

# KMQ Series



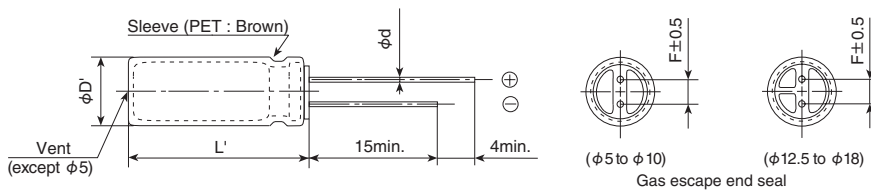
- Downsized from current standard KMG series
- Solvent resistant type except 160 to 450V<sub>dc</sub>  
(see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant

## SPECIFICATIONS

Items	Characteristics													
Category	-55 to +105°C(6.3 to 100V <sub>dc</sub> ) -40 to +105°C(160 to 400V <sub>dc</sub> ) -25 to +105°C(450V <sub>dc</sub> )													
Temperature Range														
Rated Voltage Range	6.3 to 450V <sub>dc</sub>													
Capacitance Tolerance	±20% (M) (at 20°C, 120Hz)													
Leakage Current	6.3 to 100V <sub>dc</sub>												160 to 450V <sub>dc</sub>	
	I=0.03CV or 4μA, whichever is greater.												CV≤1,000 I=0.1CV+40 max.	
													CV>1,000 I=0.04CV+100 max.	
Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20°C after 1 minute)														
Dissipation Factor (tan δ)	Rated voltage (V <sub>dc</sub> )	6.3V	10V	16V	25V	35V	50V	63V	100V	160 to 250V	350 to 400V	450V		
	tan δ (Max.)	0.28	0.24	0.20	0.16	0.14	0.12	0.10	0.08	0.20	0.24	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 <sub>dc</sub> )	6.3V	10V	16V	25V	35V	50V	63 to 100V	160 to 200V	250V	350V	400V	450V	
	Z(-25°C)/Z(+20°C)	≤φ8	5	4	3	2	2	2	2	3	3	4	4	6
		≥φ10	5	4	3	2	2	2	2	3	3	4	4	6
	Z(-40°C)/Z(+20°C)	≤φ8	10	8	6	4	3	3	3	8	10	8	8	—
≥φ10		10	8	6	4	3	3	3	4	4	6	6	—	
(at 120Hz)														
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for 1,000 hours (2,000 hours for φ 10 and more) at 105°C.													
	Capacitance change	≤ ±20% of the initial value												
	D.F. (tan δ)	≤200% 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.													
	Rated voltage	6.3 to 100V <sub>dc</sub>						160 to 450V <sub>dc</sub>						
	Capacitance change	≤ ±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						
	Leakage current	≤The initial specified value						≤500% of the initial specified value						

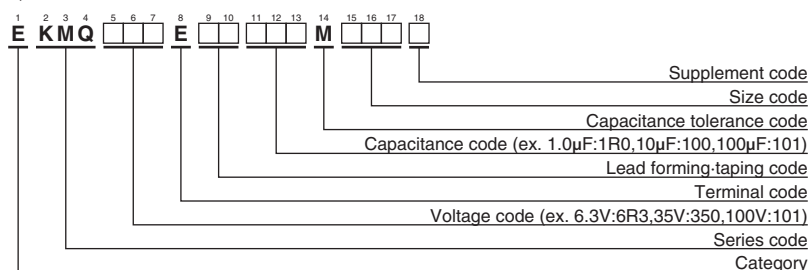
## DIMENSIONS [mm]

- Terminal Code : E



φD	5	6.3	8	10	12.5	16	18
φd	0.5	0.5	0.6	0.6	0.6	0.8	0.8
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5
φD'	φD+0.5max.						
L'	L+1.5max.						

## PART NUMBERING SYSTEM



Please refer to "Product code guide (radial lead type)"

