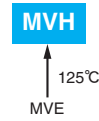


Alchip™-MVH Series *Upgrade!*

- 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.



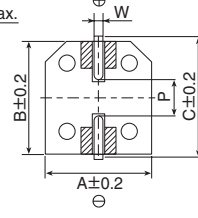
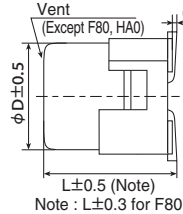
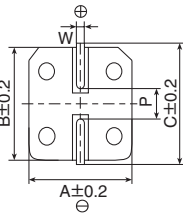
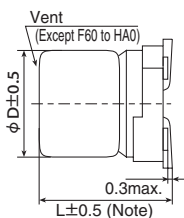
SPECIFICATIONS

Items	Characteristics													
Category Temperature Range	-40 to +125°C													
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	0.10	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})	F60 to JA0	Z(-25°C)/Z(+20°C)	3	2	2	2	2	2	2	—	—		
			Z(-40°C)/Z(+20°C)	6	4	4	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 : F80, HA0 to MN0

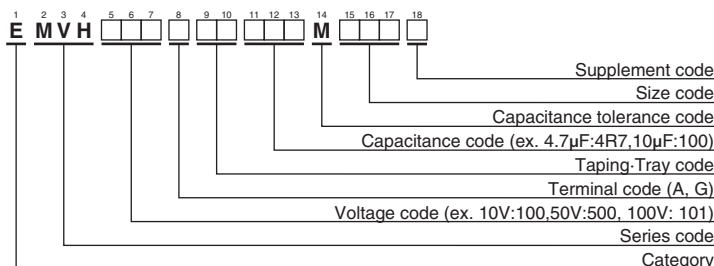


Note : L±0.3 for F60 and F80

▨ : Dummy terminals

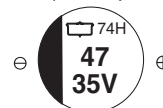
Size code	D	L	A	B	C	W	P
F60	6.3	5.7	6.6	6.6	7.2	0.5 to 0.8	1.9
F80	6.3	7.7	6.6	6.6	7.2	0.5 to 0.8	1.9
H63	8	6.3	8.3	8.3	9.0	0.5 to 0.8	2.3
HA0	8	10.0	8.3	8.3	9.0	0.7 to 1.1	3.1
JA0	10	10.0	10.3	10.3	11.0	0.7 to 1.1	4.5
KE0	12.5	13.5	13.0	13.0	13.7	1.0 to 1.3	4.2
KG5	12.5	16.0	13.0	13.0	13.7	1.0 to 1.3	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



