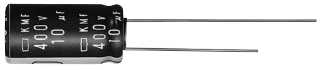
KMF Series

- Endurance with ripple current: 105℃ 2,000 to 5,000 hours
- RoHS Compliant

KMF
lower Z
longer life
KME

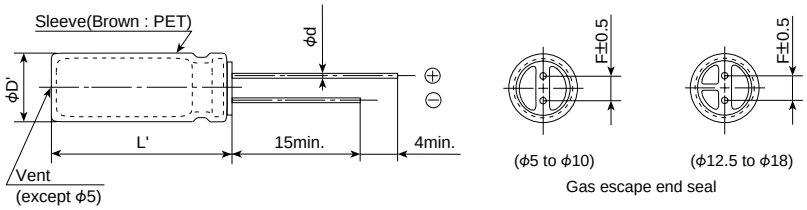


◆SPECIFICATIONS

Items	Characteristics
Category Temperature Range	−55 to +105℃ (6.3 to 100Vdc) −40 to +105℃ (160 to 400Vdc) −25 to +105℃ (450Vdc)
Rated Voltage Range	6.3 to 450Vdc
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)
Leakage Current	6.3 to 100Vdc: I=0.03CV or 4μA, whichever is greater. (at 20℃ after 1 minute); I=0.01CV or 3μA, whichever is greater. (at 20℃ after 2 minutes) 160 to 450Vdc: CV≦1,000: I=0.1CV+40 (after 1 minute), I=0.03CV+15 (after 2 minutes); CV>1,000: I=0.04CV+100 (after 1 minute), I=0.02CV+25 (after 2 minutes) Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃)
Dissipation Factor (tanδ)	Rated voltage (Vdc): 6.3V 10V 16V 25V 35V 50V 63V 100V 160 to 250V 400V 450V tanδ (Max.): 0.22 0.19 0.16 0.14 0.12 0.10 0.09 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℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (Vdc): 6.3V 10V 16V 25V 35V 50V 63V 100V 160 to 250V 400V 450V Z(−25℃)/Z(+20℃): 4 3 2 2 2 2 2 2 3 5 6 Z(−40℃)/Z(+20℃): 8 6 4 3 3 3 3 3 6 6 — (at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied for the specified period of time at 105℃. Time (6.3 to 100Vdc): φ5 & 6.3 : 2,000 hours φ8 & 10 : 3,000 hours φ12.5 and larger : 5,000 hours Time (160 to 450Vdc): 2,000 hours 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℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Rated voltage (Vdc): 6.3 to 100Vdc / 160 to 450Vdc 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

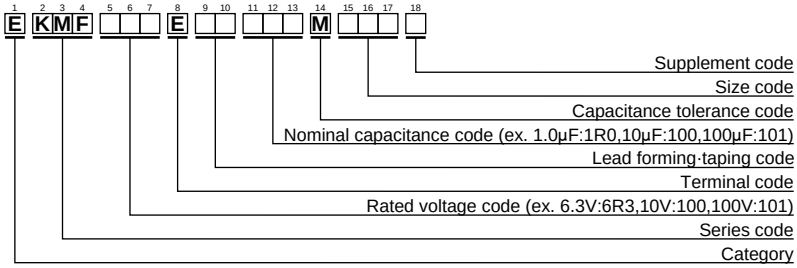
◆DIMENSIONS [mm]