◆ STANDARD RATINGS

WV (V <sub>dc</sub> )	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (mAmps/105°C, 120Hz)	Part No.	WV (V <sub>dc</sub> )	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (mAmps/105°C, 120Hz)	Part No.		
6.3	1,000	8 × 11.5	0.28	390	EKMQR3E□□102MHB5D	50	220	10 × 12.5	0.12	300	EKMQ500E□□221MJC5S		
	2,200	10 × 16	0.30	635	EKMQR3E□□222MJ16S		330	10 × 16	0.12	410	EKMQ500E□□331MJ16S		
	3,300	10 × 20	0.32	840	EKMQR3E□□332MJ20S		470	10 × 20	0.12	540	EKMQ500E□□471MJ20S		
	4,700	12.5 × 20	0.34	1,090	EKMQR3E□□472MK20S		1,000	12.5 × 25	0.12	950	EKMQ500E□□102MK25S		
	6,800	12.5 × 25	0.38	1,350	EKMQR3E□□682MK25S		2,200	16 × 31.5	0.14	1,410	EKMQ500E□□222MLN3S		
	10,000	16 × 25	0.46	1,650	EKMQR3E□□103ML25S		3,300	18 × 35.5	0.16	1,770	EKMQ500E□□332MMP1S		
	15,000	16 × 31.5	0.56	1,820	EKMQR3E□□153MLN3S		22	5 × 11	0.10	71	EKMQ630E□□220ME11D		
	22,000	18 × 35.5	0.70	2,280	EKMQR3E□□223MMP1S		33	6.3 × 11	0.10	100	EKMQ630E□□330MF11D		
10	220	5 × 11	0.24	155	EKMQ100E□□221ME11D	63	47	6.3 × 11	0.10	120	EKMQ630E□□470MF11D		
	330	6.3 × 11	0.24	210	EKMQ100E□□331MF11D		68	8 × 11.5	0.10	155	EKMQ630E□□680MHB5D		
	470	6.3 × 11	0.24	250	EKMQ100E□□471MF11D		100	8 × 11.5	0.10	200	EKMQ630E□□101MHB5D		
	1,000	10 × 12.5	0.24	460	EKMQ100E□□102MJC5S		220	10 × 16	0.10	335	EKMQ630E□□221MJ16S		
	2,200	10 × 16	0.26	705	EKMQ100E□□222MJ16S		330	10 × 20	0.10	510	EKMQ630E□□331MJ20S		
	3,300	12.5 × 20	0.28	1,000	EKMQ100E□□332MK20S		470	12.5 × 20	0.10	640	EKMQ630E□□471MK20S		
	4,700	12.5 × 25	0.30	1,260	EKMQ100E□□472MK25S		1,000	16 × 25	0.10	930	EKMQ630E□□101ML25S		
	6,800	16 × 25	0.34	1,570	EKMQ100E□□682ML25S		2,200	18 × 35.5	0.12	1,650	EKMQ630E□□222MMP1S		
	10,000	16 × 31.5	0.42	1,820	EKMQ100E□□103MLN3S		1.0	5 × 11	0.08	15	EKMQ101E□□1R0ME11D		
	15,000	16 × 35.5	0.52	2,050	EKMQ100E□□153MLP1S		2.2	5 × 11	0.08	21	EKMQ101E□□2R2ME11D		
22,000	18 × 40	0.66	2,420	EKMQ100E□□223MM40S	3.3	5 × 11	0.08	29	EKMQ101E□□3R3ME11D				
16	220	6.3 × 11	0.20	190	EKMQ160E□□221MF11D	100	4.7	5 × 11	0.08	32	EKMQ101E□□4R7ME11D		
	330	6.3 × 11	0.20	225	EKMQ160E□□331MF11D		10	5 × 11	0.08	50	EKMQ101E□□100ME11D		
	470	8 × 11.5	0.20	315	EKMQ160E□□471MHB5D		22	6.3 × 11	0.08	93	EKMQ101E□□220MF11D		
	1,000	10 × 12.5	0.20	500	EKMQ160E□□102MJC5S		33	8 × 11.5	0.08	130	EKMQ101E□□330MHB5D		
	2,200	10 × 20	0.22	710	EKMQ160E□□222MJ20S		47	8 × 11.5	0.08	140	EKMQ101E□□470MHB5D		
	3,300	12.5 × 25	0.24	1,170	EKMQ160E□□332MK25S		68	10 × 12.5	0.08	190	EKMQ101E□□680MJC5S		
	4,700	16 × 25	0.26	1,500	EKMQ160E□□472ML25S		100	10 × 16	0.08	240	EKMQ101E□□101MJ16S		
	6,800	16 × 25	0.30	1,600	EKMQ160E□□682ML25S		220	12.5 × 20	0.08	390	EKMQ101E□□221MK20S		
	10,000	16 × 35.5	0.38	1,930	EKMQ160E□□103MLP1S		330	12.5 × 25	0.08	540	EKMQ101E□□331MK25S		
	15,000	18 × 40	0.48	2,210	EKMQ160E□□153MM40S		470	16 × 25	0.08	715	EKMQ101E□□471ML25S		
25	100	5 × 11	0.16	125	EKMQ250E□□101ME11D	160	1,000	18 × 35.5	0.08	960	EKMQ101E□□102MMP1S		
	220	6.3 × 11	0.16	200	EKMQ250E□□102MF11D		68	12.5 × 20	0.20	250	EKMQ161E□□680MK20S		
	330	8 × 11.5	0.16	310	EKMQ250E□□331MHB5D		100	12.5 × 25	0.20	310	EKMQ161E□□101MK25S		
