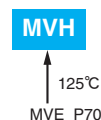


Alchip™-MVH Series

- 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
- **RoHS Compliant**

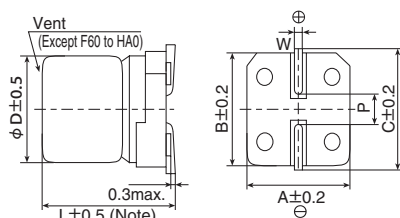


◆ SPECIFICATIONS

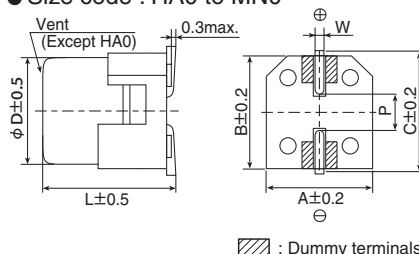
Items	Characteristics												
Category	Temperature Range												
Rated Voltage Range	-40 to +125°C												
Capacitance Tolerance	±20% (M) (at 20°C, 120Hz)												
Leakage Current	Rated voltage (V _{dc})	10 to 100V _{dc}					160 to 450V _{dc}		I=0.04CV+100				
	F60 to JA0	I=0.01CV or 3μA, whichever is greater.											
	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 (tanδ)	Rated voltage (V _{dc})	10V	16V	25V	35V	50V	63V	80V	100V	160 to 250V	400 & 450V		
	tanδ (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	(at 120Hz)	
	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
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. (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°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. (tanδ)	≤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
- Size code

