

**Alchip™-MVA Series** *Upgrade!*

- φ 4 through φ 18 case sizes are fully lined up
- Endurance : 2,000 hours at 85°C
- Suitable to fit for downsized equipment
- Solvent resistant type except 100 to 450V<sub>dc</sub> (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant

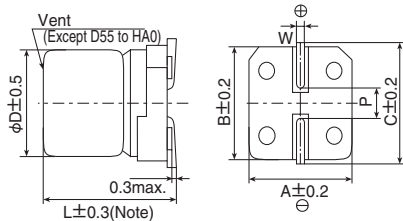


**◆ SPECIFICATIONS**

Items	Characteristics												
<b>Category</b>	-40 to +85°C												
<b>Temperature Range</b>	-40 to +85°C												
<b>Rated Voltage Range</b>	4 to 450V <sub>dc</sub>												
<b>Capacitance Tolerance</b>	±20% (M) (at 20°C, 120Hz)												
<b>Leakage Current</b>	Rated voltage (V <sub>dc</sub> )	4 to 100V						160 to 450V					
	D55 to JA0	I=0.01CV or 3μA, whichever is greater.(after 2 minutes)						—					
	KE0 to MN0	I=0.03CV or 4μA, whichever is greater.(after 1 minute)						I=0.04CV+100μA max.(after 1 minute)					
Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20°C)													
<b>Dissipation Factor (tan δ)</b>	Rated voltage (V <sub>dc</sub> )	4V	6.3V	10V	16V	25V	35V	50V	63V	100V	160 to 250V	400 & 450V	
	tan δ (Max.)	D55 to JA0	0.42	0.35	0.30	0.26	0.16	0.14	0.12	0.12	0.12	—	—
		KE0 to MN0	—	0.38	0.34	0.30	0.26	0.22	0.18	0.14	0.10	0.20	0.25
When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20°C, 120Hz)													
<b>Low Temperature Characteristics (Max. Impedance Ratio)</b>	Rated voltage (V <sub>dc</sub> )	4V	6.3V	10V	16V	25V	35V	50V	63V	100V	160 to 250V	400 & 450V	
	D55 to JA0	Z(-25°C)/Z(+20°C)	7	4	3	2	2	2	2	2	3	—	—
		Z(-40°C)/Z(+20°C)	17	10	8	6	4	3	3	3	4	—	—
	KE0 to MN0	Z(-25°C)/Z(+20°C)	—	5	4	3	2	2	2	2	2	3	6
Z(-40°C)/Z(+20°C)		—	12	10	8	5	4	3	3	3	6	10	
(at 120Hz)													
<b>Endurance</b>	The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for 2,000 hours at 85°C.												
	Size code	D55 to JA0			D55 to JA0			KE0 to MN0					
	Rated voltage (V <sub>dc</sub> )	4V & 6.3V			10 to 100V			6.3 to 450V					
	Capacitance change	≤ ±30% of the initial value			≤ ±20% of the initial value			≤ ±20% of the initial value					
	D.F. (tan δ)	≤200% of the initial specified value			≤200% of the initial specified value			≤200% of the initial specified value					
	Leakage current	≤The initial specified value			≤The initial specified value			≤The initial specified value					
<b>Shelf Life</b>	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 85°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.												
	Size code	D55 to JA0			D55 to JA0			KE0 to MN0					
	Rated voltage	4V & 6.3V			10 to 100V			6.3 to 450V					
	Capacitance change	≤ ±30% of the initial value			≤ ±20% of the initial value			≤ ±20% of the initial value					
	D.F. (tan δ)	≤200% of the initial specified value			≤200% of the initial specified value			≤200% of the initial specified value					
	Leakage current	≤The initial specified value			≤The initial specified value			≤The initial specified value					

