

# KMG Series

- Endurance with ripple current : 1,000 to 2,000 hours at 105°C
- Solvent resistant type except 350 to 450V<sub>dc</sub>  
(see PRECAUTIONS AND GUIDELINES)
- RoHS Compliant

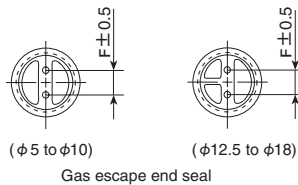
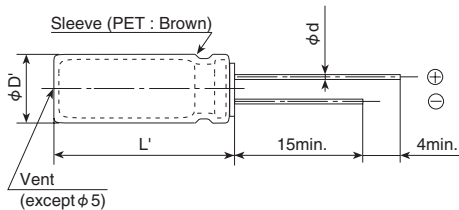


## ◆ SPECIFICATIONS

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>																					
	I=0.03CV or 4µA, whichever is greater.																					
	160 to 450V <sub>dc</sub>																					
	<table border="1"> <thead> <tr> <th>CV</th> <th>Time</th> <th>After 1minute</th> <th>After 5minutes</th> </tr> </thead> <tbody> <tr> <td>CV ≤ 1,000</td> <td></td> <td>I=0.1CV+40 max.</td> <td>I=0.03CV+15 max.</td> </tr> <tr> <td>CV &gt; 1,000</td> <td></td> <td>I=0.04CV+100 max.</td> <td>I=0.02CV+25 max.</td> </tr> </tbody> </table>											CV	Time	After 1minute	After 5minutes	CV ≤ 1,000		I=0.1CV+40 max.	I=0.03CV+15 max.	CV > 1,000		I=0.04CV+100 max.
CV	Time	After 1minute	After 5minutes																			
CV ≤ 1,000		I=0.1CV+40 max.	I=0.03CV+15 max.																			
CV > 1,000		I=0.04CV+100 max.	I=0.02CV+25 max.																			
(at 20°C after 1 minute) (at 20°C)																						
Where, I : Max. leakage current (µA), C : Nominal capacitance (µF), V : Rated voltage (V)																						
<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.)	0.34	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	63V	100V	160 to 250V	350 to 400V	450V										
	Z(-25°C)/Z(+20°C)	5	4	3	2	2	2	2	2	3	6	6										
	Z(-40°C)/Z(+20°C)	12	10	8	5	4	3	3	3	4	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 to meet the following two conditions 1): 160V <sub>dc</sub> and larger, 2) : φ 12.5 and larger) 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														

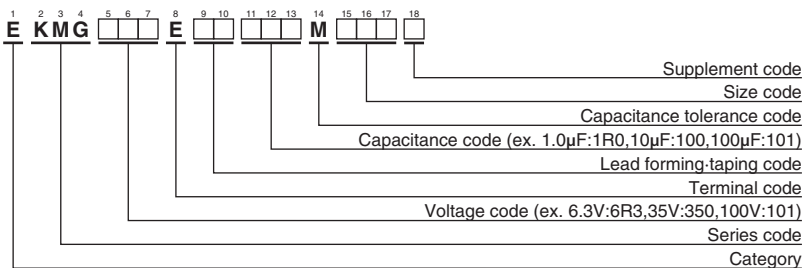
## ◆ DIMENSIONS [mm]