MARKING

F60 to JA0
EX) 35V47μF



KE0 to MN0
EX) 16V1,000μF



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

◆ **STANDARD RATINGS**

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

WV (V _{dc})	Cap (μF)	Size code	ESR (Ω max./100kHz)		Rated ripple current (mArms/125°C)		Part No.	WV (V _{dc})	Cap (μF)	Size code	ESR (Ω max./100kHz)		Rated ripple current (mArms/125°C)		Part No.	
			20°C	-40°C	100kHz	120Hz					20°C	-40°C	100kHz	120Hz		
10	100	F80	0.90	14.0	110	—	EMVH100□RA101MF80G	50	33	F80	2.0	30.0	83	—	EMVH500□RA330MF80G	
	100	H63	0.90	14.0	110	—	EMVH100ARA101MH63G		33	H63	1.6	30.0	83	—	EMVH500ARA330MH63G	
	220	F80	0.90	14.0	110	—	EMVH100□RA221MF80G		33	HA0	0.70	11.0	160	—	EMVH500□RA330MHA0G	
	220	H63	0.90	14.0	110	—	EMVH100ARA221MH63G		47	HA0	0.70	11.0	160	—	EMVH500□RA470MHA0G	
	220	HA0	0.40	6.0	220	—	EMVH100□RA221MHA0G		47	JA0	0.50	7.5	247	—	EMVH500□RA470MJA0G	
	330	HA0	0.40	6.0	220	—	EMVH100□RA331MHA0G		100	JA0	0.50	7.5	247	—	EMVH500□RA101MJA0G	
	330	JA0	0.30	4.5	296	—	EMVH100□RA331MJA0G		100	KE0	0.23	3.5	550	—	EMVH500□RA101MKE0S	
	470	JA0	0.30	4.5	296	—	EMVH100□RA471MJA0G		220	KE0	0.23	3.5	550	—	EMVH500□RA221MKE0S	
	1,000	KE0	0.14	2.1	750	—	EMVH100□RA102MKE0S		220	LH0	0.15	2.3	850	—	EMVH500□RA221MLH0S	
	2,200	LH0	0.10	1.5	1,000	—	EMVH100□RA222MLH0S		330	KG5	0.18	2.7	700	—	EMVH500□RA331MKG5S	
	2,200	MH0	0.10	1.5	1,200	—	EMVH100□RA222MMH0S		330	LH0	0.15	2.3	850	—	EMVH500□RA331MLH0S	
	3,300	MH0	0.10	1.5	1,200	—	EMVH100□RA332MMH0S		470	MH0	0.15	2.3	920	—	EMVH500□RA471MMH0S	
4,700	MN0	0.058	0.87	1,550	—	EMVH100□RA472MMN0S	63	10	F80	2.0	100	60	—	EMVH630□RA100MF80G		
47	F60	1.6	24.0	69	—	EMVH160ARA470MF60G		10	H63	2.0	110	60	—	EMVH630ARA100MH63G		
100	HA0	0.40	6.0	220	—	EMVH160□RA101MHA0G		22	HA0	0.70	35.0	100	—	EMVH630□RA220MHA0G		
220	HA0	0.40	6.0	220	—	EMVH160□RA221MHA0G		33	HA0	0.70	35.0	100	—	EMVH630□RA330MHA0G		
220	JA0	0.30	4.5	296	—	EMVH160□RA221MJA0G		33	JA0	0.50	25.0	170	—	EMVH630□RA330MJA0G		
330	JA0	0.30	4.5	296	—	EMVH160□RA331MJA0G		47	HA0	0.70	35.0	100	—	EMVH630□RA470MHA0G		
470	KE0	0.14	2.1	750	—	EMVH160□RA471MKE0S		47	JA0	0.50	25.0	170	—	EMVH630□RA470MJA0G		
680	KE0	0.14	2.1	750	—	EMVH160□RA681MKE0S		100	KE0	0.25	12.5	500	—	EMVH630□RA101MKE0S		
680	LH0	0.10	1.5	1,000	—	EMVH160□RA681MLH0S		220	KG5	0.20	10.0	600	—	EMVH630□RA221MKG5S		
1,000	MH0	0.10	1.5	1,200	—	EMVH160□RA102MMH0S		330	LH0	0.18	9.0	820	—	EMVH630□RA331MLH0S		
2,200	MH0	0.10	1.5	1,200	—	EMVH160□RA222MMH0S		470	LN0	0.11	5.5	1,100	—	EMVH630□RA471MLN0S		
25	33	F60	1.6	24.0	69	—		EMVH250ARA330MF60G	80	10	HA0	0.75	50.0	70	—	EMVH800□RA100MHA0G
	47	F80	0.90	14.0	110	—	EMVH250□RA470MF80G	22		HA0	0.75	50.0	70	—	EMVH800□RA220MHA0G	
	47	H63	0.90	14.0	110	—	EMVH250ARA470MH63G	22		JA0	0.55	35.0	115	—	EMVH800□RA220MJA0G	
