

## KM Series Standard 105°C

### Features

- ◆ Used in communication equipments, switching power supply, etc.
- ◆ Safety vent construction design.
- ◆ For detail specifications, please refer to Engineering Bulletin No. E102
- ◆ RoHS Compliant



### Specifications

Item	Performance Characteristics																											
Operating Temperature Range	-40 to +105°C	-25 to +105°C																										
Rated Voltage Range	6.3 to 100 VDC	160 to 450 VDC																										
Capacitance Range	0.1 to 22000 µF	0.47 to 470 µF																										
Capacitance Tolerance	±20% (120Hz, +20°C)																											
Leakage Current (+20°C, max.)	I ≤ 0.01 CV or 3 (µA) After 1 minute whichever is greater measured with rated working voltage applied.	I ≤ 0.03 CV (µA) After 1 minute with rated working voltage applied.																										
Dissipation Factor (tan δ, at 20°C, 120Hz)	<table border="1"> <tr> <td>Working Voltage(VDC)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>100</td> </tr> <tr> <td>D.F. (%)max.</td> <td>22</td> <td>17</td> <td>15</td> <td>14</td> <td>12</td> <td>10</td> <td>9</td> <td>8</td> </tr> </table>		Working Voltage(VDC)	6.3	10	16	25	35	50	63	100	D.F. (%)max.	22	17	15	14	12	10	9	8								
	Working Voltage(VDC)	6.3	10	16	25	35	50	63	100																			
D.F. (%)max.	22	17	15	14	12	10	9	8																				
<table border="1"> <tr> <td>Working Voltage(VDC)</td> <td>160</td> <td>200</td> <td>250</td> <td>350</td> <td>400</td> <td>450</td> </tr> <tr> <td>D.F. (%)max.</td> <td>12</td> <td>12</td> <td>12</td> <td>15</td> <td>15</td> <td>17</td> </tr> </table> <p>For capacitance &gt; 1000 µF, add 2% per another 1000 µF.</p>		Working Voltage(VDC)	160	200	250	350	400	450	D.F. (%)max.	12	12	12	15	15	17													
Working Voltage(VDC)	160	200	250	350	400	450																						
D.F. (%)max.	12	12	12	15	15	17																						
Low Temperature Characteristics (at 120Hz)	Impedance ratio max																											
	<table border="1"> <tr> <td>Working Voltage(VDC)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>100</td> </tr> <tr> <td>Z-25°C / Z+20°C</td> <td>4</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>Z-40°C / Z+20°C</td> <td>8</td> <td>6</td> <td>4</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> </tr> </table>		Working Voltage(VDC)	6.3	10	16	25	35	50	63	100	Z-25°C / Z+20°C	4	3	2	2	2	2	2	2	Z-40°C / Z+20°C	8	6	4	3	3	3	3
Working Voltage(VDC)	6.3	10	16	25	35	50	63	100																				
Z-25°C / Z+20°C	4	3	2	2	2	2	2	2																				
Z-40°C / Z+20°C	8	6	4	3	3	3	3	3																				
Load Life	<table border="1"> <tr> <td>Working Voltage(VDC)</td> <td>160</td> <td>200</td> <td>250</td> <td>350</td> <td>400</td> <td>450</td> </tr> <tr> <td>Z-25°C / Z+20°C</td> <td>2</td> <td>2</td> <td>3</td> <td>5</td> <td>6</td> <td>6</td> </tr> </table> <p>For Capacitance &gt; 1000 µF, add 0.5 per another 1000 µF for -25°C / +20°C add 1 per another 1000 µF for -40°C / +20°C</p>		Working Voltage(VDC)	160	200	250	350	400	450	Z-25°C / Z+20°C	2	2	3	5	6	6												
	Working Voltage(VDC)	160	200	250	350	400	450																					
Z-25°C / Z+20°C	2	2	3	5	6	6																						
Shelf Life	<p>Test conditions</p> <p>Duration time :2000Hrs</p> <p>Ambient temperature :+105°C</p> <p>Applied voltage :Rated DC working voltage</p> <p>After test requirement at +20°C</p> <p>Capacitance change :≤ ±20% of the initial measured value</p> <p>Dissipation factor :≤ 200% of the initial specified value</p> <p>Leakage current :≤ The initial specified value</p>																											
Shelf Life	<p>Test conditions</p> <p>Duration time :1000Hrs</p> <p>Ambient temperature :+105°C</p> <p>Applied voltage :None</p> <p>After test requirement at +20°C:Same limits as Load life.</p> <p>Pre-treatment for measurements shall be conducted after application of DC working voltage for 30 minutes.</p>																											

