

# 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

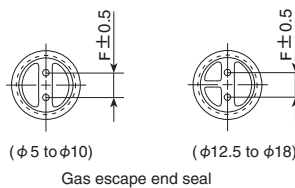
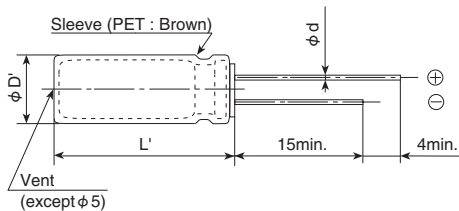


## ◆ SPECIFICATIONS

Items	Characteristics																						
Category Temperature Range	-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> )																						
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>																						
	I=0.03CV or 4µA, whichever is greater.																						
	160 to 450V <sub>dc</sub>																						
	<table border="1"> <tr> <th>CV</th> <th>Time</th> <th>After 1minute</th> <th>After 5minutes</th> </tr> <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> </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)																							
Dissipation Factor (tanδ)	Rated voltage (V <sub>dc</sub> )	6.3V	10V	16V	25V	35V	50V	63V	100V	160 to 250V	350 to 400V	450V											
	tanδ (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)																						
Low Temperature Characteristics (Max. Impedance Ratio)	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)																							
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 to meet the following two conditions 1): 160V <sub>dc</sub> and larger, 2) : φ12.5 and larger) at 105°C.																						
	Capacitance change	≤ ±20% of the initial value																					
	D.F. (tanδ)	≤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>cd</sub>						160 to 450V <sub>dc</sub>															
	Capacitance change	≤ ±20% of the initial value						≤ ±20% of the initial value															
	D.F. (tanδ)	≤200% of the initial specified value						≤200% of the initial specified value															
	Leakage current	≤ The initial specified value						≤500% of the initial specified value															

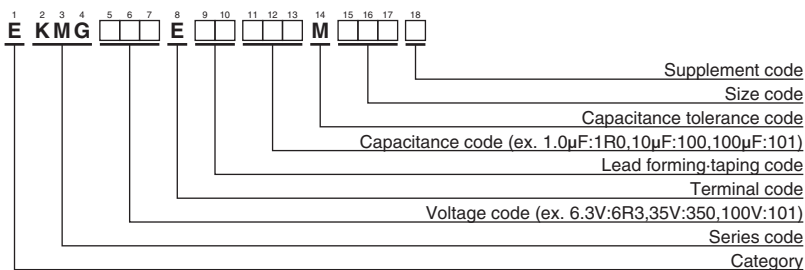
## ◆ DIMENSIONS [mm]

