

# 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															
<b>Category Temperature Range</b>	-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> )															
<b>Rated Voltage Range</b>	6.3 to 450V <sub>dc</sub>															
<b>Capacitance Tolerance</b>	±20% (M) (at 20°C, 120Hz)															
<b>Leakage Current</b>	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)																
<b>Dissipation Factor (tan δ)</b>	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)															
<b>Low Temperature Characteristics (Max. Impedance Ratio)</b>	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)		
<b>Endurance</b>	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														
<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 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

□ is not solvent resistant.

WV (V <sub>dc</sub> )	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (mA rms/105°C, 120Hz)	Part No.	WV (V <sub>dc</sub> )	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (mA rms/105°C, 120Hz)	Part No.
6.3	1,000	8 × 11.5	0.28	390	EKMQR3E□□102MHB5D	63	33	6.3 × 11	0.10	100	EKMQR3E□□330MF11D
	2,200	10 × 16	0.30	635	EKMQR3E□□222MJ16S		47	6.3 × 11	0.10	120	EKMQR3E□□470MF11D
	3,300	10 × 20	0.32	840	EKMQR3E□□332MJ20S		68	8 × 11.5	0.10	155	EKMQR3E□□680MHB5D
	4,700	12.5 × 20	0.34	1,090	EKMQR3E□□472MK20S		100	8 × 11.5	0.10	200	EKMQR3E□□101MHB5D
	6,800	12.5 × 25	0.38	1,350	EKMQR3E□□682MK25S		220	10 × 16	0.10	335	EKMQR3E□□221MJ16S
	10,000	16 × 25	0.46	1,650	EKMQR3E□□103ML25S		330	10 × 20	0.10	510	EKMQR3E□□331MJ20S
	15,000	16 × 31.5	0.56	1,820	EKMQR3E□□153MLN3S		470	12.5 × 20	0.10	640	EKMQR3E□□471MK20S
	22,000	18 × 35.5	0.70	2,280	EKMQR3E□□223MMP1S		1,000	16 × 25	0.10	930	EKMQR3E□□102ML25S
10	220	5 × 11	0.24	155	EKMQR3E□□221ME11D	2,200	18 × 35.5	0.12	1,650	EKMQR3E□□222MMP1S	
	330	6.3 × 11	0.24	210	EKMQR3E□□331MF11D	100	1.0	5 × 11	0.08	15	EKMQR3E□□1R0ME11D
	470	6.3 × 11	0.24	250	EKMQR3E□□471MF11D		2.2	5 × 11	0.08	21	EKMQR3E□□2R2ME11D
	1,000	10 × 12.5	0.24	460	EKMQR3E□□102MJC5S		3.3	5 × 11	0.08	29	EKMQR3E□□3R3ME11D
	2,200	10 × 16	0.26	705	EKMQR3E□□222MJ16S		4.7	5 × 11	0.08	32	EKMQR3E□□4R7ME11D
	3,300	12.5 × 20	0.28	1,000	EKMQR3E□□332MK20S		10	5 × 11	0.08	50	EKMQR3E□□100ME11D
	4,700	12.5 × 25	0.30	1,260	EKMQR3E□□472MK25S		22	6.3 × 11	0.08	93	EKMQR3E□□220MF11D
	6,800	16 × 25	0.34	1,570	EKMQR3E□□682ML25S		33	8 × 11.5	0.08	130	EKMQR3E□□330MHB5D
10,000	16 × 31.5	0.42	1,820	EKMQR3E□□103MLN3S	47		8 × 11.5	0.08	140	EKMQR3E□□470MHB5D	
16	15,000	16 × 35.5	0.52	2,050	EKMQR3E□□153MLP1S	68	10 × 12.5	0.08	190	EKMQR3E□□680MJC5S	
	22,000	18 × 40	0.66	2,420	EKMQR3E□□223MM40S	100	10 × 16	0.08	240	EKMQR3E□□101MJ16S	
	220	6.3 × 11	0.20	190	EKMQR3E□□221MF11D	220	12.5 × 20	0.08	390	EKMQR3E□□221MK20S	
	330	6.3 × 11	0.20	225	EKMQR3E□□331MF11D	330	12.5 × 25	0.08	540	EKMQR3E□□331MK25S	
	470	8 × 11.5	0.20	315	EKMQR3E□□471MHB5D	470	16 × 25	0.08	715	EKMQR3E□□471ML25S	
	1,000	10 × 12.5	0.20	500	EKMQR3E□□102MJC5S	1,000	18 × 35.5	0.08	960	EKMQR3E□□102MMP1S	
	2,200	10 × 20	0.22	710	EKMQR3E□□222MJ20S	160	10	8 × 11.5	0.20	41	EKMQR3E□□100MHB5D
	3,300	12.5 × 25	0.24	1,170	EKMQR3E□□332MK25S		22	10 × 12.5	0.20	92	EKMQR3E□□220MJC5S
4,700	16 × 25	0.26	1,500	EKMQR3E□□472ML25S	33		10 × 16	0.20	125	EKMQR3E□□330MJ16S	
6,800	16 × 25	0.30	1,600	EKMQR3E□□682ML25S	47		10 × 20	0.20	150	EKMQR3E□□470MJ20S	