### Multiplier for Ripple Current vs. Frequency

CAP(µF) \ Frequency(Hz)	50(60)	120	400	1K	10K	50K-100K
CAP ≤ 10	0.8	1	1.30	1.45	1.65	1.70
10 < CAP ≤ 100	0.8	1	1.23	1.36	1.48	1.53
100 < CAP ≤ 1000	0.8	1	1.16	1.25	1.35	1.38
1000 < CAP	0.8	1	1.11	1.17	1.25	1.28

### Diagram of Dimensions:(unit:mm)



D φ	5	6.3	8	10	13	16	18	22
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5	10
d φ	0.5		L < 20 0.5	L ≥ 20 0.6	0.6		0.8	

α	D < 18	D = 18		D > 18
		L < 35.5	L ≥ 35.5	
	1.5	1.5	2.0	2.0

## Case Size

φ DxL(mm)

WV (SV) Cap(μF)	6.3 (8)		10 (13)		16 (20)		25 (32)		35 (44)	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
4.7							5X11	26	5X11	28
6.8							5X11	32	5X11	36
10					5X11	35	5X11	38	5X11	46
22			5X11	45	5X11	54	5X11	58	5X11	61
33	5X11	54	5X11	60	5X11	64	5X11	69	5X11	75
47	5X11	65	5X11	70	5X11	100	5X11	105	5X11	110
68	5X11	75	5X11	80	5X11	105	6.3X11	120	6.3X11	140
100	5X11	96	5X11	105	5X11	115	6.3X11	145	6.3X11	160
					6.3X11	130			8X11.5	175
120	5X11	110	5X11	110	6.3X11	155	6.3X11	175	8X11.5	185
			6.3X11	120						
150	5X11	120	5X11	120	6.3X11	170	6.3X11	180	8X11.5	215
	6.3X11	130	6.3X11	145			8X11.5	200		
180	6.3X11	140	6.3X11	160	6.3X11	190	8X11.5	210	8X11.5	225
									10X12.5	265
220	6.3X11	160	6.3X11	175	6.3X11	215	8X11.5	235	8X11.5	255
									10X12.5	300
330	6.3X11	195	6.3X11	205	6.3X11	225	8X11.5	310	10X12.5	400
			8X11.5	255	8X11.5	265	10X12.5	335		
470	6.3X11	220	6.3X11	235	8X11.5	370	8X11.5	410	10X16	520
	8X11.5	270	8X11.5	290	8X16	400	10X12.5	440		
560	8X11.5	310	8X11.5	330			10X16	460	10X20	540
			10X12.5	340	10X12.5	410				
680	8X11.5	360	8X11.5	365	8X16	470			10X20	560
			8X16	410	10X12.5	480	10X16	520	13X20	650
820	8X11.5	390	10X12.5	480	10X16	550	10X20	640	13X20	760
1000	10X12.5	430	10X12.5	520	10X12.5	540	10X20	710	13X20	830
					10X16	600				
1200	10X12.5	550	10X16	630	10X20	700	13X20	810	13X20	900
									13X25	930
1500	10X16	625	8X20	715	10X20	820	13X20	900	13X25	960
			10X16	770						
1800	10X16	710	10X20	820	13X20	920	13X25	1050	16X25	1150
2200	10X16	750	10X20	860	13X20	1000	13X25	1200	16X25	1290
	10X20	775							16X31.5	1350
2700	10X20	850	10X25	880	13X20	1080	16X25	1320	16X31.5	1480
			13X20	920						
3300	13X20	960	13X20	1100	13X25	1200	16X25	1460	16X35.5	1650
3900	13X20	1000	13X20	1280	16X25	1490	16X31.5	1670	18X31.5	1820
4700	13X20	1150	13X25	1350	16X25	1600	16X35.5	1780	18X35.5	1900
5600	13X25	1300	16X25	1490	16X31.5	1720	16X35.5	1890	18X35.5	2000
6800	13X25	1480	16X25	1670	16X31.5	1900	18X35.5	2050		
8200	16X25	1520	16X31.5	1840	16X35.5	2020	18X35.5	2090		
10000	16X25	1680	16X35.5	1900	18X35.5	2060				
12000	16X31.5	1750	16X35.5	2050	18X35.5	2150				
15000	16X35.5	2075	18X35.5	2180						
18000	18X31.5	2150	18X35.5	2205						
22000	18X41	2300								

