

## Alchip™-MLF Series

- Endurance : 10,000 hours at 105°C
- Rated voltage range : 6.3 to 50V
- Nominal capacitance range : 1.0 to 1,000μF
- Suitable for long life and low profile products
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant

MVL  $\xrightarrow{\text{Longer life}}$  MLE  $\xrightarrow{\text{Longer life}}$  **MLF**

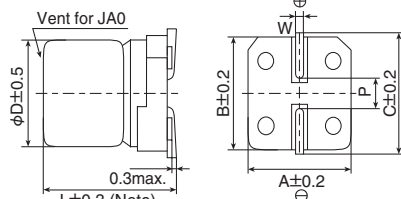


## ◆ SPECIFICATIONS

Items	Characteristics							
Category								
Temperature Range	-25 to +105°C							
Rated Voltage Range	6.3 to 50V <sub>dc</sub>							
Capacitance Tolerance	± 20%(M) (at 20°C,120Hz)							
Leakage Current	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 <sub>dc</sub> )	6.3V	10V	16V	25V	35V	50V	(at 20°C,120Hz)
	tan δ (Max.)	0.32	0.28	0.26	0.16	0.14	0.14	
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage(V <sub>dc</sub> )	6.3V	10V	16V	25V	35V	50V	(at 120Hz)
	Z(-10°C)/Z(+20°C)	4	3	2	2	2	2	
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for 10,000 hours at 105°C.							
	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 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.							
	Capacitance change	≤ ±30% of the initial value						
	D.F. (tan δ )	≤300% of the initial specified value						
	Leakage current	≤The initial specified value						

## ◆ DIMENSIONS [mm]

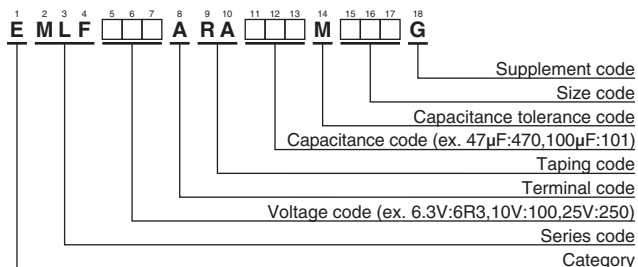
## ● Terminal Code : A



Note : L±0.5 for HA0 and JA0

Size code	D	L	A	B	C	W	P
D73	4	7.0	4.3	4.3	5.1	0.5 to 0.8	1.0
E73	5	7.0	5.3	5.3	5.9	0.5 to 0.8	1.4
F73	6.3	7.0	6.6	6.6	7.2	0.5 to 0.8	1.9
F90	6.3	8.7	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

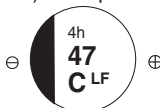
## ◆ PART NUMBERING SYSTEM



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

## ◆ MARKING

EX) 16V47μF



## ● Rated voltage symbol

Rated voltage (V <sub>dc</sub> )	6.3	10	16	25	35	50
Symbol	j	A	C	E	V	H



## Alchip™-MLF Series

## ◆STANDARD RATINGS

WV (V <sub>dc</sub> )	Cap (μF)	Size code	Rated ripple current (mA <sub>rms</sub> /105°C, 120Hz)	Part No.	WV (V <sub>dc</sub> )	Cap (μF)	Size code	Rated ripple current (mA <sub>rms</sub> /105°C, 120Hz)	Part No.
6.3	22	D73	22	EMLF6R3ARA220MD73G	35	1.0	D73	6.2	EMLF350ARA1R0MD73G
	47	E73	36	EMLF6R3ARA470ME73G		2.2	D73	11	EMLF350ARA2R2MD73G
	100	F73	60	EMLF6R3ARA101MF73G		3.3	D73	14	EMLF350ARA3R3MD73G
	220	F90	101	EMLF6R3ARA221MF90G		4.7	D73	15	EMLF350ARA4R7MD73G
	330	HA0	160	EMLF6R3ARA331MHA0G		4.7	E73	19	EMLF350ARA4R7ME73G
10	1,000	JA0	313	EMLF6R3ARA102MJA0G		10	E73	25	EMLF350ARA100ME73G
	33	E73	35	EMLF100ARA330ME73G		10	F73	30	EMLF350ARA100MF73G
	220	HA0	141	EMLF100ARA221MHA0G		22	F73	42	EMLF350ARA220MF73G
16	10	D73	18	EMLF160ARA100MD73G		22	F90	49	EMLF350ARA220MF90G
	22	E73	30	EMLF160ARA220ME73G		33	F90	57	EMLF350ARA330MF90G
	47	F73	50	EMLF160ARA470MF73G		220	JA0	216	EMLF350ARA221MJA0G
	100	F90	81	EMLF160ARA101MF90G	50	33	HA0	77	EMLF500ARA330MHA0G
	470	JA0	254	EMLF160ARA471MJA0G		47	HA0	92	EMLF500ARA470MHA0G
25	33	F73	48	EMLF250ARA330MF73G		100	JA0	151	EMLF500ARA101MJA0G
	47	F90	63	EMLF250ARA470MF90G					
	100	HA0	116	EMLF250ARA101MHA0G					

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

## ◆RATED RIPPLE CURRENT MULTIPLIERS

## ●Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	120	1k	10k	100k
1.0	1.00	1.50	1.75	1.80
2.2 to 10	1.00	1.30	1.40	1.50
22 to 1,000	1.00	1.05	1.08	1.08

The deterioration of aluminum electrolytic capacitors accelerates their life due to the internal heating produced by ripple current. For details, refer to Section "5-3 Ripple Current Effect on Lifetime" in the catalog, Technical Note.



- 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](#)