- 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



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KMF Series

◆STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case size φDXL(mm)	Impedance (Ωmax/ 100kHz) 20℃	Impedance (Ωmax/ 100kHz) -10℃	Rated ripple current (mArms/ 105℃, 100kHz)	Part No.
6.3	33	5×11	1.3	3.9	154	EKMF6R3E□□330ME11D
	47	5×11	1.3	3.9	154	EKMF6R3E□□470ME11D
	100	5×11	1.3	3.9	154	EKMF6R3E□□101ME11D
	220	6.3×11	0.6	1.8	260	EKMF6R3E□□221MF11D
	330	6.3×11	0.6	1.8	260	EKMF6R3E□□331MF11D
	470	8×11.5	0.33	0.99	400	EKMF6R3E□□471MHB5D
	1,000	10×12.5	0.25	0.75	510	EKMF6R3E□□102MJC5S
	2,200	12.5×20	0.085	0.26	1,120	EKMF6R3E□□222MK20S
	3,300	12.5×20	0.085	0.26	1,120	EKMF6R3E□□332MK20S
	4,700	16×25	0.060	0.18	1,570	EKMF6R3E□□472ML25S
	6,800	16×25	0.060	0.18	1,570	EKMF6R3E□□682ML25S
	10,000	16×31.5	0.048	0.14	1,810	EKMF6R3E□□103MLN3S
	15,000	18×35.5	0.037	0.11	2,240	EKMF6R3E□□153MMP1S
10	22	5×11	1.3	3.9	154	EKMF100E□□220ME11D
	33	5×11	1.3	3.9	154	EKMF100E□□330ME11D
	47	5×11	1.3	3.9	154	EKMF100E□□470ME11D
	100	5×11	1.3	3.9	154	EKMF100E□□101ME11D
	220	6.3×11	0.6	1.8	260	EKMF100E□□221MF11D
	330	8×11.5	0.33	0.99	400	EKMF100E□□331MHB5D
	470	8×11.5	0.33	0.99	400	EKMF100E□□471MHB5D
	1,000	10×16	0.19	0.57	635	EKMF100E□□102MJ16S
	2,200	12.5×20	0.085	0.26	1,120	EKMF100E□□222MK20S
	3,300	12.5×25	0.070	0.21	1,320	EKMF100E□□332MK25S
	4,700	16×25	0.060	0.18	1,570	EKMF100E□□472ML25S
	6,800	16×31.5	0.048	0.14	1,810	EKMF100E□□682MLN3S
	10,000	18×35.5	0.037	0.11	2,240	EKMF100E□□103MMP1S
16	10	5×11	2.0	6.0	124	EKMF160E□□100ME11D
	22	5×11	1.3	3.9	154	EKMF160E□□220ME11D
	33	5×11	1.3	3.9	154	EKMF160E□□330ME11D
	47	5×11	1.3	3.9	154	EKMF160E□□470ME11D
	100	6.3×11	0.6	1.8	260	EKMF160E□□101MF11D
	220	8×11.5	0.33	0.99	400	EKMF160E□□221MHB5D
	330	8×11.5	0.33	0.99	400	EKMF160E□□331MHB5D
	470	10×12.5	0.25	0.75	510	EKMF160E□□471MJC5S
	1,000	10×20	0.14	0.42	860	EKMF160E□□102MJ20S
	2,200	12.5×25	0.070	0.21	1,320	EKMF160E□□222MK25S
	3,300	16×25	0.060	0.18	1,570	EKMF160E□□332ML25S
	4,700	16×31.5	0.048	0.14	1,810	EKMF160E□□472MLN3S
	6,800	18×35.5	0.037	0.11	2,240	EKMF160E□□682MMP1S
	10,000	18×40	0.034	0.10	2,460	EKMF160E□□103MM40S
25	4.7	5×11	3.0	9.0	100	EKMF250E□□4R7ME11D
	10	5×11	2.0	6.0	124	EKMF250E□□100ME11D
	22	5×11	1.3	3.9	154	EKMF250E□□220ME11D
	33	5×11	1.3	3.9	154	EKMF250E□□330ME11D
	47	5×11	1.3	3.9	154	EKMF250E□□470ME11D
	100	6.3×11	0.6	1.9	260	EKMF250E□□101MF11D
	220	8×11.5	0.33	0.99	400	EKMF250E□□221MHB5D
	330	10×12.5	0.25	0.75	510	EKMF250E□□331MJC5S
	470	10×16	0.19	0.57	635	EKMF250E□□471MJ16S
	1,000	12.5×20	0.085	0.26	1,120	EKMF250E□□102MK20S
	2,200	16×25	0.060	0.18	1,570	EKMF250E□□222ML25S
	3,300	16×31.5	0.048	0.14	1,810	EKMF250E□□332MLN3S
	4,700	18×35.5	0.037	0.11	2,240	EKMF250E□□472MMP1S
	6,800	18×40	0.034	0.10	2,460	EKMF250E□□682MM40S