10,000	16 × 35.5	0.38	1,930	EKMQR3E□□103MLP1S	68		12.5 × 20	0.20	250	EKMQR3E□□680MK20S	
15,000	18 × 40	0.48	2,210	EKMQR3E□□153MM40S	100		12.5 × 25	0.20	310	EKMQR3E□□101MK25S	
100	5 × 11	0.16	125	EKMQR3E□□101ME11D	220		16 × 31.5	0.20	540	EKMQR3E□□221MLN3S	
220	6.3 × 11	0.16	200	EKMQR3E□□221MF11D	330		18 × 35.5	0.20	705	EKMQR3E□□331MMP1S	
25	330	8 × 11.5	0.16	310	EKMQR3E□□331MHB5D	470	18 × 40	0.20	855	EKMQR3E□□471MM40S	
	470	10 × 12.5	0.16	380	EKMQR3E□□471MJC5S	200	1.0	6.3 × 11	0.20	16	EKMQR3E□□1R0MF11D
	1,000	10 × 16	0.16	610	EKMQR3E□□102MJ16S		2.2	6.3 × 11	0.20	25	EKMQR3E□□2R2MF11D
	2,200	12.5 × 25	0.18	1,090	EKMQR3E□□222MK25S		3.3	6.3 × 11	0.20	30	EKMQR3E□□3R3MF11D
	3,300	16 × 25	0.20	1,400	EKMQR3E□□332ML25S		4.7	6.3 × 11	0.20	35	EKMQR3E□□4R7MF11D
	4,700	16 × 25	0.22	1,570	EKMQR3E□□472ML25S		10	8 × 11.5	0.20	57	EKMQR3E□□100MHB5D
	6,800	16 × 35.5	0.26	1,850	EKMQR3E□□682MLP1S		22	10 × 16	0.20	105	EKMQR3E□□220MJ16S
	10,000	18 × 40	0.34	2,000	EKMQR3E□□103MM40S		33	10 × 20	0.20	140	EKMQR3E□□330MJ20S
47	5 × 11	0.14	93	EKMQR3E□□470ME11D	47		12.5 × 20	0.20	195	EKMQR3E□□470MK20S	
35	68	6.3 × 11	0.14	110	EKMQR3E□□680MF11D	68	12.5 × 25	0.20	250	EKMQR3E□□680MK25S	
	100	6.3 × 11	0.14	150	EKMQR3E□□101MF11D	100	16 × 25	0.20	335	EKMQR3E□□101ML25S	
	220	8 × 11.5	0.14	270	EKMQR3E□□221MHB5D	220	16 × 35.5	0.20	500	EKMQR3E□□221MLP1S	
	330	10 × 12.5	0.14	350	EKMQR3E□□331MJC5S	330	18 × 40	0.20	675	EKMQR3E□□331MM40S	
	470	10 × 16	0.14	460	EKMQR3E□□471MJ16S	250	3.3	6.3 × 11	0.20	28	EKMQR3E□□3R3MF11D
	1,000	12.5 × 20	0.14	810	EKMQR3E□□102MK20S		4.7	6.3 × 11	0.20	35	EKMQR3E□□4R7MF11D
	2,200	16 × 25	0.16	1,260	EKMQR3E□□222ML25S		10	10 × 12.5	0.20	71	EKMQR3E□□100MJC5S
	3,300	16 × 31.5	0.18	1,500	EKMQR3E□□332MLN3S		22	10 × 20	0.20	105	EKMQR3E□□220MJ20S
4,700	16 × 35.5	0.20	1,780	EKMQR3E□□472MLP1S	33		10 × 20	0.20	140	EKMQR3E□□330MJ20S	
6,800	18 × 40	0.24	2,000	EKMQR3E□□682MM40S	47		12.5 × 20	0.20	190	EKMQR3E□□470MK20S	
1.0	5 × 11	0.12	13	EKMQR3E□□1R0ME11D	68		16 × 25	0.20	270	EKMQR3E□□680ML25S	
2.2	5 × 11	0.12	20	EKMQR3E□□2R2ME11D	100		16 × 25	0.20	310	EKMQR3E□□101ML25S	
50	3.3	5 × 11	0.12	25	EKMQR3E□□3R3ME11D	220	18 × 35.5	0.20	485	EKMQR3E□□221MMP1S	
	4.7	5 × 11	0.12	30	EKMQR3E□□4R7ME11D	350	2.2	6.3 × 11	0.24	21	EKMQR3E□□2R2MF11D
	10	5 × 11	0.12	46	EKMQR3E□□100ME11D		3.3	8 × 11.5	0.24	30	EKMQR3E□□3R3MHB5D
	22	5 × 11	0.12	68	EKMQR3E□□220ME11D		4.7	8 × 11.5	0.24	39	EKMQR3E□□4R7MHB5D
	33	5 × 11	0.12	90	EKMQR3E□□330ME11D		10	10 × 12.5	0.24	64	EKMQR3E□□100MJC5S
	47	6.3 × 11	0.12	115	EKMQR3E□□470MF11D		22	12.5 × 20	0.24	130	EKMQR3E□□220MK20S
	68	6.3 × 11	0.12	150	EKMQR3E□□680MF11D		33	12.5 × 25	0.24	170	EKMQR3E□□330MK25S
	100	8 × 11.5	0.12	190	EKMQR3E□□101MHB5D		47	16 × 25	0.24	230	EKMQR3E□□470ML25S
220	10 × 12.5	0.12	300	EKMQR3E□□221MJC5S	68		16 × 25	0.24	285	EKMQR3E□□680ML25S	
63	330	10 × 16	0.12	410	EKMQR3E□□331MJ16S	100	18 × 31.5	0.24	375	EKMQR3E□□101MMN3S	
	470	10 × 20	0.12	540	EKMQR3E□□471MJ20S	400	1.0	6.3 × 11	0.24	15	EKMQR3E□□1R0MF11D
	1,000	12.5 × 25	0.12	950	EKMQR3E□□102MK25S		2.2	8 × 11.5	0.24	27	EKMQR3E□□2R2MHB5D
	2,200	16 × 31.5	0.14	1,410	EKMQR3E□□222MLN3S		3.3	8 × 11.5	0.24	34	EKMQR3E□□3R3MHB5D
	3,300	18 × 35.5	0.16	1,770	EKMQR3E□□332MMP1S		4.7	10 × 12.5	0.24	42	EKMQR3E□□4R7MJC5S
	22	5 × 11	0.10	71	EKMQR3E□□220ME11D		10	10 × 16	0.24	64	EKMQR3E□□100MJ16S