- 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 (Vdc)	Cap (μF)	Case size φD×L(mm)	tanδ	Rated ripple current (mA rms/105°C, 120Hz)	Part No.	WV (Vdc)	Cap (μF)	Case size φD×L(mm)	tanδ	Rated ripple current (mA rms/105°C, 120Hz)	Part No.	
6.3	220	5X11	0.34	140	EKMG6R3E□□221ME11D	63	10	5X11	0.10	46	EKMG630E□□100ME11D	
	330	6.3X11	0.34	190	EKMG6R3E□□331MF11D		22	5X11	0.10	71	EKMG630E□□220ME11D	
	470	6.3X11	0.34	230	EKMG6R3E□□471MF11D		33	6.3X11	0.10	100	EKMG630E□□330MF11D	
	1,000	8X11.5	0.34	380	EKMG6R3E□□102MHB5D		47	6.3X11	0.10	120	EKMG630E□□470MF11D	
	2,200	10X20	0.36	710	EKMG6R3E□□222MJ20S		100	10X12.5	0.10	215	EKMG630E□□101MJC5S	
	3,300	10X20	0.38	840	EKMG6R3E□□332MJ20S		220	10X16	0.10	335	EKMG630E□□221MJ16S	
	4,700	12.5X20	0.40	1,090	EKMG6R3E□□472MK20S		330	10X20	0.10	510	EKMG630E□□331MJ20S	
	6,800	12.5X25	0.44	1,350	EKMG6R3E□□682MK25S		470	12.5X20	0.10	640	EKMG630E□□471MK20S	
	10,000	16X25	0.52	1,650	EKMG6R3E□□103ML25S		1,000	16X25	0.10	930	EKMG630E□□102ML25S	
	15,000	16X35.5	0.62	2,010	EKMG6R3E□□153MLP1S		100	1.0	5X11	0.08	15	EKMG101E□□1R0ME11D
22,000	18X40	0.76	2,350	EKMG6R3E□□223MM40S	2.2	5X11		0.08	21	EKMG101E□□2R2ME11D		
10	220	6.3X11	0.24	170	EKMG100E□□221MF11D	3.3		5X11	0.08	29	EKMG101E□□3R3ME11D	
	330	6.3X11	0.24	200	EKMG100E□□331MF11D	4.7		5X11	0.08	32	EKMG101E□□4R7ME11D	
	470	8X11.5	0.24	250	EKMG100E□□471MHB5D	10		6.3X11	0.08	54	EKMG101E□□100MF11D	
	1,000	10X12.5	0.24	460	EKMG100E□□102MJC5S	22		8X11.5	0.08	93	EKMG101E□□220MHB5D	
	2,200	10X20	0.26	760	EKMG100E□□222MJ20S	33		8X11.5	0.08	130	EKMG101E□□330MHB5D	
	3,300	12.5X20	0.28	1,000	EKMG100E□□332MK20S	47		10X12.5	0.08	165	EKMG101E□□470MJC5S	
	4,700	12.5X25	0.30	1,260	EKMG100E□□472MK25S	100		10X20	0.08	265	EKMG101E□□101MJ20S	
	6,800	16X25	0.34	1,570	EKMG100E□□682ML25S	220		12.5X25	0.08	440	EKMG101E□□221MK25S	
	10,000	16X35.5	0.42	1,890	EKMG100E□□103MLP1S	330	16X25	0.08	540	EKMG101E□□331ML25S		
	15,000	18X35.5	0.52	2,180	EKMG100E□□153MMP1S	470	16X31.5	0.08	715	EKMG101E□□471MLN3S		
16	100	5X11	0.20	110	EKMG160E□□101ME11D	1,000	18X40	0.08	985	EKMG101E□□102MM40S		
	220	6.3X11	0.20	180	EKMG160E□□221MF11D	160	3.3	6.3X11	0.20	28	EKMG161E□□3R3MF11D	
	330	8X11.5	0.20	260	EKMG160E□□331MHB5D		4.7	6.3X11	0.20	34	EKMG161E□□4R7MF11D	
	470	8X11.5	0.20	310	EKMG160E□□471MHB5D		10	10X12.5	0.20	67	EKMG161E□□100MJC5S	
	1,000	10X16	0.20	560	EKMG160E□□102MJ16S		22	10X20	0.20	120	EKMG161E□□220MJ20S	
	2,200	12.5X20	0.22	920	EKMG160E□□222MK20S		33	10X20	0.20	145	EKMG161E□□330MJ20S	
	3,300	12.5X25	0.24	1,170	EKMG160E□□332MK25S		47	12.5X20	0.20	195	EKMG161E□□470MK20S	
	4,700	16X25	0.26	1,480	EKMG160E□□472ML25S		100	16X25	0.20	335	EKMG161E□□101ML25S	
	6,800	16X31.5	0.30	1,780	EKMG160E□□682MLN3S		220	16X31.5	0.20	540	EKMG161E□□221MLN3S	
	10,000	18X35.5	0.38	2,060	EKMG160E□□103MMP1S		330	18X35.5	0.20	705	EKMG161E□□331MMP1S	
25	47	5X11	0.16	80	EKMG250E□□470ME11D		200	3.3	6.3X11	0.20	28	EKMG201E□□3R3MF11D
	100	6.3X11	0.16	130	EKMG250E□□101MF11D	4.7		8X11.5	0.20	39	EKMG201E□□4R7MHB5D	
	220	8X11.5	0.16	230	EKMG250E□□221MHB5D	10		10X16	0.20	74	EKMG201E□□100MJ16S	
	330	8X11.5	0.16	310	EKMG250E□□331MHB5D	22		10X20	0.20	120	EKMG201E□□220MJ20S	