Ripple Current ( mA, rms ) at 105°C 120Hz

φ DxL(mm)

WV (SV) Cap(μF)	50 (63)		63 (79)		100 (125)		160 (200)		200 (250)	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
0.1	5X11	1.3	5X11	1.3	5X11	1.9				
0.22	5X11	2.9	5X11	2.9	5X11	3.4				
0.33	5X11	4	5X11	4.5	5X11	5				
0.47	5X11	7	5X11	7	5X11	10	5X11	11	5X11	12
1	5X11	13	5X11	13	5X11	15	5X11	17	6.3X11	17
							6.3X11	19		
2.2	5X11	20	5X11	20	5X11	21	6.3X11	25	6.3X11	25
3.3	5X11	26	5X11	28	5X11	30	6.3X11	32	6.3X11	33
									8X11.5	35
4.7	5X11	32	5X11	32	5X11	35	6.3X11	38	6.3X11	42
							8X11.5	42	8X11.5	50
6.8	5X11	40	5X11	40	6.3X11	47	8X11.5	56	8X11.5	60
									10X12.5	63
10	5X11	48	5X11	42	6.3X11	56	8X11.5	63	8X11.5	78
			6.3X11	48	8X11.5	60	10X12.5	75	10X12.5	85
22	5X11	60	6.3X11	82	6.3X11	75	10X12.5	95	10X16	125
							10X16	105		
33	6.3X11	70			8X11.5	90	10X20	120	10X20	130
	5X11	75	6.3X11	100	8X11.5	140	10X16	155	10X16	160
47									10X20	180
	6.3X11	90			10X12.5	155	10X20	170	13X20	190
68	6.3X11	115	6.3X11	125	8X16	165	10X20	180	13X20	220
			8X11.5	140	10X12.5	170	13X20	210		
100	6.3X11	130	8X11.5	155	10X16	240	13X20	260	13X20	270
	8X11.5	155	10X12.5	185			13X25	280	13X25	300
120	8X11.5	200	10X12.5	230	10X20	280	13X25	310	13X25	320
							16X25	330	16X25	345
150	8X16	220	10X16	255	10X20	295	13X25	320	16X25	360
	10X12.5	225					16X25	350	16X31.5	390
180	10X12.5	245	10X16	270	13X20	340	16X25	470	16X25	440
					13X25	360			16X31.5	480
220	10X12.5	260	10X16	310	13X20	410	16X25	550	16X31.5	550
	10X16	280			13X25	480			16X35.5	560
330	10X12.5	345	10X16	375	13X25	520	16X31.5	560	16X35.5	670
	10X16	360	10X20	400			16X35.5	580	18X31.5	690
470	10X16	450	13X20	580	16X25	690	18X31.5	660	18X35.5	750
	10X20	470					18X35.5	700	18X41	810
560	10X20	600	13X20	690	16X25	820	18X35.5	810	18X41	840
	13X20	650			16X31.5	860	18X41	860	22X41	925
680	13X20	660	13X25	770	16X35.5	900			18X51	940
	13X20	700	16X25	880	16X35.5	920				
820	13X25	770			18X31.5	950				
	13X25	850	16X25	920	18X35.5	1020				
1000	13X25	890	16X31.5	1185	18X41	1200				
	16X25	1000								
1200	16X25	1150	16X35.5	1200						
1500	16X31.5	1300	18X31.5	1350						
1800	16X35.5	1480								
2200	16X35.5	1530								
2700	18X35.5	1590								
3300	18X35.5	1750								