	100	F80	0.90	14.0	110	—	EMVH250□RA101MF80G	33		HA0	0.75	50.0	70	—	EMVH800□RA330MHA0G	
	100	H63	0.90	14.0	110	—	EMVH250ARA101MH63G	33		JA0	0.55	35.0	115	—	EMVH800□RA330MJA0G	
	100	HA0	0.40	6.0	220	—	EMVH250□RA101MHA0G	47		JA0	0.55	35.0	115	—	EMVH800□RA470MJA0G	
	220	HA0	0.40	6.0	220	—	EMVH250□RA221MHA0G	100		10	HA0	0.75	50.0	70	—	EMVH101□RA100MHA0G
	220	JA0	0.30	4.5	296	—	EMVH250□RA221MJA0G			22	HA0	0.75	50.0	70	—	EMVH101□RA220MHA0G
	330	JA0	0.30	4.5	296	—	EMVH250□RA331MJA0G			22	JA0	0.55	35.0	115	—	EMVH101□RA220MJA0G
	330	KE0	0.14	2.1	750	—	EMVH250□RA331MKE0S			33	JA0	0.55	35.0	115	—	EMVH101□RA330MJA0G
	470	KE0	0.14	2.1	750	—	EMVH250□RA471MKE0S			47	KE0	0.33	16.5	450	—	EMVH101□RA470MKE0S
	470	LH0	0.10	1.5	1,000	—	EMVH250□RA471MLH0S			68	KG5	0.26	13.0	550	—	EMVH101□RA680MKG5S
680	LH0	0.10	1.5	1,000	—	EMVH250□RA681MLH0S	100		LH0	0.24	12.0	650	—	EMVH101□RA101MLH0S		
680	MH0	0.10	1.5	1,200	—	EMVH250□RA681MMH0S	220		MN0	0.16	8.0	950	—	EMVH101□RA221MMN0S		
1,000	MN0	0.058	0.87	1,550	—	EMVH250□RA102MMN0S	160		10	KE0	—	—	—	100	EMVH161□RA100MKE0S	
35	10	F60	1.6	24.0	69	—			EMVH350ARA100MF60G	22	LH0	—	—	—	180	EMVH161□RA220MLH0S
	22	F60	1.6	24.0	69	—			EMVH350ARA220MF60G	33	MH0	—	—	—	245	EMVH161□RA330MMH0S
	33	F80	0.90	14.0	110	—			EMVH350□RA330MF80G	68	MN0	—	—	—	380	EMVH161□RA680MMN0S
	33	H63	0.90	14.0	110	—		EMVH350ARA330MH63G	10	KE0	—	—	—	100	EMVH201□RA100MKE0S	
	47	F80	0.90	14.0	110	—		EMVH350□RA470MF80G	22	LH0	—	—	—	180	EMVH201□RA220MLH0S	
	47	H63	0.90	14.0	110	—	EMVH350ARA470MH63G	33	LN0	—	—	—	250	EMVH201□RA330MLN0S		
	47	HA0	0.40	6.0	220	—	EMVH350□RA470MHA0G	33	MH0	—	—	—	245	EMVH201□RA330MMH0S		
	100	HA0	0.40	6.0	220	—	EMVH350□RA101MHA0G	47	MN0	—	—	—	315	EMVH201□RA470MMN0S		
	100	JA0	0.30	4.5	296	—	EMVH350□RA101MJA0G	200	10	KG5	—	—	—	110	EMVH251□RA100MKG5S	
	220	JA0	0.30	4.5	296	—	EMVH350□RA221MJA0G		22	LN0	—	—	—	200	EMVH251□RA220MLN0S	
	330	KE0	0.14	2.1	750	—	EMVH350□RA331MKE0S		22	MH0	—	—	—	205	EMVH251□RA220MMH0S	
	330	LH0	0.10	1.5	1,000	—	EMVH350□RA331MLH0S		33	MN0	—	—	—	260	EMVH251□RA330MMN0S	
470	KG5	0.11	1.5	900	—	EMVH350□RA471MKG5S	250		4.7	KE0	—	—	—	70	EMVH401□RA471MKE0S	
470	LH0	0.10	1.5	1,000	—	EMVH350□RA471MLH0S			6.8	LH0	—	—	—	100	EMVH401□RA681MLH0S	
680	MH0	0.10	1.5	1,200	—	EMVH350□RA681MMH0S		10	LN0	—	—	—	140	EMVH401□RA100MLN0S		
50	10	F60	2.8	42.0	51	—		EMVH500ARA100MF60G	10	MH0	—	—	—	135	EMVH401□RA100MMH0S	
	10	H63	1.6	30.0	83	—		EMVH500ARA100MH63G	400	3.3	KG5	—	—	—	65	EMVH451□RA331MKG5S
	22	F80	2.0	30.0	83	—		EMVH500□RA220MF80G		4.7	LH0	—	—	—	85	EMVH451□RA471MLH0S
	22	H63	1.6	30.0	83	—	EMVH500ARA220MH63G	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
		47 to 100	0.40	0.75	0.90	1.00
	KE0 to MN0	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
160 to 450	KE0 to MN0	4,700	0.85	0.95	0.98	1.00
		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.