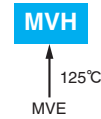


Alchip™-MVH Series

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



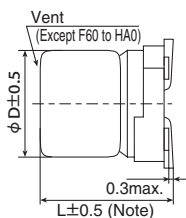
SPECIFICATIONS

Items	Characteristics												
Category	-40 to +125°C												
Temperature Range													
Rated Voltage Range	10 to 450V _{dc}												
Capacitance Tolerance	±20% (M) (at 20°C, 120Hz)												
Leakage Current	Rated voltage (V _{dc})	10 to 100V _{dc}					160 to 450V _{dc}						
	F60 to JA0	I=0.01CV or 3μA, whichever is greater.					I=0.04CV+100						
	KE0 to MN0	I=0.03CV or 4μA, whichever is greater.											
	Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20°C after 2 minutes)												
Dissipation Factor (tan δ)	Rated voltage (V _{dc})	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	—	—	
		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°C, 120Hz)												
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (V _{dc})	10V	16V	25V	35V	50V	63V	80V	100V	160 to 250V	400 & 450V		
	F60 to JA0	Z(-25°C)/Z(+20°C)	3	2	2	2	2	2	2	2	—	—	
		Z(-40°C)/Z(+20°C)	6	4	4	3	3	3	3	3	—	—	
	KE0 to MN0	Z(-25°C)/Z(+20°C)	4	3	2	2	2	2	—	2	3	6	
		Z(-40°C)/Z(+20°C)	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°C after the rated voltage is applied for the specified time at 125°C.												
	Time	F60 to H63 (10 to 100V _{dc}) : 1,000hours HA0 to JA0 (10 to 100V _{dc}) : 2,000hours KE0 to MN0 (10 to 100V _{dc}) : 5,000hours KE0 to MN0 (160 to 450V _{dc}) : 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°C after exposing them for 1,000 hours (500 hours for 400 to 450V _{dc}) at 125°C 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(V _{dc})	10 to 50V _{dc}					63 to 450V _{dc}						
	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						

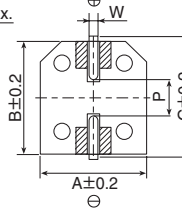
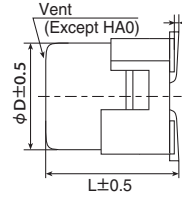
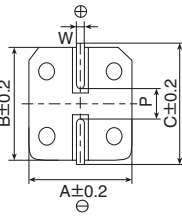
DIMENSIONS [mm]

- Terminal Code : A
- Size code : F60 to MN0

- Terminal Code : G(Vibration resistant structure)
- Size code : HA0 to MN0



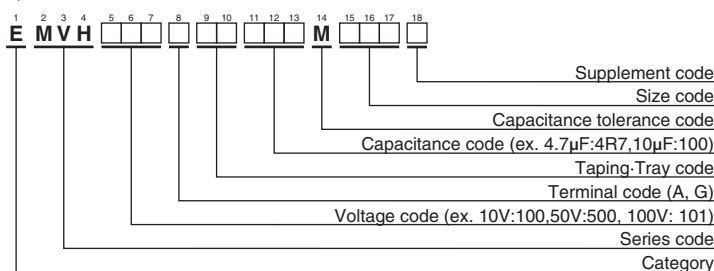
Note : L±0.3 for F60 and F80



⊞ : 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 Series

◆STANDARD RATINGS

□ is not solvent resistant (63 to 450V_{dc}).

