



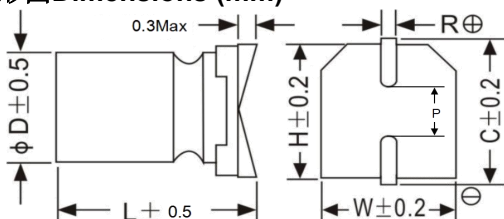
## M2 Series

- 低阻抗,耐高频波电流,小型化Low ESR, high ripple current, miniaturized
- SMD类型:峰值260°C无铅回流焊接条件SMD type: lead free reflow soldering condition at 260°C peak correspondence
- 通过RoHS认证RoHS compliant

### 规格表 Specifications

项目Items	特性参数Characteristics			
使用温度范围 Category temperture range	-55 ~ +105°C			
额定工作电压范围 Rated voltage range	2.5 ~ 160V			
静电容量允许偏差 Capacitance tolerance	±20%(M) (at 20°C,120Hz)			
漏电流 Leakage current	施加额定工作电压2分钟后读数, 小于或等于规格值 (at 20°C) Less than or equal to the specified value, after 2 minutes application of rated voltage at 20°C		2.5~25V	35~160V
			≤0.2CV 或500μA(取大值)	≤0.1CV 或299μA(取大值)
损耗角正切值tanδ Dissipation factor	Rated voltage (V)	2.5~6.3	10~160	(at 20°C,120Hz)
	tanδ (Max.)	0.08	0.12	
温度特性 Low temperture characteristics (Max.impedance ratio)	Z(-25°C)/Z(+20°C)	≤ 2.0		(100KHz)
	Z(-55°C)/Z(+20°C)	≤ 2.5		
耐久性 Endurance	105°C施加额定工作电压2000小时, 恢复到20°C后, 产品性能应满足以下要求 The specifications listed below shall be satisfied when the capacitors are restored to 20°C after application of rated voltage for 2000 hours at 105°C.			
	Appearance	No significant damage		
	Capacitance change	≤ ±20% of the initial value		
	D.F.(tanδ)	≤ 150% of the specified value		
	ESR	≤ 150% of the specified value		
	Leakage current	≤ The specified value		
耐湿负荷特性 Damp heat (Steady state)	在60°C 温度, 湿度90%~95%RH的环境中, 施加额定电压1000小时后, 恢复到20°C后, 产品性能应满足以下要求 The specifications listed below shall be satisfied when the capacitors are restored to 20°C after application of rated voltage for 1000 hours at 60°C,90%~ 95% RH.			
	Appearance	No significant damage		
	Capacitance change	≤ ±20% of the initial value		
	D.F.(tanδ)	≤ 150% of the specified value		
	ESR	≤ 150% of the specified value		
	Leakage current	≤ The specified value		
浪涌电压特性 Surge voltage	浪涌电压=额定电压× 1.15(V) Surge voltage=Rated voltage × 1.15(V) 在15°C~35°C环境中, 按充电30秒; 放电5分30秒, 连续施加浪涌电压1000次(Rc=1kΩ), 待恢复测试, 应满足以下要求 The capacitors shall be subjected to 1000 cycles each consisting of charge with the surge voltages specified at 15°C~35°C for 30 seconds through a protective resistor (Rc=1kΩ) and discharge for 5 minutes 30 seconds.			
	Appearance	No significant damage		
	Capacitance change	≤ ±20% of the initial value		
	D.F.(tanδ)	≤ 150% of the specified value		
	ESR	≤ 150% of the specified value		
	Leakage current	≤ The specified value		
焊接耐热性 Resistance to soldering heat	按回流焊试验后, 应满足以下要求 Measurement for solder temperature profile shall be made at the capacitor top and the terminal.			
	Capacitance change	≤ ±10% of the initial value		
	D.F.(tanδ)	≤ 130% of the specified value		
	ESR	≤ 130% of the specified value		
	Leakage current	≤ The specified value		

### 外形图Dimensions (mm)



ΦD	W	H	C	R	P
5	5.3	5.3	5.9	0.5~0.8	1.4
6.3*4~7.7	6.5	6.5	7.2	0.5~0.8	2.2
6.3*8~15	6.5	6.5	7.2	0.7~1.1	2.2
8	8.3	8.3	9.0	0.7~1.1	3.1
10	10.3	10.3	11.0	0.7~1.1	4.5

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### ◆ 纹波电流修正系数 Rated Ripple Current Coefficient

频率Frequency(Hz)	120Hz $\leq$ f < 1kHz	1kHz $\leq$ f < 10kHz	10kHz $\leq$ f < 100kHz	100kHz $\leq$ f < 500kHz
系数 Coefficient	0.05	0.30	0.7	1.00

### ◆ 尺寸与技术参数一览表Standard Ratings

Rated voltage (V)	Rated capacitance (uF)	Case size $\Phi$ D×L(mm)	ESR(m $\Omega$ ) at 20°C, 100 KHz	Leakage Current ( $\mu$ A)	Rated ripple current (mArms/105°C/100kHz)
2.5	470	6.3*9	18	500	4100
	560	6.3*9	18	500	4100
	680	6.3*9	18	500	4100
	820	6.3*9	18	500	4100
4	560	6.3*9	18	500	4100
	680	6.3*9	18	544	4100
	820	6.3*9	18	656	4100
	1000	6.3*9	18	800	4100
	1200	6.3*9	18	960	4100
6.3	220	6.3*5.8	30	500	2690
		6.3*7.7	25	500	2900
	330	6.3*5.8	30	500	2690
		6.3*7.7	25	500	2900
	470	6.3*7.7	25	592.2	3500
	560	6.3*7.7	25	705.6	3500
	680	6.3*9	18	856.8	3800
	820	6.3*9	18	1033.2	3800
	1000	6.3*10	18	1260	4200
		8*9.5	15	1260	4900
	1500	8*12.6	15	1890	5200
		10*13.5	15	1890	5700
	2200	10*13.5	15	2772	5700
10	220	6.3*5.8	30	500	2500
		6.3*7.7	30	500	2650
	330	6.3*7.7	30	660	2650
	470	6.3*7.7	30	940	2700
		6.3*9	30	940	2900
	560	6.3*9	20	1120	3100
	680	8*9.5	18	1360	4700
	820	8*12.6	16	1640	4900
		10*10.5	15	1640	4900
	1000	8*12.6	16	2000	4900
		10*13.5	15	2000	5300
	1500	8*12.6	16	3000	4900
		10*13.5	15	3000	5300
	2200	10*13.5	15	4400	5300