□ □ : Enter the appropriate lead forming or taping code.

◆ STANDARD RATINGS

is not solvent resistant.

WV (V <sub>dc</sub> )	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (mA <sub>rms</sub> /105°C, 120Hz)	Part No.	WV (V <sub>dc</sub> )	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (mA <sub>rms</sub> /105°C, 120Hz)	Part No.
400	22	12.5 × 25	0.24	145	EKMQ401E□□220MK25S	450	4.7	10 × 12.5	0.24	32	EKMQ451E□□4R7MJC5S
	33	16 × 25	0.24	195	EKMQ401E□□330ML25S		10	10 × 20	0.24	56	EKMQ451E□□100MJ20S
	47	16 × 25	0.24	200	EKMQ401E□□470ML25S		22	12.5 × 25	0.24	100	EKMQ451E□□220MK25S
	68	16 × 31.5	0.24	240	EKMQ401E□□680MLN3S		33	16 × 25	0.24	125	EKMQ451E□□330ML25S
	100	18 × 35.5	0.24	310	EKMQ401E□□101MMP1S		47	16 × 31.5	0.24	155	EKMQ451E□□470MLN3S
450	2.2	8 × 11.5	0.24	20	EKMQ451E□□2R2MHB5D	68	18 × 35.5	0.24	185	EKMQ451E□□680MMP1S	
	3.3	10 × 12.5	0.24	28	EKMQ451E□□3R3MJC5S	100	18 × 40	0.24	200	EKMQ451E□□101MM40S	

□ □ : Enter the appropriate lead forming or taping code.

◆ 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 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.