Ripple Current ( mA, rms ) at 105°C 120Hz

φ DxL(mm)

WV (SV) Cap(μF)	250 (300)		350 (400)		400 (450)		420 (470)		450 (500)	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
0.47	5X11	8	6.3X11	13	6.3X11	14	6.3X11	14	6.3X11	14
1	6.3X11	16	6.3X11	16	6.3X11	17	8X11.5	20	8X11.5	20
2.2	6.3X11	20	8X11.5	31	6.3X15	34	8X11.5	35	10X12.5	35
	8X11.5	25			8X11.5	35				
3.3	8X11.5	33	8X11.5	34	6.3X15	35	10X12.5	42	8X11.5	32
					8X11.5	36			10X12.5	38
			10X12.5	38	10X12.5	41			10X16	42
4.7	8X11.5	46	8X11.5	47	8X11.5	48	10X12.5	58	8X16	44
					10X12.5	55				
	10X12.5	50	10X12.5	52	10X16	65	10X16	61	10X12.5	45
6.8									10X16	50
	8X11.5	60	10X12.5	79	8X14	75	10X16	84	10X16	65
	10X12.5	70			8X16	80			10X20	72
10					10X16	90				
	8X11.5	68	10X16	87	10X16	110	10X20	96	10X20	92
	10X12.5	80	10X20	92	10X20	125	10X20	112	13X20	98
22	10X16	110	13X20	160	13X20	170			13X20	165
	10X20	125								
33	13X20	150	13X25	170	13X25	190	13X25	185	13X25	180
	13X20	190	13X20	180	13X20	235			16X25	210
47			13X25	200	13X25	260	16X25	230		
	13X20	230	16X25	245	16X25	300	16X31.5	310	16X31.5	340
	13X25	240	16X31.5	260	16X31.5	360			16X35.5	380
56									18X25	350
	13X20	255	16X25	330	16X25	360	16X35.5	390	16X31.5	370
	13X25	280			16X31.5	400			16X35.5	400
68									18X25	370
	13X25	310	16X31.5	370	18X25	440	18X31.5	470	16X35.5	450
					16X35.5	480			18X31.5	460
82	16X25	355			18X31.5	500			18X35.5	470
	16X25	370	16X35.5	385	18X25	470	18X35.5	500	18X31.5	465
100					18X31.5	520			18X35.5	480
	16X25	375	18X31.5	390	18X31.5	530	18X35.5	555	18X35.5	525
	16X31.5	395			18X35.5	550			18X41	560
120	16X31.5	420	16X41	400	18X31.5	550			18X41	580
					18X35.5	580			22X41	650
150	16X35.5	430	18X35.5	400	18X35.5	580	18X41	630		
	16X35.5	460	18X41	420	18X35.5	610	18X41	660	18X45	690
180	18X31.5	460			18X41	650				
	18X31.5	465	18X41	430	18X45	700	18X45	680		
220	18X35.5	470								
	18X35.5	650	22X41	500						
330	18X41	700								
	18X45	720								
	22X41	780								

Ripple Current ( mA, rms ) at 105°C 120Hz

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