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Rated voltage (V)	Rated capacitance (uF)	Case size ΦD×L(mm)	ESR(mΩ) at 20°C, 100 KHz	Leakage Current (μA)	Rated ripple current (mArms/105°C/100kHz)
16	47	6.3*5.8	40	500	1900
	68	6.3*5.8	40	500	1900
	100	6.3*5.4	45	500	1850
		6.3*5.8	40	500	1900
		6.3*7.7	35	500	2100
	220	6.3*5.8	35	704	2260
		6.3*7.7	30	704	2500
		8*9.5	20	704	3400
	270	6.3*7.7	30	864	2260
	330	6.3*7.7	30	1056	2260
		6.3*9	25	1056	2900
		8*9.5	18	1056	3700
	470	6.3*10	25	1504	3500
		8*9.5	18	1504	3700
		8*12.6	18	1504	4100
		10*10.5	15	1504	4800
	680	8*12.6	18	2176	4100
	820	8*12.6	18	2624	4100
1000	8*12.6	18	3200	4100	
	10*13.5	15	3200	4900	
1500	10*13.5	15	4800	4900	
25	47	6.3*5.8	50	500	1870
	100	6.3*5.4	50	500	1700
		6.3*5.8	45	500	1870
		6.3*7.7	45	500	1950
	180	6.3*5.8	40	900	1900
	220	6.3*7.7	40	1100	2100
		6.3*8.5	40	1100	2100
		8*9.5	30	1100	3100
	330	6.3*10	35	1650	2500
		8*9.5	30	1650	3100
	470	6.3*10.8	35	2350	2900
		8*9.5	30	2350	3100
		8*12.6	25	2350	3800
		10*10.5	25	2350	4500
	560	10*10.5	25	2800	4500
680	8*12.6	25	3400	4200	
	10*13.5	20	3400	4800	
820	10*13.5	20	4100	4800	
1000	10*13.5	20	5000	4800	

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Rated voltage (V)	Rated capacitance (uF)	Case size $\Phi D \times L$ (mm)	ESR(m $\Omega$ ) at 20°C, 100 KHz	Leakage Current ( $\mu$ A)	Rated ripple current (mArms/105°C/100kHz)
35	22	6.3*5.8	100	299	1200
	47	6.3*5.4	80	299	1200
		6.3*5.8	80	299	1200
	100	6.3*5.8	60	350	1400
		6.3*7.7	60	350	1500
		6.3*9	50	350	1700
	150	8*9.5	40	350	2400
		6.3*10	50	525	1700
	220	6.3*10.5	40	770	1900
		8*9.5	40	770	2500
		8*12.6	40	770	2900
		10*10.5	40	770	3100
	330	8*12.6	35	1155	2900
		10*10.5	35	1155	3100
		10*13.5	30	1155	3500
	470	10*13.5	30	1645	3500
560	10*13.5	30	1960	3500	
680	10*13.5	30	2380	3900	
50	22	6.3*5.8	100	299	780
		6.3*9	100	299	850
	33	6.3*9	100	299	850
	47	6.3*7.7	80	299	850
		6.3*9	80	299	900
		8*9.5	50	299	1100
	100	8*9.5	50	500	1150
		8*12.6	40	500	1550
		10*13.5	35	500	2100
	150	8*12.6	40	750	1550
		10*13.5	35	750	2400
	220	10*10.5	35	1100	2100
		10*13.5	35	1100	2450
330	10*13.5	35	1650	2500	
63	10	6.3*7.7	120	299	700
	22	6.3*5.8	100	299	650
		6.3*7.7	100	299	700
		6.3*9	100	299	750
	33	6.3*9	100	299	820
	47	8*9.5	45	299	950
8*12.6		40	299	1300	

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Rated voltage (V)	Rated capacitance (uF)	Case size $\Phi D \times L$ (mm)	ESR(m $\Omega$ ) at 20°C, 100 KHz	Leakage Current ( $\mu A$ )	Rated ripple current (mA <sub>rms</sub> /105°C/100kHz)
63	100	8*12.6	40	630	1300
		10*10.5	40	630	1700
		10*13.5	35	630	2100
	150	10*13.5	35	945	2200
	220	10*13.5	35	1386	2200
80	10	6.3*9	120	299	550
	22	8*9.5	60	299	1100
	33	8*9.5	60	299	1100
	47	8*12.6	60	376	1300
		10*10.5	50	376	1400
	68	10*13.5	45	544	1800
	100	10*13.5	45	800	1900
100	10	6.3*9	120	299	550
	22	8*9.5	60	299	850
		8*12.6	60	299	1190
	33	8*12.6	60	330	1190
	47	10*13.5	50	470	1550
	68	10*13.5	50	680	1600
	82	10*13.5	50	820	1600
160	4.7	8*9.5	350	299	550
	10	8*12.6	250	299	750
	15	8*12.6	250	299	750
		10*10.5	300	299	750
	18	10*13.5	200	299	950
	22	10*13.5	200	352	950