- 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

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	220	5 × 11	0.34	140	EKMG6R3E□□221ME11D	63	10	5 × 11	0.10	46	EKMG630E□□100ME11D
	330	6.3 × 11	0.34	190	EKMG6R3E□□331MF11D		22	5 × 11	0.10	71	EKMG630E□□220ME11D
	470	6.3 × 11	0.34	230	EKMG6R3E□□471MF11D		33	6.3 × 11	0.10	100	EKMG630E□□330MF11D
	1,000	8 × 11.5	0.34	380	EKMG6R3E□□102MHB5D		47	6.3 × 11	0.10	120	EKMG630E□□470MF11D
	2,200	10 × 20	0.36	710	EKMG6R3E□□222MJ20S		100	10 × 12.5	0.10	215	EKMG630E□□101MJC5S
	3,300	10 × 20	0.38	840	EKMG6R3E□□332MJ20S		220	10 × 16	0.10	335	EKMG630E□□221MJ16S
	4,700	12.5 × 20	0.40	1,090	EKMG6R3E□□472MK20S		330	10 × 20	0.10	510	EKMG630E□□331MJ20S
	6,800	12.5 × 25	0.44	1,350	EKMG6R3E□□682MK25S		470	12.5 × 20	0.10	640	EKMG630E□□471MK20S
	10,000	16 × 25	0.52	1,650	EKMG6R3E□□103ML25S		1,000	16 × 25	0.10	930	EKMG630E□□102ML25S
	15,000	16 × 35.5	0.62	2,010	EKMG6R3E□□153MLP1S		1.0	5 × 11	0.08	15	EKMG101E□□1R0ME11D
22,000	18 × 40	0.76	2,350	EKMG6R3E□□223MM40S	2.2	5 × 11	0.08	21	EKMG101E□□2R2ME11D		
10	220	6.3 × 11	0.24	170	EKMG100E□□221MF11D	3.3	5 × 11	0.08	29	EKMG101E□□3R3ME11D	
	330	6.3 × 11	0.24	200	EKMG100E□□331MF11D	4.7	5 × 11	0.08	32	EKMG101E□□4R7ME11D	
	470	8 × 11.5	0.24	250	EKMG100E□□471MHB5D	10	6.3 × 11	0.08	54	EKMG101E□□100MF11D	
	1,000	10 × 12.5	0.24	460	EKMG100E□□102MJC5S	22	8 × 11.5	0.08	93	EKMG101E□□220MHB5D	
	2,200	10 × 20	0.26	760	EKMG100E□□222MJ20S	33	8 × 11.5	0.08	130	EKMG101E□□330MHB5D	
	3,300	12.5 × 20	0.28	1,000	EKMG100E□□332MK20S	47	10 × 12.5	0.08	165	EKMG101E□□470MJC5S	
	4,700	12.5 × 25	0.30	1,260	EKMG100E□□472MK25S	100	10 × 20	0.08	265	EKMG101E□□101MJ20S	
	6,800	16 × 25	0.34	1,570	EKMG100E□□682ML25S	220	12.5 × 25	0.08	440	EKMG101E□□221MK25S	
	10,000	16 × 35.5	0.42	1,890	EKMG100E□□103MLP1S	330	16 × 25	0.08	540	EKMG101E□□331ML25S	
	15,000	18 × 35.5	0.52	2,180	EKMG100E□□153MMP1S	470	16 × 31.5	0.08	715	EKMG101E□□471MLN3S	
16	100	5 × 11	0.20	110	EKMG160E□□101ME11D	1,000	18 × 40	0.08	985	EKMG101E□□102MM40S	
	220	6.3 × 11	0.20	180	EKMG160E□□221MF11D	3.3	6.3 × 11	0.20	28	EKMG161E□□3R3MF11D	
	330	8 × 11.5	0.20	260	EKMG160E□□331MHB5D	4.7	6.3 × 11	0.20	34	EKMG161E□□4R7MF11D	
	470	8 × 11.5	0.20	310	EKMG160E□□471MHB5D	10	10 × 12.5	0.20	67	EKMG161E□□100MJC5S	
	1,000	10 × 16	0.20	560	EKMG160E□□102MJ16S	22	10 × 20	0.20	120	EKMG161E□□220MJ20S	
	2,200	12.5 × 20	0.22	920	EKMG160E□□222MK20S	33	10 × 20	0.20	145	EKMG161E□□330MJ20S	
	3,300	12.5 × 25	0.24	1,170	EKMG160E□□332MK25S	47	12.5 × 20	0.20	195	EKMG161E□□470MK20S	
	4,700	16 × 25	0.26	1,480	EKMG160E□□472ML25S	100	16 × 25	0.20	335	EKMG161E□□101ML25S	
	6,800	16 × 31.5	0.30	1,780	EKMG160E□□682MLN3S	220	16 × 31.5	0.20	540	EKMG161E□□221MLN3S	
	10,000	18 × 35.5	0.38	2,060	EKMG160E□□103MMP1S	330	18 × 35.5	0.20	705	EKMG161E□□331MMP1S	
25	47	5 × 11	0.16	80	EKMG250E□□470ME11D	3.3	6.3 × 11	0.20	28	EKMG201E□□3R3MF11D	