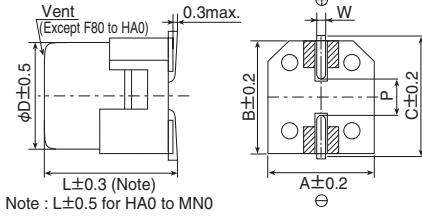
**◆ DIMENSIONS [mm]**

- Terminal Code : A
- Size code : D55 to MN0



Note : L±0.5 for HA0 to MN0

- Terminal Code : G (Vibration resistant structure)
- Size code : F80 to MN0



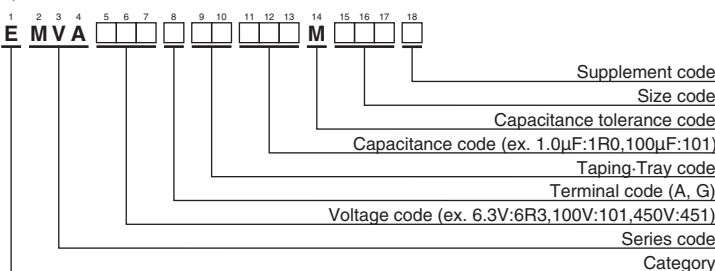
▨ : Dummy terminals

Size code	D	L	A	B	C	W	P
D55	4	5.2	4.3	4.3	5.1	0.5 to 0.8	1.0
E55	5	5.2	5.3	5.3	5.9	0.5 to 0.8	1.4
F55	6.3	5.2	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
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

**◆ MARKING**



**◆ PART NUMBERING SYSTEM**



**◆ RATED RIPPLE CURRENT MULTIPLIERS**

- Frequency Multipliers

Size code	Capacitance(μF)	Frequency(Hz)			
		1.0	1k	10k	100k
D55 to JA0	1.0	1.00	1.50	1.75	1.80
	2.2 to 10	1.00	1.30	1.40	1.50
	22 to 1,500	1.00	1.05	1.08	1.08
KE0 to MN0	4.7	1.00	1.75	2.30	2.50
	10 to 68	1.00	1.50	1.75	1.80
	100 to 1,000	1.00	1.30	1.40	1.50
	2,200 to 10,000	1.00	1.05	1.08	1.08

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.

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

◆ STANDARD RATINGS

□ is not solvent resistant.

