

Alchip™-MAK Series

- Suitable for small and low profile product such as the car audio and electronics
- Non solvent resistant type
- RoHS2 Compliant

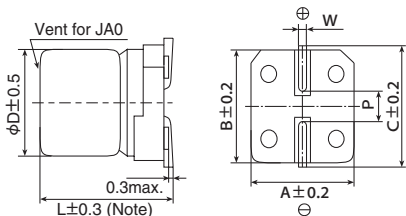


◆ SPECIFICATIONS

Items	Characteristics						
Category	-40 to +105°C						
Temperature Range	-40 to +105°C						
Rated Voltage Range	6.3 to 50V _{dc}						
Capacitance Tolerance	±20% (M) (at 20°C, 120Hz)						
Leakage Current	I=0.01CV or 3μA, 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})	6.3V	10V	16V	25V	35V	50V
	tan δ (Max.)	0.30	0.26	0.22	0.16	0.13	0.12
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (V _{dc})	6.3V	10V	16V	25V	35V	50V
	Z(-25°C)/Z(+20°C)	4	3	2	2	2	2
	Z(-40°C)/Z(+20°C)	8	5	4	3	3	3
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for 1,000 hours at 105°C.						
	Size code	D55 to F55			H63 to JA0		
	Capacitance change	≤ ±30% 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		
	Leakage current	≤The initial specified value			≤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 at 105°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 F55			H63 to JA0		
	Capacitance change	≤ ±30% 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		
	Leakage current	≤The initial specified value			≤The initial specified value		

◆ DIMENSIONS [mm]

- Terminal Code : A



Note : L ± 0.5 for H63 to JA0

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
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

◆ MARKING

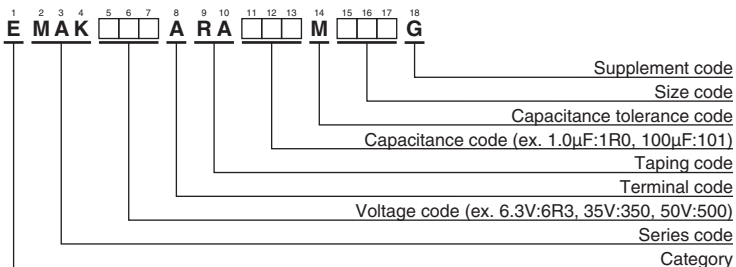
EX) 10V100μF



- Rated voltage symbol

Rated voltage (V _{dc})	Symbol
6.3	j
10	A
16	C
25	E
35	V
50	H

◆ PART NUMBERING SYSTEM



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



Alchip™-MAK Series

◆STANDARD RATINGS

WV (V _{dc})	Cap (μF)	Size Code	tan δ	Part No.	WV (V _{dc})	Cap (μF)	Size Code	tan δ	Part No.
6.3	22	D55	0.30	EMAK6R3ARA220MD55G	25	4.7	D55	0.16	EMAK250ARA4R7MD55G
	33	E55	0.30	EMAK6R3ARA330ME55G		10	E55	0.16	EMAK250ARA100ME55G
	47	E55	0.30	EMAK6R3ARA470ME55G		22	F55	0.16	EMAK250ARA220MF55G
	100	F55	0.30	EMAK6R3ARA101MF55G		33	F55	0.16	EMAK250ARA330MF55G
	220	H63	0.30	EMAK6R3ARA221MH63G		47	H63	0.16	EMAK250ARA470MH63G
	330	H63	0.30	EMAK6R3ARA331MH63G		100	HA0	0.16	EMAK250ARA101MHA0G
	470	HA0	0.30	EMAK6R3ARA471MHA0G		330	JA0	0.16	EMAK250ARA331MJA0G
1,000	JA0	0.30	EMAK6R3ARA102MJA0G	35	4.7	D55	0.13	EMAK350ARA4R7MD55G	
10	22	E55	0.26		EMAK100ARA220ME55G	10	E55	0.13	EMAK350ARA100ME55G
	33	E55	0.26		EMAK100ARA330ME55G	22	F55	0.13	EMAK350ARA220MF55G
	47	F55	0.26		EMAK100ARA470MF55G	33	H63	0.13	EMAK350ARA330MH63G
	100	F55	0.26		EMAK100ARA101MF55G	47	HA0	0.13	EMAK350ARA470MHA0G
	220	H63	0.26		EMAK100ARA221MH63G	100	JA0	0.13	EMAK350ARA101MJA0G
	330	HA0	0.26		EMAK100ARA331MHA0G	220	JA0	0.13	EMAK350ARA221MJA0G
	470	JA0	0.26	EMAK100ARA471MJA0G	50	1.0	D55	0.12	EMAK500ARA1R0MD55G
16	10	D55	0.22	EMAK160ARA100MD55G		2.2	D55	0.12	EMAK500ARA2R2MD55G
	22	E55	0.22	EMAK160ARA220ME55G		3.3	D55	0.12	EMAK500ARA3R3MD55G
	47	F55	0.22	EMAK160ARA470MF55G		4.7	E55	0.12	EMAK500ARA4R7ME55G
	100	H63	0.22	EMAK160ARA101MH63G		10	F55	0.12	EMAK500ARA100MF55G
	220	HA0	0.22	EMAK160ARA221MHA0G		22	H63	0.12	EMAK500ARA220MH63G
	330	HA0	0.22	EMAK160ARA331MHA0G		33	HA0	0.12	EMAK500ARA330MHA0G
	470	JA0	0.22	EMAK160ARA471MJA0G		47	HA0	0.12	EMAK500ARA470MHA0G
				100		JA0	0.12	EMAK500ARA101MJA0G	