	100	6.3 × 11	0.16	130	EKMG250E□□101MF11D	4.7	8 × 11.5	0.20	39	EKMG201E□□4R7MHB5D	
	220	8 × 11.5	0.16	230	EKMG250E□□221MHB5D	10	10 × 16	0.20	74	EKMG201E□□100MJ16S	
	330	8 × 11.5	0.16	310	EKMG250E□□331MHB5D	22	10 × 20	0.20	120	EKMG201E□□220MJ20S	
	470	10 × 12.5	0.16	380	EKMG250E□□471MJC5S	33	12.5 × 20	0.20	160	EKMG201E□□330MK20S	
	1,000	10 × 20	0.16	680	EKMG250E□□102MJ20S	47	12.5 × 20	0.20	195	EKMG201E□□470MK20S	
	2,200	12.5 × 25	0.18	1,090	EKMG250E□□222MK25S	100	16 × 25	0.20	335	EKMG201E□□101ML25S	
	3,300	16 × 25	0.20	1,400	EKMG250E□□332ML25S	220	18 × 35.5	0.20	575	EKMG201E□□221MMP1S	
	4,700	16 × 31.5	0.22	1,710	EKMG250E□□472MLN3S	2.2	6.3 × 11	0.20	23	EKMG251E□□2R2MF11D	
	6,800	18 × 35.5	0.26	2,040	EKMG250E□□682MMP1S	3.3	8 × 11.5	0.20	32	EKMG251E□□3R3MHB5D	
35	47	5 × 11	0.14	90	EKMG350E□□470ME11D	4.7	8 × 11.5	0.20	39	EKMG251E□□4R7MHB5D	
	100	6.3 × 11	0.14	150	EKMG350E□□101MF11D	10	10 × 16	0.20	74	EKMG251E□□100MJ16S	
	220	8 × 11.5	0.14	270	EKMG350E□□221MHB5D	22	12.5 × 20	0.20	130	EKMG251E□□220MK20S	
	330	10 × 12.5	0.14	350	EKMG350E□□331MJC5S	33	12.5 × 20	0.20	160	EKMG251E□□330MK20S	
	470	10 × 16	0.14	460	EKMG350E□□471MJ16S	47	12.5 × 25	0.20	210	EKMG251E□□470MK25S	
	1,000	12.5 × 20	0.14	810	EKMG350E□□102MK20S	100	16 × 31.5	0.20	365	EKMG251E□□101MLN3S	
	2,200	16 × 25	0.16	1,260	EKMG350E□□222ML25S	220	18 × 40	0.20	585	EKMG251E□□221MM40S	
	3,300	16 × 35.5	0.18	1,610	EKMG350E□□332MLP1S	1.0	6.3 × 11	0.24	15	EKMG351E□□1R0MF11D	
	4,700	18 × 35.5	0.20	1,910	EKMG350E□□472MMP1S	2.2	8 × 11.5	0.24	26	EKMG351E□□2R2MHB5D	
	50	1.0	5 × 11	0.12	13	EKMG500E□□1R0ME11D	3.3	10 × 12.5	0.24	38	EKMG351E□□3R3MJC5S
2.2		5 × 11	0.12	20	EKMG500E□□2R2ME11D	4.7	10 × 16	0.24	50	EKMG351E□□4R7MJ16S	
3.3		5 × 11	0.12	25	EKMG500E□□3R3ME11D	10	10 × 20	0.24	80	EKMG351E□□100MJ20S	
4.7		5 × 11	0.12	30	EKMG500E□□4R7ME11D	22	12.5 × 20	0.24	130	EKMG351E□□220MK20S	
10		5 × 11	0.12	40	EKMG500E□□100ME11D	33	16 × 25	0.24	195	EKMG351E□□330ML25S	
22		5 × 11	0.12	65	EKMG500E□□220ME11D	47	16 × 25	0.24	230	EKMG351E□□470ML25S	
33		5 × 11	0.12	90	EKMG500E□□330ME11D	100	18 × 31.5	0.24	375	EKMG351E□□101MMN3S	
47		6.3 × 11	0.12	110	EKMG500E□□470MF11D	1.0	6.3 × 11	0.24	15	EKMG401E□□1R0MF11D	
100		8 × 11.5	0.12	180	EKMG500E□□101MHB5D	2.2	8 × 11.5	0.24	26	EKMG401E□□2R2MHB5D	
220		10 × 12.5	0.12	300	EKMG500E□□221MJC5S	3.3	10 × 12.5	0.24	38	EKMG401E□□3R3MJC5S	
63	330	10 × 16	0.12	410	EKMG500E□□331MJ16S	4.7	10 × 16	0.24	50	EKMG401E□□4R7MJ16S	
	470	10 × 20	0.12	530	EKMG500E□□471MJ20S	10	10 × 20	0.24	80	EKMG401E□□100MJ20S	
	1,000	12.5 × 25	0.12	950	EKMG500E□□102MK25S	22	12.5 × 25	0.24	145	EKMG401E□□220MK25S	
	2,200	16 × 35.5	0.14	1,470	EKMG500E□□222MLP1S	33	16 × 25	0.24	195	EKMG401E□□330ML25S	
	3,300	18 × 35.5	0.16	1,770	EKMG500E□□332MMP1S	47	16 × 31.5	0.24	250	EKMG401E□□470MLN3S	
	100	16 × 40	0.24	350	EKMG401E□□101ML40S						

