

M2 SERIES

Low ESR, High ripple, miniaturized

SMD type: lead free reflow soldering condition at 260°C peak correspondence



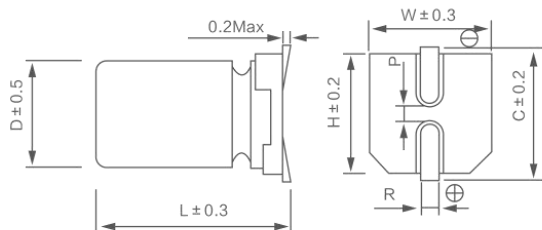
規格表 Specifications

項目Items	特性參數Characteristics			
使用溫度範圍 Category Temperture Range	-55 ~ +105℃			
額定工作電壓範圍 Rated Voltage Range	2.5 ~ 100V			
靜電容量允許偏差 Capacitance tolerance	± 20%(M) (at 20℃,120Hz)			
漏電流 Leakage Current	施加額定工作電壓 2 分鐘後讀數, 小于或等于規格值 (at 20℃) Less than or equal to the specified value. After 2 minutes application of rated Voltage at 20℃		2.5~25V	35~100V
			I≤0.1CV 或 500 μ A(取大值)	I≤0.1CV 或 299 μ A(取大值)
損耗角正切值 tan δ Dissipation Factor	Rated voltage (V)	2.5-6.3	10-100	(at 20℃,120Hz)
	tan δ (Max.)	0.08	0.12	
溫度特性 Low Temperture Characteristics (Max.Impedance Ratio)	Z(-25℃)/Z(+20℃)		⊆ 1.25	(100KHz)
	Z(-55℃)/Z(+20℃)			
耐久性 Endurance	105℃施加額定工作電壓 2000 小時, 恢復到 20℃後, 產品性能應滿足以下要求 The specifications listed below shall be satisfied when the capacitors are restored to 20℃ after application of rated voltage for 2000 hours at 105℃.			
	Appearance		No significant damage	
	Capacitance change		⊆ ± 20% of the initial value	
	D.F.(tan δ)		⊆ 150% of the specified value	
	ESR		⊆ 150% of the specified value	
	Leakage current		⊆ The specified value	
耐濕負荷特性 Damp Heat (Steady State)	在 60℃ 溫度, 濕度 90%~95%RH 的環境中, 施加額定電壓 1000 小時後, 恢復到 20℃後, 產品性能應滿足以下要求 The specifications listed below shall be satisfied when the capacitors are restored to 20℃after application of rated voltage for 1000 hours at 60℃,90% ~ 95% RH.			
	Appearance		No significant damage	
	Capacitance change		⊆ ± 20% of the initial value	
	D.F.(tan δ)		⊆ 150% of the specified value	
	ESR		⊆ 150% of the specified value	
	Leakage current		⊆ The specified value	
浪涌電壓特性 (Surge Voltage)	浪涌電壓 = 額定電壓 × 1.15(V) Surge Voltage=Rated voltage × 1.15(V) 在 105℃環境中, 按充電 30 秒; 放電 5 分 30 秒, 連續施加浪涌電壓 1000 次 (Rc=1kΩ), 待恢復後測試, 應滿足以下要求 The capacitors shall be subjected to 1000 cycles each consisting of charge with the surge voltages specified at 105℃ 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.(tan δ)		⊆ 150% of the specified value	
	ESR		⊆ 150% of the specified value	
	Leakage current		⊆ The specified value	
焊接耐熱性 Resistance to soldering heat	按回流焊試驗後, 應滿足于以下要求 Measurement for solder temperature profile shall be made at the capacitor top and the terminal.			
	Capacitance change		⊆ ± 10% of the initial value	
	D.F.(tan δ)		⊆ 130% of the specified value	
	ESR		⊆ 130% of the specified value	
	Leakage current		⊆ The specified value	

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SMK[®]

外形圖Dimensions (mm)



ΦD	W	H	C	R	P
5	5.3	5.3	5.9	0.5~0.8	1.4
6.3	6.5	6.5	7.2	0.5~0.8	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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紋波電流補正係數 Rated Ripple Current Coefficient

頻率Frequency(Hz)	120Hz ≦ f < 1kHz	1kHz ≦ f < 10kHz	10kHz ≦ f < 100kHz	100kHz ≦ f < 500kHz
係數Coefficient	0.05	0.30	0.70	1.00

