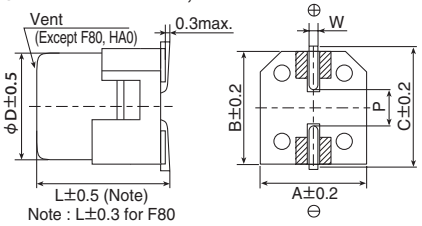
● Size code : F60 to MN0



Note : L±0.3 for F60 and F80

● Terminal Code : G(Vibration resistant structure)

● Size code : F80, HA0 to MN0

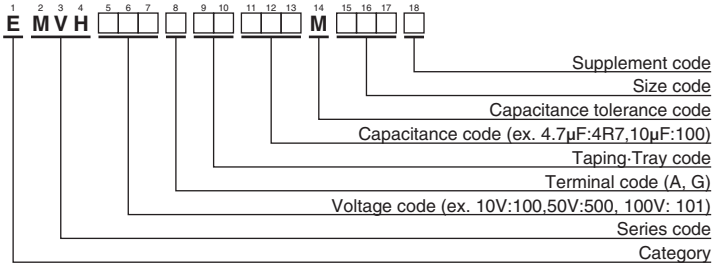


Note : L±0.3 for F80

▨ : Dummy terminals

Size code	D	L	A	B	C	W	P
F60	6.3	5.7	6.6	6.6	7.2	0.5 to 0.8	1.9
F80	6.3	7.7	6.6	6.6	7.2	0.5 to 0.8	1.9
H63	8	6.3	8.3	8.3	9.0	0.5 to 0.8	2.3
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
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)"

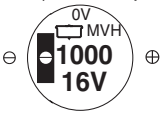
◆MARKING

F60 to JA0

EX) 35V47μF

KE0 to MN0

EX) 16V1,000μF



Alchip™-MVH Upgrade! Series

◆STANDARD RATINGS

□ is not solvent resistant (63 to 450Vdc).

