

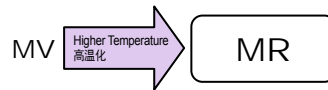
MR Series

CHIP TYPE, HIGH RELIABILITY

貼片式, 高可靠品



- Operating with wide temperature range -55~+125°C
適用於 -55~+125°C 的寬溫範圍
- High reliability, low ESR, high ripple current
高可靠, 低阻抗, 高紋波電流
- Load life of 1500~3000 hours
負荷壽命 1500~3000 小時
- RoHS & REACH compliant, Halogen-free
符合 RoHS 與 REACH, 無鹵

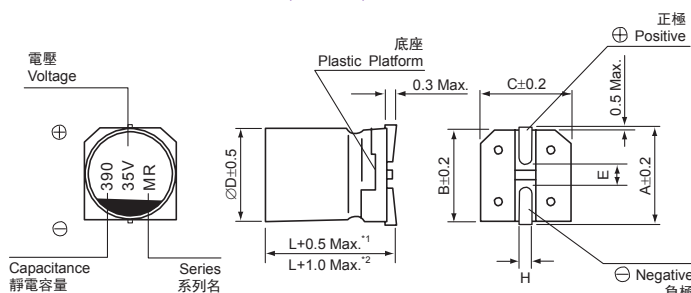


□ SPECIFICATIONS 特性表

Items 項目	Characteristics 主要特性					
Operation Temperature Range 使用溫度範圍	-55 ~ +125°C					
Voltage Range 額定工作電壓範圍	16 ~ 50V					
Capacitance Range 靜電容量範圍	5.6 ~ 390µF					
Capacitance Tolerance 靜電容量允許偏差	±20% at 120Hz, 20°C					
Leakage Current 漏電流 (*1)	≤Specified value (after 2 minutes application of rated voltage at 20°C). ≤規範值 (在 20°C 環境中施加額定工作電壓 2 分鐘後)。					
Dissipation Factor (tan δ) 損耗角正切	≤Specified value at 120Hz, 20°C. ≤規範值 (在 20°C 120Hz 環境下)。					
ESR 阻抗值 (*2)	≤Specified value at 100KHz, 20°C. ≤規範值 (在 20°C 100KHz 環境下)。					
Stability at Low Temperature 低溫特性	Measurement frequency 測試頻率: 100KHz					
	<table border="1"> <tr> <td>Impedance Ratio 阻抗比 Z1/Z20 (max.)</td> <td>Z(+125°C)/Z(20°C)</td> <td>≤1.25</td> </tr> <tr> <td></td> <td>Z(-55°C)/Z(20°C)</td> <td>≤1.25</td> </tr> </table>	Impedance Ratio 阻抗比 Z1/Z20 (max.)	Z(+125°C)/Z(20°C)	≤1.25		Z(-55°C)/Z(20°C)
Impedance Ratio 阻抗比 Z1/Z20 (max.)	Z(+125°C)/Z(20°C)	≤1.25				
	Z(-55°C)/Z(20°C)	≤1.25				
Damp Heat (Steady State) 穩態濕熱	When the capacitors are restored to 20°C after the rated voltage is applied for 1000 hours at 60°C, 90% RH, they meet the characteristics listed below. 在 60°C 和相對濕度 90% 環境下施加額定工作電壓 1000 小時並冷卻至 20°C 後, 電容器的特性符合下表的要求。					
	Capacitance Change 靜電容量變化率	Within ±20% of initial value 為初始值的±20%以內 (*3)				
	Dissipation Factor 損耗角正切	150% or less of initial specified value 不大於規範值的 150%				
	ESR 阻抗值 (*2)	150% or less of initial specified value 不大於規範值的 150%				
	Leakage Current 漏電流	Initial specified value or less 不大於規範值				
Endurance 耐久性	After 3000 hours (1500 hours for ∅6.3) application of the rated voltage at 125°C, they meet the characteristics listed below. 在 125°C 環境中施加額定工作電壓 3000 小時 (∅6.3 為 1500 小時) 後, 電容器的特性符合下表的要求。					
	Capacitance Change 靜電容量變化率	Within ±20% of initial value 為初始值的±20%以內 (*3)				
	Dissipation Factor 損耗角正切	150% or less of initial specified value 不大於規範值的 150%				
	ESR 阻抗值 (*2)	150% or less of initial specified value 不大於規範值的 150%				
	Leakage Current 漏電流	Initial specified value or less 不大於規範值				
Resistance to Soldering Heat 耐焊接熱特性 <small>(Please refer page 22 for soldering conditions) (焊接條件請查閱第 22 頁)</small>	After reflow soldering and restored at room temperature, they meet the characteristics listed below. 經過回流焊並冷卻至室溫後, 電容器的特性符合下表的要求。					
	Capacitance Change 靜電容量變化率	Within ±10% of initial value 初始值的±10%以內 (*3)				
	Dissipation Factor 損耗角正切	130% or less of initial specified value 不大於規範值的 130%				
	ESR 阻抗值 (*2)	130% or less of initial specified value 不大於規範值的 130%				
	Leakage Current 漏電流	Initial specified value or less 不大於規範值				
Marking 標識	Red print on the case top. 鋁殼頂部紅色字體印刷。					