	470	10X12.5	0.16	380	EKMG250E□□471MJC5S	33		12.5X20	0.20	160	EKMG201E□□330MK20S	
	1,000	10X20	0.16	680	EKMG250E□□102MJ20S	47		12.5X20	0.20	195	EKMG201E□□470MK20S	
	2,200	12.5X25	0.18	1,090	EKMG250E□□222MK25S	100		16X25	0.20	335	EKMG201E□□101ML25S	
	3,300	16X25	0.20	1,400	EKMG250E□□332ML25S	220		18X35.5	0.20	575	EKMG201E□□221MMP1S	
	4,700	16X31.5	0.22	1,710	EKMG250E□□472MLN3S	250		2.2	6.3X11	0.20	23	EKMG251E□□2R2MF11D
	6,800	18X35.5	0.26	2,040	EKMG250E□□682MMP1S			3.3	8X11.5	0.20	32	EKMG251E□□3R3MHB5D
35	47	5X11	0.14	90	EKMG350E□□470ME11D		4.7	8X11.5	0.20	39	EKMG251E□□4R7MHB5D	
	100	6.3X11	0.14	150	EKMG350E□□101MF11D		10	10X16	0.20	74	EKMG251E□□100MJ16S	
	220	8X11.5	0.14	270	EKMG350E□□221MHB5D		22	12.5X20	0.20	130	EKMG251E□□220MK20S	
	330	10X12.5	0.14	350	EKMG350E□□331MJC5S		33	12.5X20	0.20	160	EKMG251E□□330MK20S	
	470	10X16	0.14	460	EKMG350E□□471MJ16S		47	12.5X25	0.20	210	EKMG251E□□470MK25S	
	1,000	12.5X20	0.14	810	EKMG350E□□102MK20S		100	16X31.5	0.20	365	EKMG251E□□101MLN3S	
	2,200	16X25	0.16	1,260	EKMG350E□□222ML25S		220	18X40	0.20	585	EKMG251E□□221MM40S	
	3,300	16X35.5	0.18	1,610	EKMG350E□□332MLP1S		350	1.0	6.3X11	0.24	15	EKMG351E□□1R0MF11D
	4,700	18X35.5	0.20	1,910	EKMG350E□□472MMP1S	2.2		8X11.5	0.24	26	EKMG351E□□2R2MHB5D	
	50	1.0	5X11	0.12	13	EKMG500E□□1R0ME11D		3.3	10X12.5	0.24	38	EKMG351E□□3R3MJC5S
2.2		5X11	0.12	20	EKMG500E□□2R2ME11D	4.7		10X16	0.24	50	EKMG351E□□4R7MJ16S	
3.3		5X11	0.12	25	EKMG500E□□3R3ME11D	10		10X20	0.24	80	EKMG351E□□100MJ20S	
4.7		5X11	0.12	30	EKMG500E□□4R7ME11D	22		12.5X20	0.24	130	EKMG351E□□220MK20S	
10		5X11	0.12	40	EKMG500E□□100ME11D	33		16X25	0.24	195	EKMG351E□□330ML25S	
22		5X11	0.12	65	EKMG500E□□220ME11D	47		16X25	0.24	230	EKMG351E□□470ML25S	
33		5X11	0.12	90	EKMG500E□□330ME11D	100		18X31.5	0.24	375	EKMG351E□□101MMN3S	
47		6.3X11	0.12	110	EKMG500E□□470MF11D	400		1.0	6.3X11	0.24	15	EKMG401E□□1R0MF11D
100		8X11.5	0.12	180	EKMG500E□□101MHB5D		2.2	8X11.5	0.24	26	EKMG401E□□2R2MHB5D	
220		10X12.5	0.12	300	EKMG500E□□221MJC5S		3.3	10X12.5	0.24	38	EKMG401E□□3R3MJC5S	
330	10X16	0.12	410	EKMG500E□□331MJ16S	4.7		10X16	0.24	50	EKMG401E□□4R7MJ16S		
470	10X20	0.12	530	EKMG500E□□471MJ20S	10		10X20	0.24	80	EKMG401E□□100MJ20S		
1,000	12.5X25	0.12	950	EKMG500E□□102MK25S	22		12.5X25	0.24	145	EKMG401E□□220MK25S		
2,200	16X35.5	0.14	1,470	EKMG500E□□222MLP1S	33		16X25	0.24	195	EKMG401E□□330ML25S		
3,300	18X35.5	0.16	1,770	EKMG500E□□332MMP1S	47		16X31.5	0.24	250	EKMG401E□□470MLN3S		
							100	16X40	0.24	350	EKMG401E□□101ML40S	

□ : Enter the appropriate lead forming or taping code.



## KMG Series

### ◆ STANDARD RATINGS

is not solvent resistant.

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	tanδ	Rated ripple current (mA <sub>rms</sub> /105°C,120Hz)	Part No.
450	2.2	10×12.5	0.24	23	EKMG451E□□2R2MJC5S
	3.3	10×16	0.24	31	EKMG451E□□3R3MJ16S
	4.7	10×20	0.24	40	EKMG451E□□4R7MJ20S
	10	12.5×20	0.24	65	EKMG451E□□100MK20S
	22	16×25	0.24	115	EKMG451E□□220ML25S
	33	16×31.5	0.24	155	EKMG451E□□330MLN3S
	47	16×35.5	0.24	185	EKMG451E□□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
1.0 to 4.7	0.65	1.00	1.35	1.75	2.30	2.50
10 to 47	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.