WV (Vdc)	Cap (μF)	Case size φDXL(mm)	Impedance (Ωmax/ 100kHz) 20℃	Impedance (Ωmax/ 100kHz) -10℃	Rated ripple current (mArms/ 105℃, 100kHz)	Part No.
35	4.7	5×11	3.0	9.0	100	EKMF350E□□4R7ME11D
	10	5×11	2.0	6.0	124	EKMF350E□□100ME11D
	22	5×11	1.3	3.9	154	EKMF350E□□220ME11D
	33	5×11	1.3	3.9	154	EKMF350E□□330ME11D
	47	6.3×11	0.6	1.8	260	EKMF350E□□470MF11D
	100	8×11.5	0.33	0.99	400	EKMF350E□□101MHB5D
	220	10×12.5	0.25	0.75	510	EKMF350E□□221MJC5S
	330	10×16	0.19	0.57	635	EKMF350E□□331MJ16S
	470	10×20	0.14	0.42	860	EKMF350E□□471MJ20S
	1,000	12.5×25	0.070	0.21	1,320	EKMF350E□□102MK25S
	2,200	16×31.5	0.048	0.14	1,810	EKMF350E□□222MLN3S
	3,300	18×35.5	0.037	0.11	2,240	EKMF350E□□332MMP1S
	4,700	18×40	0.034	0.10	2,460	EKMF350E□□472MM40S
50	0.47	5×11	7.0	21.0	66	EKMF500E□□R47ME11D
	1	5×11	5.0	15.0	78	EKMF500E□□1R0ME11D
	2.2	5×11	4.0	12.0	88	EKMF500E□□2R2ME11D
	3.3	5×11	3.5	11.0	94	EKMF500E□□3R3ME11D
	4.7	5×11	3.0	9.0	100	EKMF500E□□4R7ME11D
	10	5×11	2.0	6.0	124	EKMF500E□□100ME11D
	22	5×11	1.3	3.9	154	EKMF500E□□220ME11D
	33	6.3×11	0.60	1.8	260	EKMF500E□□330MF11D
	47	6.3×11	0.60	1.8	260	EKMF500E□□470MF11D
	100	8×11.5	0.33	0.99	400	EKMF500E□□101MHB5D
	220	10×16	0.19	0.57	635	EKMF500E□□221MJ16S
	330	10×20	0.14	0.42	860	EKMF500E□□331MJ20S
	470	12.5×20	0.085	0.26	1,120	EKMF500E□□471MK20S
	1,000	16×25	0.060	0.18	1,570	EKMF500E□□102ML25S
	2,200	18×35.5	0.037	0.11	2,240	EKMF500E□□222MMP1S
63	4.7	5×11	4.0	14.0	88	EKMF630E□□4R7ME11D
	10	5×11	2.5	8.8	124	EKMF630E□□100ME11D
	22	6.3×11	1.2	4.2	180	EKMF630E□□220MF11D
	33	6.3×11	1.2	4.2	180	EKMF630E□□330MF11D
	47	8×11.5	0.56	2.0	305	EKMF630E□□470MHB5D
	100	10×12.5	0.50	1.8	380	EKMF630E□□101MJC5S
	220	10×20	0.27	0.95	620	EKMF630E□□221MJ20S
	330	12.5×20	0.16	0.56	890	EKMF630E□□331MK20S
	470	12.5×25	0.14	0.49	1,040	EKMF630E□□471MK25S
	1,000	16×31.5	0.06	0.21	1,790	EKMF630E□□102MLN3S
100	0.47	5×11	10.0	35.0	55	EKMF101E□□R47ME11D
	1	5×11	7.0	25.0	66	EKMF101E□□1R0ME11D
	2.2	5×11	6.0	21.0	72	EKMF101E□□2R2ME11D
	3.3	5×11	5.0	18.0	78	EKMF101E□□3R3ME11D
	4.7	5×11	4.0	14.0	88	EKMF101E□□4R7ME11D
	10	6.3×11	1.2	4.2	180	EKMF101E□□100MF11D
	22	8×11.5	0.66	2.3	282	EKMF101E□□220MHB5D
	33	10×12.5	0.50	1.8	380	EKMF101E□□330MJC5S
	47	10×16	0.32	1.1	500	EKMF101E□□470MJ16S
	100	12.5×20	0.16	0.56	890	EKMF101E□□101MK20S
	220	16×25	0.09	0.32	1,440	EKMF101E□□221ML25S
	330	16×25	0.09	0.32	1,440	EKMF101E□□331ML25S
	470	16×31.5	0.06	0.21	1,790	EKMF101E□□471MLN3S