尺寸與個技術參數一覽表Standard Ratings

Rated voltage (V)	Rated capacitance (uF)	Case size ΦD × L(mm)	ESR(mΩ) at 20°C, 100 KHz	Leakage Current (μA)	Rated ripple current (mA _{rms} /105°C/100kHz)
2.5	470	6.3*9	30	500	4100
	470	8*9.8	30	500	4500
	560	6.3*9	30	500	4100
	560	8*9.8	30	500	4500
	680	8*12.6	25	500	4800
	820	8*12.6	25	500	4800
4	560	8*9.8	30	500	4250
	680	8*12.6	25	544	4700
	820	10*12.6	20	656	5100
	1000	10*12.6	20	800	5100
	1200	10*12.6	20	960	5100
6.3	220	6.3*9	35	500	3500
	270	6.3*9	35	500	3500
	330	6.3*9	35	500	3500
	470	8*9.8	35	592	3800
	560	8*9.8	35	706	3800
	680	8*12.6	25	857	4300
	820	10*12.6	25	1033	4800
	1000	10*12.6	25	1260	4800
	1500	10*12.6	25	1890	4800
10	220	6.3*9	35	500	2900
	270	6.3*9	35	540	2900
	330	8*9.8	35	660	3600
	470	8*9.8	35	940	3600
	560	8*9.8	35	1120	3600
	680	8*12.6	25	1360	4200
	820	10*12.6	25	1640	4500
	1000	10*12.6	25	2000	4500
16	47	6.3*9	50	500	2690
	68	6.3*9	40	500	2690
	82	6.3*9	40	500	2690
	100	6.3*9	40	500	2690
	220	6.3*9	40	704	2690

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Rated voltage (V)	Rated capacitance (μ F)	Case size Φ D $\times$ L(mm)	ESR(m Ω) at 20°C, 100 KHz	Leakage Current (μ A)	Rated ripple current (mA _{rms} /105°C/100kHz)
16	220	8*9.8	40	704	2900
	220	8*12.6	30	704	3500
	270	8*9.8	40	864	2900
	330	6.3*9	40	1056	2690
	330	8*9.8	40	1056	2900
	330	8*12.6	30	1056	3500
	470	8*12.6	30	1504	3500
	470	10*12.6	30	1504	4100
	560	8*12.6	30	1792	3500
	680	10*12.6	30	2176	4100
	820	10*12.6	30	2624	4100
	1000	10*12.6	30	3200	4100
25	22	6.3*9	60	500	2100
	33	6.3*9	60	500	2100
	47	6.3*9	60	500	2100
	47	8*9.8	50	500	2690
	68	6.3*9	50	500	2100
	82	6.3*9	50	500	2100
	100	6.3*9	50	500	2100
	100	8*9.8	50	500	2690
	150	8*9.8	50	750	2690
	220	8*12.6	50	1100	2900
	220	10*12.6	45	1100	3500
	270	8*12.6	50	1350	2900
	330	10*12.6	45	1650	3500
	470	10*12.6	45	2350	3500
35	10	6.3*9	100	299	1350
	22	6.3*9	100	299	1410
	33	6.3*9	100	299	1410
	47	6.3*9	80	299	1410
	82	8*9.8	55	299	1900
	100	8*9.8	55	350	1900
	100	8*12.6	55	350	2690
	220	10*12.6	50	770	3100

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Rated voltage (V)	Rated capacitance (μ F)	Case size $\Phi D \times L$ (mm)	ESR(m Ω) at 20°C, 100 KHz	Leakage Current (μ A)	Rated ripple current (mA _{rms} /105°C/100kHz)
50	10	6.3*9	100	299	800
	22	6.3*9	100	299	850
	33	8*9.8	60	299	1300
	47	8*12.6	60	299	1500
	68	8*12.6	60	340	1500
	100	8*12.6	60	500	1500
	120	10*12.6	55	600	2100
	220	10*12.6	55	1100	2100
63	10	6.3*9	110	299	750
	22	8*9.8	60	299	1100
	33	8*9.8	60	299	1100
	33	8*12.6	60	299	1300
	47	8*12.6	60	299	1300
	68	8*12.6	60	428	1300
	82	10*12.6	55	517	1800
	100	10*12.6	55	630	1800
80	10	6.3*9	120	299	550
	22	8*9.8	80	299	1100
	22	8*12.6	70	299	1300
	33	8*12.6	70	299	1300
	47	10*12.6	60	376	1800
100	10	8*9.8	90	299	850
	15	8*12.6	70	299	1190
	22	10*12.6	60	299	1550
	33	10*12.6	60	330	1550