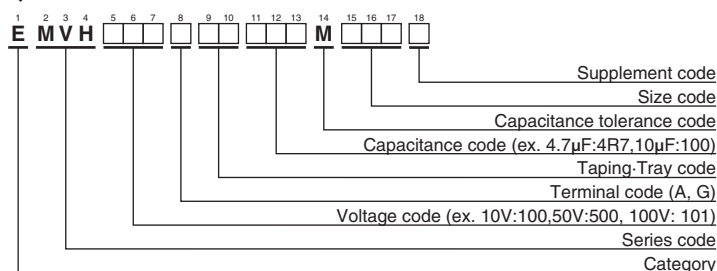


Note : $L \pm 0.3$ for F60 and F80



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

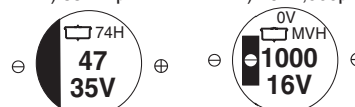
◆PART NUMBERING SYSTEM



◆ 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 (mA rms/125°C)		Part No.
			20°C	-40°C	100kHz	120Hz	
10	100	F80	0.90	14.0	110	—	EMVH100ADA101MF80G
	100	H63	0.90	14.0	110	—	EMVH100ADA101MH63G
	220	F80	0.90	14.0	110	—	EMVH100ADA221MF80G
	220	H63	0.90	14.0	110	—	EMVH100ADA221MH63G
	220	HA0	0.40	6.0	220	—	EMVH100ADA221MHA0G
	330	HA0	0.40	6.0	220	—	EMVH100ADA331MHA0G
	330	JA0	0.30	4.5	296	—	EMVH100ADA331MJA0G
	470	JA0	0.30	4.5	296	—	EMVH100ADA471MJA0G
	1,000	KE0	0.14	2.1	750	—	EMVH100ARA102MKE0S
	2,200	LH0	0.10	1.5	1,000	—	EMVH100□DA222MLH0S
	2,200	MH0	0.10	1.5	1,200	—	EMVH100□DA222MMH0S
	3,300	MH0	0.10	1.5	1,200	—	EMVH100□DA332MMH0S
	4,700	MN0	0.058	0.87	1,550	—	EMVH100□DA472MMN0S
	47	F60	1.6	24.0	69	—	EMVH160ADA470MF60G
16	100	HA0	0.40	6.0	220	—	EMVH160ADA101MHA0G
	220	HA0	0.40	6.0	220	—	EMVH160ADA221MHA0G
	220	JA0	0.30	4.5	296	—	EMVH160ADA221MJA0G
	330	JA0	0.30	4.5	296	—	EMVH160ADA331MJA0G
	470	KE0	0.14	2.1	750	—	EMVH160ARA471MKE0S
	680	KE0	0.14	2.1	750	—	EMVH160ARA681MKE0S
	680	LH0	0.10	1.5	1,000	—	EMVH160□DA681MLH0S
	1,000	MH0	0.10	1.5	1,200	—	EMVH160□DA102MMH0S
	2,200	MH0	0.10	1.5	1,200	—	EMVH160□DA222MMH0S
	33	F60	1.6	24.0	69	—	EMVH250ADA330MF60G
	47	F80	0.90	14.0	110	—	EMVH250ADA470MF80G
	47	H63	0.90	14.0	110	—	EMVH250ADA470MH63G
	100	F80	0.90	14.0	110	—	EMVH250ADA101MF80G
	100	H63	0.90	14.0	110	—	EMVH250ADA101MH63G
25	100	HA0	0.40	6.0	220	—	EMVH250ADA101MHA0G
	220	HA0	0.40	6.0	220	—	EMVH250ADA221MHA0G
	220	JA0	0.30	4.5	296	—	EMVH250ADA221MJA0G
	330	JA0	0.30	4.5	296	—	EMVH250ADA331MJA0G
	330	KE0	0.14	2.1	750	—	EMVH250ARA331MKE0S
	470	KE0	0.14	2.1	750	—	EMVH250ARA471MKE0S
	470	LH0	0.10	1.5	1,000	—	EMVH250□DA471MLH0S
	680	LH0	0.10	1.5	1,000	—	EMVH250□DA681MLH0S
	680	MH0	0.10	1.5	1,200	—	EMVH250□DA681MMH0S
	1,000	MN0	0.058	0.87	1,550	—	EMVH250□DA102MMN0S
	10	F60	1.6	24.0	69	—	EMVH350ADA100MF60G
	22	F60	1.6	24.0	69	—	EMVH350ADA220MF60G
	33	F80	0.90	14.0	110	—	EMVH350ADA330MF80G
	33	H63	0.90	14.0	110	—	EMVH350ADA330MH63G
35	47	F80	0.90	14.0	110	—	EMVH350ADA470MF80G
	47	H63	0.90	14.0	110	—	EMVH350ADA470MH63G
	47	HA0	0.40	6.0	220	—	EMVH350ADA470MHA0G
	100	HA0	0.40	6.0	220	—	EMVH350ADA101MHA0G
	100	JA0	0.30	4.5	296	—	EMVH350ADA101MJA0G
	220	JA0	0.30	4.5	296	—	EMVH350ADA221MJA0G
	330	KE0	0.14	2.1	750	—	EMVH350ARA331MKE0S
	330	LH0	0.10	1.5	1,000	—	EMVH350□DA331MLH0S
	470	KG5	0.11	1.5	900	—	EMVH350ARA471MKG5S
	470	LH0	0.10	1.5	1,000	—	EMVH350□DA471MLH0S
	680	MH0	0.10	1.5	1,200	—	EMVH350□DA681MMH0S
	10	F60	2.8	42.0	51	—	EMVH500ADA100MF60G
	10	H63	1.6	30.0	83	—	EMVH500ADA100MH63G
	22	F80	2.0	30.0	83	—	EMVH500ADA220MF80G
	22	H63	1.6	30.0	83	—	EMVH500ADA220MH63G