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

## KMG Series

### ◆ 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.
450	2.2	10 × 12.5	0.24	23	EKMG451E <input type="checkbox"/> <input type="checkbox"/> 2R2MJC5S
	3.3	10 × 16	0.24	31	EKMG451E <input type="checkbox"/> <input type="checkbox"/> 3R3MJ16S
	4.7	10 × 20	0.24	40	EKMG451E <input type="checkbox"/> <input type="checkbox"/> 4R7MJ20S
	10	12.5 × 20	0.24	65	EKMG451E <input type="checkbox"/> <input type="checkbox"/> 100MK20S
	22	16 × 25	0.24	115	EKMG451E <input type="checkbox"/> <input type="checkbox"/> 220ML25S
	33	16 × 31.5	0.24	155	EKMG451E <input type="checkbox"/> <input type="checkbox"/> 330MLN3S
	47	16 × 35.5	0.24	185	EKMG451E <input type="checkbox"/> <input type="checkbox"/> 470MLP1S

: Enter the appropriate lead forming or taping code.

### ◆ RATED RIPPLE CURRENT MULTIPLIERS

#### ● Frequency Multipliers

Capacitance(μF) \ Frequency(Hz)	50	120	300	1k	10k	100k
<b>1.0 to 4.7</b>	0.65	1.00	1.35	1.75	2.30	2.50
<b>10 to 47</b>	0.75	1.00	1.25	1.50	1.75	1.80
<b>100 to 1,000</b>	0.80	1.00	1.15	1.30	1.40	1.50
<b>2,200 to</b>	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.