WV (Vdc)	Cap (μF)	Size code	ESR (Ω max./ 100kHz) 20℃	ESR (Ω max./ 100kHz) -40℃	Rated ripple current (mArms/125℃) 100kHz	Rated ripple current (mArms/125℃) 120Hz	Part No.
10	100	F80	0.90	14.0	110	—	EMVH100□RA101MF80G
	100	H63	0.90	14.0	110	—	EMVH100ARA101MH63G
	220	F80	0.90	14.0	110	—	EMVH100□RA221MF80G
	220	H63	0.90	14.0	110	—	EMVH100ARA221MH63G
	220	HA0	0.40	6.0	220	—	EMVH100□RA221MHA0G
	330	HA0	0.40	6.0	220	—	EMVH100□RA331MHA0G
	330	JA0	0.30	4.5	296	—	EMVH100□RA331MJA0G
	470	JA0	0.30	4.5	296	—	EMVH100□RA471MJA0G
	1,000	KE0	0.14	2.1	750	—	EMVH100□RA102MKE0S
	2,200	LH0	0.10	1.5	1,000	—	EMVH100□RA222MLH0S
	2,200	MH0	0.10	1.5	1,200	—	EMVH100□RA222MMH0S
	3,300	MH0	0.10	1.5	1,200	—	EMVH100□RA332MMH0S
	4,700	MN0	0.058	0.87	1,550	—	EMVH100□RA472MMN0S
16	47	F60	1.6	24.0	69	—	EMVH160ARA470MF60G
	100	HA0	0.40	6.0	220	—	EMVH160□RA101MHA0G
	220	HA0	0.40	6.0	220	—	EMVH160□RA221MHA0G
	220	JA0	0.30	4.5	296	—	EMVH160□RA221MJA0G
	330	JA0	0.30	4.5	296	—	EMVH160□RA331MJA0G
	470	KE0	0.14	2.1	750	—	EMVH160□RA471MKE0S
	680	KE0	0.14	2.1	750	—	EMVH160□RA681MKE0S
	680	LH0	0.10	1.5	1,000	—	EMVH160□RA681MLH0S
	1,000	MH0	0.10	1.5	1,200	—	EMVH160□RA102MMH0S
	2,200	MH0	0.10	1.5	1,200	—	EMVH160□RA222MMH0S
25	33	F60	1.6	24.0	69	—	EMVH250ARA330MF60G
	47	F80	0.90	14.0	110	—	EMVH250□RA470MF80G
	47	H63	0.90	14.0	110	—	EMVH250ARA470MH63G
	100	F80	0.90	14.0	110	—	EMVH250□RA101MF80G
	100	H63	0.90	14.0	110	—	EMVH250ARA101MH63G
	100	HA0	0.40	6.0	220	—	EMVH250□RA101MHA0G
	220	HA0	0.40	6.0	220	—	EMVH250□RA221MHA0G
	220	JA0	0.30	4.5	296	—	EMVH250□RA221MJA0G
	330	JA0	0.30	4.5	296	—	EMVH250□RA331MJA0G
	330	KE0	0.14	2.1	750	—	EMVH250□RA331MKE0S
	470	KE0	0.14	2.1	750	—	EMVH250□RA471MKE0S
	470	LH0	0.10	1.5	1,000	—	EMVH250□RA471MLH0S
	680	LH0	0.10	1.5	1,000	—	EMVH250□RA681MLH0S
	680	MH0	0.10	1.5	1,200	—	EMVH250□RA681MMH0S
	1,000	MN0	0.058	0.87	1,550	—	EMVH250□RA102MMN0S
35	10	F60	1.6	24.0	69	—	EMVH350ARA100MF60G
	22	F60	1.6	24.0	69	—	EMVH350ARA220MF60G
	33	F80	0.90	14.0	110	—	EMVH350□RA330MF80G
	33	H63	0.90	14.0	110	—	EMVH350ARA330MH63G
	47	F80	0.90	14.0	110	—	EMVH350□RA470MF80G
	47	H63	0.90	14.0	110	—	EMVH350ARA470MH63G
	47	HA0	0.40	6.0	220	—	EMVH350□RA470MHA0G
	100	HA0	0.40	6.0	220	—	EMVH350□RA101MHA0G
	100	JA0	0.30	4.5	296	—	EMVH350□RA101MJA0G
	220	JA0	0.30	4.5	296	—	EMVH350□RA221MJA0G
	330	KE0	0.14	2.1	750	—	EMVH350□RA331MKE0S
	330	LH0	0.10	1.5	1,000	—	EMVH350□RA331MLH0S
	470	KG5	0.11	1.5	900	—	EMVH350□RA471MKG5S
	470	LH0	0.10	1.5	1,000	—	EMVH350□RA471MLH0S
	680	MH0	0.10	1.5	1,200	—	EMVH350□RA681MMH0S
50	10	F60	2.8	42.0	51	—	EMVH500ARA100MF60G
	10	H63	1.6	30.0	83	—	EMVH500ARA100MH63G
	22	F80	2.0	30.0	83	—	EMVH500□RA220MF80G
	22	H63	1.6	30.0	83	—	EMVH500ARA220MH63G
50	33	F80	2.0	30.0	83	—	EMVH500□RA330MF80G
	33	H63	1.6	30.0	83	—	EMVH500ARA330MH63G
	33	HA0	0.70	11.0	160	—	EMVH500□RA330MHA0G