WV (V _{dc})	Cap (μF)	Size code	ESR (Ω max./ 100kHz)		Rated ripple current (mA rms/125°C)		Part No.
			20°C	-40°C	100kHz	120Hz	
10	100	F80	0.90	14.0	110	—	EMVH100ARA101MF80G
	100	H63	0.90	14.0	110	—	EMVH100ARA101MH63G
	220	F80	0.90	14.0	110	—	EMVH100ARA221MF80G
	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
16	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
	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
25	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
	33	F60	1.6	24.0	69	—	EMVH250ARA330MF60G
	47	F80	0.90	14.0	110	—	EMVH250ARA470MF80G
	47	H63	0.90	14.0	110	—	EMVH250ARA470MH63G
	100	F80	0.90	14.0	110	—	EMVH250ARA101MF80G
	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
35	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
	10	F60	1.6	24.0	69	—	EMVH350ARA100MF60G
	22	F60	1.6	24.0	69	—	EMVH350ARA220MF60G
50	33	F80	0.90	14.0	110	—	EMVH350ARA330MF80G
	33	H63	0.90	14.0	110	—	EMVH350ARA330MH63G
	47	F80	0.90	14.0	110	—	EMVH350ARA470MF80G
	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
100	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
	10	F60	2.8	42.0	51	—	EMVH500ARA100MF60G
	10	H63	1.6	30.0	83	—	EMVH500ARA100MH63G
	22	F80	2.0	30.0	83	—	EMVH500ARA220MF80G
	22	H63	1.6	30.0	83	—	EMVH500ARA220MH63G
	33	F60	1.6	24.0	69	—	EMVH800ARA100MF60G
	47	F80	0.90	14.0	110	—	EMVH800ARA470MF80G
	47	H63	0.90	14.0	110	—	EMVH800ARA470MH63G
160	100	HA0	0.40	6.0	220	—	EMVH800□RA100MHA0G
	220	HA0	0.40	6.0	220	—	EMVH800□RA220MHA0G
	220	JA0	0.30	4.5	296	—	EMVH800□RA220MJA0G
	330	JA0	0.30	4.5	296	—	EMVH800□RA330MJA0G
	470	KE0	0.14	2.1	750	—	EMVH800□RA470MKE0S
	470	LH0	0.10	1.5	1,000	—	EMVH800□RA470MLH0S
	680	LH0	0.10	1.5	1,000	—	EMVH800□RA680MLH0S
	680	MH0	0.10	1.5	1,200	—	EMVH800□RA680MMH0S
	1,000	MN0	0.058	0.87	1,550	—	EMVH800□RA102MMN0S
	10	F60	1.6	24.0	69	—	EMVH101ARA100MF60G
200	22	F60	1.6	24.0	69	—	EMVH101ARA220MF60G
	33	F80	0.90	14.0	110	—	EMVH101ARA330MF80G
	33	H63	0.90	14.0	110	—	EMVH101ARA330MH63G
	47	F80	0.90	14.0	110	—	EMVH101ARA470MF80G
	47	H63	0.90	14.0	110	—	EMVH101ARA470MH63G
	47	HA0	0.40	6.0	220	—	EMVH101□RA470MHA0G
	100	HA0	0.40	6.0	220	—	EMVH101□RA100MHA0G
	100	JA0	0.30	4.5	296	—	EMVH101□RA100MJA0G
	220	JA0	0.30	4.5	296	—	EMVH101□RA220MJA0G
	330	KE0	0.14	2.1	750	—	EMVH101□RA330MKE0S
250	470	KE0	0.14	2.1	750	—	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
	10	KE0	—	—	100	—	EMVH161□RA100MKE0S
	22	LH0	—	—	180	—	EMVH161□RA220MLH0S
	33	MH0	—	—	245	—	EMVH161□RA330MMH0S
	68	MN0	—	—	380	—	EMVH161□RA680MMN0S
	10	KE0	—	—	100	—	EMVH201□RA100MKE0S
	22	LH0	—	—	180	—	EMVH201□RA220MLH0S
400	33	LN0	—	—	250	—	EMVH201□RA330MLN0S
	33	MH0	—	—	245	—	EMVH201□RA330MMH0S
	47	MN0	—	—	315	—	EMVH201□RA470MMN0S
	10	KG5	—	—	110	—	EMVH251□RA100MKG5S
	22	LN0	—	—	200	—	EMVH251□RA220MLN0S
	22	MH0	—	—	205	—	EMVH251□RA220MMH0S
	33	MN0	—	—	260	—	EMVH251□RA330MMN0S
	4.7	KE0	—	—	70	—	EMVH401□RA47R7MKE0S
	6.8	LH0	—	—	100	—	EMVH401□RA68R8MLH0S
	10	LN0	—	—	140	—	EMVH401□RA100MLN0S
450	10	MH0	—	—	135	—	EMVH401□RA100MMH0S
	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 (V _{dc})	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°C rise.

When long life performance is required in actual use, the rms ripple current has to be reduced.