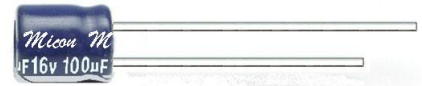


SM series

Features

- ◆ Load Life: 105°C 2000 hours.
- ◆ Suitable for slim application
- ◆ For detail specifications, please refer to Engineering Bulletin No.E171



Specifications

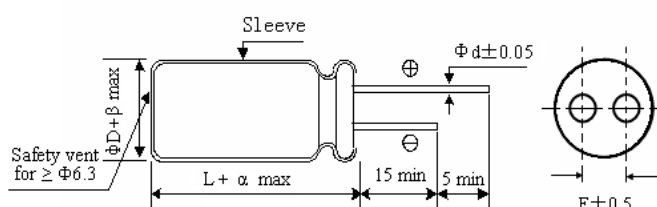
Item	Performance Characteristics																																													
Operating Temperature Range	-40~+85℃																																													
Rate Voltage Range	4~63 VDC																																													
CapacitanceRange	0.1~470μF																																													
Capacitance Tolerance	±20%（120Hz， +20℃）																																													
Leakage current （+20℃,max.）	I≤0.01 CV or 3(μA) After 1 minute, whichever is greater measured with rated working voltage applied.																																													
Dissipation factor （tgδ）	<table><tr><td>Working Voltage(VDC)</td><td>4</td><td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td><td>63</td></tr><tr><td>D.F(%)max</td><td>25</td><td>22</td><td>20</td><td>16</td><td>14</td><td>12</td><td>10</td><td>9</td></tr></table> （120Hz， +20℃）									Working Voltage(VDC)	4	6.3	10	16	25	35	50	63	D.F(%)max	25	22	20	16	14	12	10	9																			
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Low Temperature Characteristics （120Hz）	<table><tr><td colspan="10">Impedance ratio max.</td></tr><tr><td>Working Voltage(VDC)</td><td>4</td><td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td><td>63</td></tr><tr><td>Z-25℃/ Z+20℃</td><td>7</td><td>4</td><td>3</td><td>2</td><td>2</td><td>2</td><td>2</td><td>2</td></tr><tr><td>Z-40℃/ Z+20℃</td><td>15</td><td>8</td><td>6</td><td>4</td><td>4</td><td>3</td><td>3</td><td>3</td></tr></table>									Impedance ratio max.										Working Voltage(VDC)	4	6.3	10	16	25	35	50	63	Z-25℃/ Z+20℃	7	4	3	2	2	2	2	2	Z-40℃/ Z+20℃	15	8	6	4	4	3	3	3
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Z-40℃/ Z+20℃	15	8	6	4	4	3	3	3																																						
Load Life	Test conditions Duration time : 1000Hrs Ambient temperature : +85℃ Applied voltage : Rated DC working voltage After test requirement at +20℃ Capacitance change : ≤±20% of the initial measured value（4V: ≤ ±30%） Dissipation factor : ≤200% of the initial specified value Leakage current : ≤The initial specified value																																													
Shelf Life	Test conditions Duration time : 1000Hrs Ambient temperature : +105℃ Applied voltage : None After test requirement at +20℃ : Same limits as Load life. Pre-treatment for measurements shall be conducted after application of DC working voltage for 30 minutes																																													

Multiplier for Ripple Current vs. Frequency

CAP(μA) \ Frequency (Hz)	60(50)	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