	47	HA0	0.70	11.0	160	—	EMVH500□RA470MHA0G
	47	JA0	0.50	7.5	247	—	EMVH500□RA470MJA0G
	100	JA0	0.50	7.5	247	—	EMVH500□RA101MJA0G
	100	KE0	0.23	3.5	550	—	EMVH500□RA101MKE0S
	220	KE0	0.23	3.5	550	—	EMVH500□RA221MKE0S
	220	LH0	0.15	2.3	850	—	EMVH500□RA221MLH0S
	330	KG5	0.18	2.7	700	—	EMVH500□RA331MKG5S
	330	LH0	0.15	2.3	850	—	EMVH500□RA331MLH0S
	470	MH0	0.15	2.3	920	—	EMVH500□RA471MMH0S
63	10	F80	2.0	100	60	—	EMVH630□RA100MF80G
	10	H63	2.0	110	60	—	EMVH630ARA100MH63G
	22	HA0	0.70	35.0	100	—	EMVH630□RA220MHA0G
	33	HA0	0.70	35.0	100	—	EMVH630□RA330MHA0G
	33	JA0	0.50	25.0	170	—	EMVH630□RA330MJA0G
	47	HA0	0.70	35.0	100	—	EMVH630□RA470MHA0G
	47	JA0	0.50	25.0	170	—	EMVH630□RA470MJA0G
	100	KE0	0.25	12.5	500	—	EMVH630□RA101MKE0S
	220	KG5	0.20	10.0	600	—	EMVH630□RA221MKG5S
	330	LH0	0.18	9.0	820	—	EMVH630□RA331MLH0S
	470	LN0	0.11	5.5	1,100	—	EMVH630□RA471MLN0S
80	10	HA0	0.75	50.0	70	—	EMVH800□RA100MHA0G
	22	HA0	0.75	50.0	70	—	EMVH800□RA220MHA0G
	22	JA0	0.55	35.0	115	—	EMVH800□RA220MJA0G
	33	HA0	0.75	50.0	70	—	EMVH800□RA330MHA0G
	33	JA0	0.55	35.0	115	—	EMVH800□RA330MJA0G
	47	JA0	0.55	35.0	115	—	EMVH800□RA470MJA0G
100	10	HA0	0.75	50.0	70	—	EMVH101□RA100MHA0G
	22	HA0	0.75	50.0	70	—	EMVH101□RA220MHA0G
	22	JA0	0.55	35.0	115	—	EMVH101□RA220MJA0G
	33	JA0	0.55	35.0	115	—	EMVH101□RA330MJA0G
	47	KE0	0.33	16.5	450	—	EMVH101□RA470MKE0S
	68	KG5	0.26	13.0	550	—	EMVH101□RA680MKG5S
	100	LH0	0.24	12.0	650	—	EMVH101□RA101MLH0S
	220	MN0	0.16	8.0	950	—	EMVH101□RA221MMN0S
160	10	KE0	—	—	—	100	EMVH161□RA100MKE0S
	22	LH0	—	—	—	180	EMVH161□RA220MLH0S
	33	MH0	—	—	—	245	EMVH161□RA330MMH0S
	68	MN0	—	—	—	380	EMVH161□RA680MMN0S
200	10	KE0	—	—	—	100	EMVH201□RA100MKE0S
	22	LH0	—	—	—	180	EMVH201□RA220MLH0S
	33	LN0	—	—	—	250	EMVH201□RA330MLN0S
	33	MH0	—	—	—	245	EMVH201□RA330MMH0S
	47	MN0	—	—	—	315	EMVH201□RA470MMN0S
250	10	KG5	—	—	—	110	EMVH251□RA100MKG5S
	22	LN0	—	—	—	200	EMVH251□RA220MLN0S
	22	MH0	—	—	—	205	EMVH251□RA220MMH0S
	33	MN0	—	—	—	260	EMVH251□RA330MMN0S
400	4.7	KE0	—	—	—	70	EMVH401□RA4R7MKE0S
	6.8	LH0	—	—	—	100	EMVH401□RA6R8MLH0S
	10	LN0	—	—	—	140	EMVH401□RA100MLN0S
	10	MH0	—	—	—	135	EMVH401□RA100MMH0S
450	3.3	KG5	—	—	—	65	EMVH451□RA3R3MKG5S
	4.7	LH0	—	—	—	85	EMVH451□RA4R7MLH0S
	10	MN0	—	—	—	145	EMVH451□RA100MMN0S

□ : Enter the appropriate terminal code.

◆RATED RIPPLE CURRENT MULTIPLIERS

●Frequency Multipliers

Rated voltage (Vdc)	Size code	Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
10 to 100	F60 to JA0	10	0.66	0.86	0.93	1.00
		22 to 470	0.93	0.97	1.00	1.00
	KE0 to MN0	47 to 100	0.40	0.75	0.90	1.00
		220 to 470	0.50	0.85	0.94	1.00
		680 to 1,000	0.60	0.87	0.95	1.00
		2,200 to 3,300	0.75	0.90	0.95	1.00
		4,700	0.85	0.95	0.98	1.00
160 to 450	KE0 to MN0	3.3 to 33	1.00	1.50	1.75	1.80
		47 to 68	1.00	1.30	1.40	1.50

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.