WV (V <sub>dc</sub> )	Cap (μF)	Size code	tan δ	Rated ripple current (mArms/85°C, 120Hz)	Part No.	WV (V <sub>dc</sub> )	Cap (μF)	Size code	tan δ	Rated ripple current (mArms/85°C, 120Hz)	Part No.		
4	33	D55	0.42	25	EMVA4R0ARA330MD55G	35	33	F55	0.14	54	EMVA350ARA330MF55G		
	47	D55	0.42	30	EMVA4R0ARA470MD55G		100	F80	0.14	120	EMVA350□RA101MF80G		
	100	E55	0.42	50	EMVA4R0ARA101ME55G		150	HA0	0.14	210	EMVA350□RA151MHA0G		
	220	F55	0.42	80	EMVA4R0ARA221MF55G		220	HA0	0.14	260	EMVA350□RA221MHA0G		
	330	F80	0.42	135	EMVA4R0□RA331MF80G		330	JA0	0.14	360	EMVA350□RA331MJA0G		
	470	F80	0.42	150	EMVA4R0□RA471MF80G		470	KE0	0.22	600	EMVA350□RA471MKE0S		
	1,000	HA0	0.42	320	EMVA4R0□RA102MHA0G		1,000	LH0	0.22	1,100	EMVA350□RA102MLH0S		
6.3	33	D55	0.35	30	EMVA6R3ARA330MD55G	50	2,200	MN0	0.24	1,700	EMVA350□RA222MMN0S		
	47	D55	0.35	33	EMVA6R3ARA470MD55G		3.3	D55	0.12	15	EMVA500ARA3R3MD55G		
	100	E55	0.35	55	EMVA6R3ARA101ME55G		4.7	D55	0.12	18	EMVA500ARA4R7MD55G		
	220	F55	0.35	88	EMVA6R3ARA221MF55G		10	E55	0.12	30	EMVA500ARA100ME55G		
	330	F80	0.35	135	EMVA6R3□RA331MF80G		22	F55	0.12	47	EMVA500ARA220MF55G		
	470	HA0	0.35	280	EMVA6R3□RA471MHA0G		33	F80	0.12	70	EMVA500□RA330MF80G		
	680	HA0	0.35	290	EMVA6R3□RA681MHA0G		47	F80	0.12	85	EMVA500□RA470MF80G		
	820	HA0	0.35	320	EMVA6R3□RA821MHA0G		100	HA0	0.12	190	EMVA500□RA101MHA0G		
	1,000	JA0	0.35	430	EMVA6R3□RA102MJA0G		220	JA0	0.12	320	EMVA500□RA221MJA0G		
	1,500	JA0	0.35	480	EMVA6R3□RA152MJA0G		330	KE0	0.18	600	EMVA500□RA331MKE0S		
	2,200	KE0	0.40	890	EMVA6R3□RA222MKE0S		470	KG5	0.18	740	EMVA500□RA471MKG5S		
	3,300	KG5	0.42	1,000	EMVA6R3□RA332MKG5S		470	LH0	0.18	850	EMVA500□RA471MLH0S		
	3,300	LH0	0.42	1,200	EMVA6R3□RA332MLH0S		1,000	LN0	0.18	1,300	EMVA500□RA102MLN0S		
	4,700	LH0	0.44	1,400	EMVA6R3□RA472MLH0S		1,000	MN0	0.18	1,400	EMVA500□RA102MMN0S		
	6,800	LN0	0.48	1,750	EMVA6R3□RA682MLN0S		63	1.0	D55	0.12	8.0	EMVA630ARA1R0MD55G	
6,800	MH0	0.48	1,700	EMVA6R3□RA682MMH0S	2.2	D55		0.12	12	EMVA630ARA2R2MD55G			
10,000	MN0	0.56	2,000	EMVA6R3□RA103MMN0S	3.3	E55		0.12	17	EMVA630ARA3R3ME55G			
10	22	D55	0.30	26	EMVA100ARA220MD55G	4.7		E55	0.12	20	EMVA630ARA4R7ME55G		
	33	D55	0.30	30	EMVA100ARA330MD55G	10		F55	0.12	32	EMVA630ARA100MF55G		
	47	E55	0.30	44	EMVA100ARA470ME55G	22		F80	0.12	60	EMVA630□RA220MF80G		
	100	F55	0.30	70	EMVA100ARA101MF55G	33		HA0	0.12	110	EMVA630□RA330MHA0G		
	150	F55	0.30	79	EMVA100ARA151MF55G	47		HA0	0.12	130	EMVA630□RA470MHA0G		
	220	F80	0.30	130	EMVA100□RA221MF80G	56		JA0	0.12	160	EMVA630□RA560MJA0G		
	330	HA0	0.30	270	EMVA100□RA331MHA0G	68		JA0	0.12	170	EMVA630□RA680MJA0G		
	470	HA0	0.30	280	EMVA100□RA471MHA0G	100		KE0	0.14	380	EMVA630□RA101MKE0S		
	1,000	JA0	0.30	430	EMVA100□RA102MJA0G	220		KE0	0.14	580	EMVA630□RA221MKE0S		