50	33	F80	2.0	30.0	83	—	EMVH500ADA330MF80G
	33	H63	1.6	30.0	83	—	EMVH500ADA330MH63G
	33	HA0	0.70	11.0	160	—	EMVH500ADA330MHA0G
	47	HA0	0.70	11.0	160	—	EMVH500ADA470MHA0G
	47	JA0	0.50	7.5	247	—	EMVH500ADA470MJA0G
	100	JA0	0.50	7.5	247	—	EMVH500ADA101MJA0G
	100	KE0	0.23	3.5	550	—	EMVH500ARA101MKE0S
	220	KE0	0.23	3.5	550	—	EMVH500ARA221MKE0S
	220	LH0	0.15	2.3	850	—	EMVH500□DA221MLH0S
	330	KG5	0.18	2.7	700	—	EMVH500ARA331MKG5S
	330	LH0	0.15	2.3	850	—	EMVH500□DA331MLH0S
	470	MH0	0.15	2.3	920	—	EMVH500□DA471MMH0S
	10	F80	2.0	100	60	—	EMVH630ADA100MF80G
	10	H63	2.0	110	60	—	EMVH630ADA100MH63G
63	22	HA0	0.70	35.0	100	—	EMVH630ADA220MHA0G
	33	HA0	0.70	35.0	100	—	EMVH630ADA330MHA0G
	33	JA0	0.50	25.0	170	—	EMVH630ADA330MJA0G
	47	HA0	0.70	35.0	100	—	EMVH630ADA470MHA0G
	47	JA0	0.50	25.0	170	—	EMVH630ADA470MJA0G
	100	KE0	0.25	12.5	500	—	EMVH630ARA101MKE0S
	220	KG5	0.20	10.0	600	—	EMVH630ARA221MKG5S
	330	LH0	0.18	9.0	820	—	EMVH630□DA331MLH0S
	470	LN0	0.11	5.5	1,100	—	EMVH630□DA471MLN0S
	10	HA0	0.75	50.0	70	—	EMVH800ADA100MHA0G
	22	HA0	0.75	50.0	70	—	EMVH800ADA220MHA0G
	22	JA0	0.55	35.0	115	—	EMVH800ADA220MJA0G
	33	HA0	0.75	50.0	70	—	EMVH800ADA330MHA0G
	33	JA0	0.55	35.0	115	—	EMVH800ADA330MJA0G
80	47	JA0	0.55	35.0	115	—	EMVH800ADA470MJA0G
	10	HA0	0.75	50.0	70	—	EMVH101ADA100MHA0G
	22	HA0	0.75	50.0	70	—	EMVH101ADA220MHA0G
	22	JA0	0.55	35.0	115	—	EMVH101ADA220MJA0G
	33	JA0	0.55	35.0	115	—	EMVH101ADA330MJA0G
	47	KE0	0.33	16.5	450	—	EMVH101ARA470MKE0S
	68	KG5	0.26	13.0	550	—	EMVH101ARA680MKG5S
	100	LH0	0.24	12.0	650	—	EMVH101□DA101MLH0S
	220	MN0	0.16	8.0	950	—	EMVH101□DA221MMN0S
	10	KE0	—	—	100	—	EMVH161ARA100MKE0S
	22	LH0	—	—	180	—	EMVH161□DA220MLH0S
	33	MH0	—	—	245	—	EMVH161□DA330MMH0S
	68	MN0	—	—	380	—	EMVH161□DA680MMN0S
	10	KE0	—	—	100	—	EMVH201ARA100MKE0S
100	22	LH0	—	—	180	—	EMVH201□DA220MLH0S
	33	LN0	—	—	250	—	EMVH201□DA330MLN0S
	33	MH0	—	—	245	—	EMVH201□DA330MMH0S
	47	MN0	—	—	315	—	EMVH201□DA470MMN0S
	10	KG5	—	—	110	—	EMVH251ARA100MKG5S
	22	LN0	—	—	200	—	EMVH251□DA220MLN0S
	22	MH0	—	—	205	—	EMVH251□DA220MMH0S
	33	MN0	—	—	260	—	EMVH251□DA330MMN0S
	4.7	KE0	—	—	70	—	EMVH401ARA47MKE0S
	6.8	LH0	—	—	100	—	EMVH401□DA688MLH0S
	10	LN0	—	—	140	—	EMVH401□DA100MLN0S
	10	MH0	—	—	135	—	EMVH401□DA100MMH0S
	3.3	KG5	—	—	65	—	EMVH451ARA33MKG5S
	4.7	LH0	—	—	85	—	EMVH451□DA47MLH0S
	10	MN0	—	—	145	—	EMVH451□DA100MMN0S

□ : Enter the appropriate terminal code.

◆RATED RIPPLE CURRENT MULTIPLIERS

●Frequency Multipliers

Rated voltage (V _{dc})	Size code	Frequency(Hz)				
		Capacitance(μF)	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
		220 to 470	0.50	0.85	0.94	1.00
		680 to 1,000	0.60	0.87	0.95	1.00
	KE0 to MN0	2,200 to 3,300	0.75	0.90	0.95	1.00
		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
		—	—	—	—	—
160 to 450	KE0 to MN0	—	—	—	—	—
		—	—	—	—	—

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.