Production of the products shown in is scheduled to be discontinued.



- Always read "Notes on Use" before using the product in order to enable you to use the product correctly and prevent any faults and accidents from occurring.
- Request the Product Specification on the product of NIPPON CHEMI-CON CORPORATION to refer to it as well as this brochure prior to the order of the products. Some specific notes on use of the ordered product may be described in the specifications.
- The products listed in this catalog are designed and manufactured for general electronics equipment use and are not intended for use in applications that can adversely affect human life; where the malfunction of equipment may cause damage to life or property. In addition, our products are not intended to be used in specific applications that may cause a major social impact. Please consult with us in advance of usage of our products in the following listed applications. ① Aerospace equipment ② Power generation equipment such as thermal power, nuclear power etc. ③ Medical equipment ④ Transport equipment (automobiles, trains, ships, etc.) ⑤ Transportation control equipment ⑥ Disaster prevention / crime prevention equipment ⑦ Highly publicized information processing equipment ⑧ Submarine equipment ⑨ Other applications that are not considered general-purpose applications.
- The circuits described as examples in this catalog and the "delivery specifications" are featured in order to show the operations and usage of our products, however, this fact does not guarantee that the circuits are available to function in your equipment systems. We are not in any case responsible for any failures or damage caused by the use of information contained herein. You should examine our products, of which the characteristics are described in the "delivery specifications" and other documents, and determine whether or not our products suit your requirements according to the specifications of your equipment systems. Therefore, you bear final responsibility regarding the use of our products.
Please make sure that you take appropriate safety measures such as use of redundant design and malfunction prevention measures in order to prevent fatal accidents and/or fires in the event any of our products malfunction.
- We strongly recommend our customers to purchase Nippon Chemi-Con products only through our official sales channels. We assume no responsibility for any defects or damages caused by using products purchased from outside our official sales channel or of counterfeit goods. In addition, we will ask the customer to pay the investigation cost for products purchased outside our official sales channel.
- We reserve the right to discontinue production and delivery of products. We do not guarantee that all the products included in this catalog will be available in the future.
The aforementioned does not apply in the case of individual agreements deviating from the foregoing for customer-specific products
- We continually strive to improve the quality and reliability of our products, but in any case that our product does not meet our published specifications, please stop using it promptly and contact us immediately. As for compensation for non-conforming goods delivered by Chemi-Con, we will limit it only to goods found in non-compliance of our published specifications. This may be accomplished by a no cost replacement of non-conforming individual products, a credit of the piece price paid per each individual non-conforming product, or in other ways deemed necessary.
In addition, we have an established system with enhanced traceability, therefore we will limit the applicable lot items for any potential compensation.

[Part Numbering System](#)

[Part Numbering System \(Appendix\)](#)

[Standardization](#)

[Available Items by Manufacturing Locations](#)

[Environmental Measures](#)

[Technical Note](#)

[Precautions and Guidelines](#)

[Recommended Soldering Conditions](#)

[Taping, Lead-preforming and Packaging](#)

[Available Terminals for Snap-in and Screw Mount Type](#)