	470	10 × 12.5	0.16	380	EKMQ250E□□471MJC5S		220	16 × 31.5	0.20	540	EKMQ161E□□221MLN3S		
	1,000	10 × 16	0.16	610	EKMQ250E□□102MJ16S		330	18 × 35.5	0.20	705	EKMQ161E□□331MMP1S		
	2,200	12.5 × 25	0.18	1,090	EKMQ250E□□222MK25S		470	18 × 40	0.20	855	EKMQ161E□□471MM40S		
	3,300	16 × 25	0.20	1,400	EKMQ250E□□332ML25S		200	47	12.5 × 20	0.20	195	EKMQ201E□□470MK20S	
	4,700	16 × 25	0.22	1,570	EKMQ250E□□472ML25S			68	12.5 × 25	0.20	250	EKMQ201E□□680MK25S	
	6,800	16 × 35.5	0.26	1,850	EKMQ250E□□682MLP1S			100	16 × 25	0.20	335	EKMQ201E□□101ML25S	
	10,000	18 × 40	0.34	2,000	EKMQ250E□□103MM40S			220	16 × 35.5	0.20	500	EKMQ201E□□221MLP1S	
35	47	5 × 11	0.14	93	EKMQ350E□□470ME11D	250		330	18 × 40	0.20	675	EKMQ201E□□331MM40S	
	68	6.3 × 11	0.14	110	EKMQ350E□□680MF11D			47	12.5 × 20	0.20	190	EKMQ251E□□470MK20S	
	100	6.3 × 11	0.14	150	EKMQ350E□□101MF11D			68	16 × 25	0.20	270	EKMQ251E□□680ML25S	
	220	8 × 11.5	0.14	270	EKMQ350E□□221MHB5D			100	16 × 25	0.20	310	EKMQ251E□□101ML25S	
	330	10 × 12.5	0.14	350	EKMQ350E□□331MJC5S			220	18 × 35.5	0.20	485	EKMQ251E□□221MMP1S	
	470	10 × 16	0.14	460	EKMQ350E□□471MJ16S			350	22	12.5 × 20	0.24	130	EKMQ351E□□220MK20S
	1,000	12.5 × 20	0.14	810	EKMQ350E□□102MK20S		33		12.5 × 25	0.24	170	EKMQ351E□□330MK25S	
	2,200	16 × 25	0.16	1,260	EKMQ350E□□222ML25S		47		16 × 25	0.24	230	EKMQ351E□□470ML25S	
	3,300	16 × 31.5	0.18	1,500	EKMQ350E□□332MLN3S		68		16 × 25	0.24	285	EKMQ351E□□680ML25S	
	4,700	16 × 35.5	0.20	1,780	EKMQ350E□□472MLP1S		100		18 × 31.5	0.24	375	EKMQ351E□□101MMN3S	
6,800	18 × 40	0.24	2,000	EKMQ350E□□682MM40S	400	22	12.5 × 25		0.24	145	EKMQ401E□□220MK25S		
50	1.0	5 × 11	0.12	13		EKMQ500E□□1R0ME11D	450		33	16 × 25	0.24	195	EKMQ401E□□330ML25S
	2.2	5 × 11	0.12	20		EKMQ500E□□2R2ME11D			47	16 × 25	0.24	200	EKMQ401E□□470ML25S
	3.3	5 × 11	0.12	25		EKMQ500E□□3R3ME11D			68	16 × 31.5	0.24	240	EKMQ401E□□680MLN3S
	4.7	5 × 11	0.12	30		EKMQ500E□□4R7ME11D			100	18 × 35.5	0.24	310	EKMQ401E□□101MMP1S
	10	5 × 11	0.12	46		EKMQ500E□□100ME11D		22	12.5 × 25	0.24	100	EKMQ451E□□220MK25S	
	22	5 × 11	0.12	68		EKMQ500E□□220ME11D		33	16 × 25	0.24	125	EKMQ451E□□330ML25S	
	33	5 × 11	0.12	90		EKMQ500E□□330ME11D		47	16 × 31.5	0.24	155	EKMQ451E□□470MLN3S	
	47	6.3 × 11	0.12	115		EKMQ500E□□470MF11D		68	18 × 35.5	0.24	185	EKMQ451E□□680MMP1S	
	68	6.3 × 11	0.12	150		EKMQ500E□□680MF11D		100	18 × 40	0.24	200	EKMQ451E□□101MM40S	
	100	8 × 11.5	0.12	190	EKMQ500E□□101MHB5D								

□□ : Enter the appropriate lead forming or taping code.  
 Production of the products shown in [ ] is scheduled to be discontinued.  
 \*1: Assembly boards with the designated products attached cannot be cleaned.



## KMQ Series

### ◆ RATED RIPPLE CURRENT MULTIPLIERS

#### ● Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	50	120	300	1k	10k	100k
1.0 to 4.7	0.65	1.00	1.35	1.75	2.30	2.50
10 to 68	0.75	1.00	1.25	1.50	1.75	1.80
100 to 1,000	0.80	1.00	1.15	1.30	1.40	1.50
2,200 to	0.85	1.00	1.03	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.  
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- 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](#)