	2,200	KE0	0.36	960	EMVA100□RA222MKE0S	330		KG5	0.14	720	EMVA630□RA331MKG5S		
	3,300	LH0	0.38	1,300	EMVA100□RA332MLH0S	330		LH0	0.14	820	EMVA630□RA331MLH0S		
	4,700	LN0	0.40	1,550	EMVA100□RA472MLN0S	470		LH0	0.14	950	EMVA630□RA471MLH0S		
	4,700	MH0	0.40	1,600	EMVA100□RA472MMH0S	470	MH0	0.14	1,000	EMVA630□RA471MMH0S			
	6,800	MN0	0.44	1,850	EMVA100□RA682MMN0S	100	22	HA0	0.12	90	EMVA101□RA220MHA0G		
	16	22	D55	0.26	26		EMVA160ARA220MD55G	33	JA0	0.12	120	EMVA101□RA330MJA0G	
33		E55	0.26	37	EMVA160ARA330ME55G		68	KE0	0.10	380	EMVA101□RA680MKE0S		
47		E55	0.26	44	EMVA160ARA470ME55G		100	KE0	0.10	440	EMVA101□RA101MKE0S		
100		F55	0.26	70	EMVA160ARA101MF55G		220	LN0	0.10	850	EMVA101□RA221MLN0S		
150		F80	0.26	110	EMVA160□RA151MF80G		220	MH0	0.10	800	EMVA101□RA221MMH0S		
220		F80	0.26	130	EMVA160□RA221MF80G		330	MN0	0.10	1,000	EMVA101□RA331MMN0S		
330		HA0	0.26	270	EMVA160□RA331MHA0G		160	47	KG5	0.20	370	EMVA161□RA470MKG5S	
470		HA0	0.26	280	EMVA160□RA471MHA0G			68	LH0	0.20	500	EMVA161□RA680MLH0S	
680		JA0	0.26	380	EMVA160□RA681MJA0G			100	LN0	0.20	590	EMVA161□RA101MLN0S	
1,000		KE0	0.30	710	EMVA160□RA102MKE0S			100	MH0	0.20	590	EMVA161□RA101MMH0S	
2,200		LH0	0.32	1,150	EMVA160□RA222MLH0S			200	22	KE0	0.20	240	EMVA201□RA220MKE0S
3,300		LN0	0.34	1,450	EMVA160□RA332MLN0S				33	KG5	0.20	310	EMVA201□RA330MKG5S
3,300		MH0	0.34	1,450	EMVA160□RA332MMH0S				47	LH0	0.20	420	EMVA201□RA470MLH0S
4,700		MN0	0.36	1,750	EMVA160□RA472MMN0S				68	LN0	0.20	510	EMVA201□RA680MLN0S
25		10	D55	0.16	24	EMVA250ARA100MD55G			68	MH0	0.20	510	EMVA201□RA680MMH0S
	22	E55	0.16	41	EMVA250ARA220ME55G	100			MN0	0.20	590	EMVA201□RA101MMN0S	
	33	E55	0.16	47	EMVA250ARA330ME55G	250			10	KE0	0.20	150	EMVA251□RA100MKE0S
	47	F55	0.16	60	EMVA250ARA470MF55G				22	KG5	0.20	240	EMVA251□RA220MKG5S
	56	F55	0.16	66	EMVA250ARA560MF55G				33	LH0	0.20	340	EMVA251□RA330MLH0S
	100	F80	0.16	120	EMVA250□RA101MF80G				47	LN0	0.20	420	EMVA251□RA470MLN0S
	150	HA0	0.16	210	EMVA250□RA151MHA0G				47	MH0	0.20	420	EMVA251□RA470MMH0S
	220	HA0	0.16	260	EMVA250□RA221MHA0G		68		MN0	0.20	490	EMVA251□RA680MMN0S	
	330	HA0	0.16	300	EMVA250□RA331MHA0G		400		4.7	KE0	0.25	120	EMVA401□RA4R7MKE0S
	470	JA0	0.16	400	EMVA250□RA471MJA0G				10	LH0	0.25	140	EMVA401□RA100MLH0S
	1,000	KE0	0.26	820	EMVA250□RA102MKE0S				22	LN0	0.25	280	EMVA401□RA220MLN0S
	2,200	LN0	0.28	1,450	EMVA250□RA222MLN0S			22	MH0	0.25	280	EMVA401□RA220MMH0S	
	2,200	MH0	0.28	1,400	EMVA250□RA222MMH0S			33	MN0	0.25	350	EMVA401□RA330MMN0S	
	3,300	MN0	0.30	1,800	EMVA250□RA332MMN0S			450	4.7	KE0	0.25	120	EMVA451□RA4R7MKE0S
	35	4.7	D55	0.14	18				EMVA350ARA4R7MD55G	10	LH0	0.25	140
10		D55	0.14	24	EMVA350ARA100MD55G				22	LN0	0.25	280	EMVA451□RA220MLN0S
22		E55	0.14	41	EMVA350ARA220ME55G				33	MN0	0.25	350	EMVA451□RA330MMN0S

□ : Enter the appropriate terminal code.