□□ : Lead forming / taping code

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KMF Series

◆STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	Impedance (Ωmax/20℃, 100kHz)	Rated ripple current (mArms/105℃, 100kHz)	Part No.
160	10	10×16	1.5	250	EKMF161E□□100MJ16S
	22	10×20	1.1	350	EKMF161E□□220MJ20S
	33	12.5×20	0.71	440	EKMF161E□□330MK20S
	47	12.5×25	0.46	600	EKMF161E□□470MK25S
	100	16×25	0.24	910	EKMF161E□□101ML25S
	220	18×35.5	0.14	1370	EKMF161E□□221MMP1S
200	10	10×16	1.5	250	EKMF201E□□100MJ16S
	22	10×20	1.1	350	EKMF201E□□220MJ20S
	33	12.5×20	0.71	440	EKMF201E□□330MK20S
	47	12.5×25	0.46	600	EKMF201E□□470MK25S
	100	16×31.5	0.17	1160	EKMF201E□□101MLN3S
	220	18×35.5	0.14	1370	EKMF201E□□221MMP1S
250	4.7	10×16	3.5	165	EKMF251E□□4R7MJ16S
	10	10×20	2.8	230	EKMF251E□□100MJ20S
	22	12.5×25	1.2	360	EKMF251E□□220MK25S
	33	12.5×25	1.2	360	EKMF251E□□330MK25S

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	Impedance (Ωmax/20℃, 100kHz)	Rated ripple current (mArms/105℃, 100kHz)	Part No.
250	47	16×25	0.6	570	EKMF251E□□470ML25S
	100	18×35.5	0.3	935	EKMF251E□□101MMP1S
	220	18×40	0.27	1000	EKMF251E□□221MM40S
400	3.3	10×20	2.9	195	EKMF401E□□3R3MJ20S
	4.7	10×25	2.3	220	EKMF401E□□4R7MJ25S
	10	12.5×25	1.2	360	EKMF401E□□100MK25S
	22	16×25	0.61	570	EKMF401E□□220ML25S
	33	16×31.5	0.46	700	EKMF401E□□330MLN3S
	47	18×31.5	0.33	860	EKMF401E□□470MMN3S
450	2.2	10×16	7.9	110	EKMF451E□□2R2MJ16S
	3.3	10×20	6.2	135	EKMF451E□□3R3MJ20S
	4.7	12.5×20	3.7	190	EKMF451E□□4R7MK20S
	10	12.5×25	2.6	250	EKMF451E□□100MK25S
	22	16×31.5	1.0	480	EKMF451E□□220MLN3S
	33	18×35.5	0.62	650	EKMF451E□□330MMP1S

□□ : Lead forming / Taping code

◆RATED RIPPLE CURRENT MULTIPLIERS

●Frequency Multipliers

Rated voltage(Vdc)	Case code \ Frequency(Hz)	120	1k	10k	100k
6.3, 10	φ5(to 47μF)	0.40	0.75	0.93	1.00
	φ5(100μF), φ6.3, φ8	0.70	0.86	0.96	1.00
	φ10 to	0.85	0.95	0.98	1.00
16 to 35	φ5(to 22μF)	0.30	0.68	0.91	1.00
	φ5(33μF to), φ6.3, φ8	0.50	0.80	0.94	1.00
	φ10 to	0.70	0.88	0.97	1.00
50, 60	φ5(to 3.3μF)	0.20	0.66	0.90	1.00
	φ5(4.7μF to), φ6.3, φ8	0.40	0.76	0.93	1.00
	φ10 to	0.60	0.84	0.96	1.00
100	φ5(to 1μF)	0.20	0.60	0.88	1.00
	φ5(2.2μF to), φ6.3, φ8	0.30	0.65	0.90	1.00
	φ10 to	0.40	0.75	0.93	1.00
160 to 450	φ10	0.25	0.61	0.88	1.00
	φ12.5 to φ18	0.35	0.66	0.89	1.00

The endurance of capacitors is shorted with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

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