Diagram of Dimensions

Unit: mm



ΦD	4	5	6.3	8
F	1.5 ± 0.5	2.0 ± 0.5	2.5 ± 0.5	3.5 ± 0.5
Φd	0.45		0.5	

SM series

Case Size

$\Phi \text{ D} \times \text{L}$										
Voltage	4V		6.3V		10V		16V		25V	
Cap(μF)	Case Size	Ripple Current	Case Size	Ripple Current	Case Size	Ripple Current	Case Size	Ripple Current	Case Size	Ripple Current
4.7							4 $\times$ 7	15	4 $\times$ 7	20
6.8							4 $\times$ 7	20	4 $\times$ 7	22
10							4 $\times$ 7	28	4 $\times$ 7	30
15			4 $\times$ 7	28	4 $\times$ 7	32	4 $\times$ 7	35	5 $\times$ 7	37
22			4 $\times$ 7	35	4 $\times$ 7	36	4 $\times$ 7	40	4 $\times$ 7	46
					5 $\times$ 7	38	5 $\times$ 7	42	5 $\times$ 7	50
33	4 $\times$ 7	33	4 $\times$ 7	40	4 $\times$ 7	43	4 $\times$ 7	45	5 $\times$ 7	52
			5 $\times$ 7	42	5 $\times$ 7	45	5 $\times$ 7	55	6.3 $\times$ 7	58
47	4 $\times$ 7	35	4 $\times$ 7	46	4 $\times$ 7	50	5 $\times$ 7	65	6.3 $\times$ 7	71
			5 $\times$ 7	48	5 $\times$ 7	58	6.3 $\times$ 7	68		
68	4 $\times$ 7	42	5 $\times$ 7	50	5 $\times$ 7	60	6.3 $\times$ 7	70	6.3 $\times$ 7	79
100	4 $\times$ 7	55	5 $\times$ 7	75	5 $\times$ 7	82	6.3 $\times$ 7	98	8 $\times$ 7	113
	5 $\times$ 7	61	6.3 $\times$ 7	80	6.3 $\times$ 7	90	8 $\times$ 7	105		
150	5 $\times$ 7	72	6.3 $\times$ 7	82	6.3 $\times$ 7	95	8 $\times$ 7	111		
			8 $\times$ 7	85						
220	6.3 $\times$ 7	110	6.3 $\times$ 7	120	6.3 $\times$ 7	136	8 $\times$ 7	152		
			8 $\times$ 7	133	8 $\times$ 7	140				
330	6.3 $\times$ 7	120	8 $\times$ 7	160	8 $\times$ 7	182				
	8 $\times$ 7	165								
470	8 $\times$ 7	235								

Voltage	35V		50V		63V	
Cap(μF)	Case Size	Ripple Current	Case Size	Ripple Current	Case Size	Ripple Current
0.1			4 $\times$ 7	1.3	4 $\times$ 7	1.3
0.15			4 $\times$ 7	2	4 $\times$ 7	2.0
0.22			4 $\times$ 7	3	4 $\times$ 7	3.0
0.33			4 $\times$ 7	3.5	4 $\times$ 7	4.0
0.47			4 $\times$ 7	5	4 $\times$ 7	6.3
0.68			4 $\times$ 7	7.5	4 $\times$ 7	8
1			4 $\times$ 7	10	4 $\times$ 7	12
1.5			4 $\times$ 7	13	4 $\times$ 7	14
2.2			4 $\times$ 7	17	4 $\times$ 7	18
3.3	4 $\times$ 7	18	4 $\times$ 7	23	5 $\times$ 7	25
4.7	4 $\times$ 7	22	4 $\times$ 7	24	5 $\times$ 7	30
			5 $\times$ 7	26	6.3 $\times$ 7	33
6.8	5 $\times$ 7	25	5 $\times$ 7	28	6.3 $\times$ 7	31
10	4 $\times$ 7	31	5 $\times$ 7	35	6.3 $\times$ 7	48
	5 $\times$ 7	33	6.3 $\times$ 7	38		
15	5 $\times$ 7	37	6.3 $\times$ 7	42	8 $\times$ 7	45
22	5 $\times$ 7	47	6.3 $\times$ 7	59	8 $\times$ 7	65
	6.3 $\times$ 7	55	8 $\times$ 7	63		
33	6.3 $\times$ 7	65	8 $\times$ 7	75		
	8 $\times$ 7	68				
47	8 $\times$ 7	85	8 $\times$ 7	88		
68	8 $\times$ 7	88				
100	8 $\times$ 7	119				

Ripple Current (mA,rms) at 105℃ 120KHz