(*1) If any doubt arises, measure the leakage current after the voltage treatment of applying DC rated voltage continuously to the capacitor for 120 minutes at 105°C. 如未能確定, 在 105°C 環境下連續施加額定工作電壓 120 分鐘後測量漏電流。
 (*2) Should be measured at both of the terminal ends closest where the terminals protrude through the plastic platform. 測試應為靠近突出底座兩個端子的末端。
 (*3) The value before test of examination of resistance to soldering. 焊接測試前的值。

□ DRAWING 外形圖 (Unit: mm)



*1. Applicable to ∅5~∅8 適用於∅5~∅8
 *2. Applicable to ∅10 and above 適用於∅10和∅10以上

Dimension table in next page. 尺寸表見下一頁。

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□ DIMENSIONS 尺寸表 (Unit: mm)

∅D × L	6.3 × 6/8	8 × 7/7.5	8 × 10/10.5	8 × 12	10 × 8	10 × 10/10.5	10 × 12.7
A	7.3	9.0	9.0	9.0	11.0	11.0	11.0
B	6.6	8.3	8.3	8.3	10.3	10.3	10.3
C	6.6	8.3	8.3	8.3	10.3	10.3	10.3
E	2.1	3.2	3.2	3.2	4.6	4.6	4.6
L	6.0/8.0	7.0/7.5	10.0/10.5	12	8.0	10.0/10.5	12.7
H	0.5~0.8	0.8~1.1	0.8~1.1	0.8~1.1	0.8~1.1	0.8~1.1	0.8~1.1

□ DIMENSIONS & STANDARD RATINGS 規格尺寸及標準參數

Cap. 容量 (μF)	Parameter 參數	WV (V)	16 (1C)					20 (1D)						
			Case size ∅D×L (mm) 尺寸	Dissipation factor (tan δ) 損耗角正切	Leakage current (μA) 漏電流	ESR (mΩ) max. 20°C, 100KHz 阻抗值	Ripple current (mA rms) 紋波電流		Case size ∅D×L (mm) 尺寸	Dissipation factor (tan δ) 損耗角正切	Leakage current (μA) 漏電流	ESR (mΩ) max. 20°C, 100KHz 阻抗值	Ripple current (mA rms) 紋波電流	
							≤105°C (3)	105°C≤125°C (3)					≤105°C (3)	105°C≤125°C (3)
33	330							6.3 × 6	0.12	132	60	900	380	
47	470		6.3 × 6	0.12	150	55	1000	390						
56	560							8 × 7 (8 × 7.5)	0.12 (0.12)	224 (224)	50 (50)	1300 (1300)	500 (500)	
68	680							6.3 × 8	0.12	272	34	1450	470	
82	820		8 × 7 (8 × 7.5)	0.12 (0.12)	262 (262)	45 (45)	1300 (1300)	530 (530)						
100	101		6.3 × 8	0.12	320	33	1500	460						
120	121							8 × 10 (8 × 10.5) (10 × 8)	0.12 (0.12) (0.12)	480 (480) (480)	29 (29) (35)	1900 (1900) (1800)	770 (770) (810)	
150	151		8 × 10 (10 × 8)	0.12 (0.12)	480 (480)	28 (33)	2000 (1900)	780 (830)	8 × 12	0.12	600	28	2200	860
180	181							10 × 10 (10 × 10.5)	0.12 (0.12)	720 (720)	28 (28)	2300 (2300)	800 (800)	
220	221		8 × 12	0.12	704	27	2300	870						
270	271		10 × 10 (10 × 10.5)	0.12 (0.12)	864 (864)	27 (27)	2300 (2300)	830 (830)	10 × 12.7	0.12	1080	27	2700	1020
390	391		10 × 12.7	0.12	1248	26	2700	1040						

Cap. 容量 (μF)	Parameter 參數	WV (V)	25 (1E)					35 (1V)						
			Case size ∅D×L (mm) 尺寸	Dissipation factor (tan δ) 損耗角正切	Leakage current (μA) 漏電流	ESR (mΩ) max. 20°C, 100KHz 阻抗值	Ripple current (mA rms) 紋波電流		Case size ∅D×L (mm) 尺寸	Dissipation factor (tan δ) 損耗角正切	Leakage current (μA) 漏電流	ESR (mΩ) max. 20°C, 100KHz 阻抗值	Ripple current (mA rms) 紋波電流	
							≤105°C (3)	105°C≤125°C (3)					≤105°C (3)	105°C≤125°C (3)
10	100							6.3 × 6	0.12	70	85	800	310	
18	180							8 × 7 (8 × 7.5)	0.12 (0.12)	126 (126)	60 (60)	1100 (1100)	450 (450)	
22	220		6.3 × 6	0.12	110	65	900	360						
27	270							6.3 × 8	0.12	189	45	1300	450	
39	390		8 × 7 (8 × 7.5)	0.12 (0.12)	195 (195)	55 (55)	1200 (1200)	480 (480)	8 × 10 (8 × 10.5) (10 × 8)	0.12 (0.12) (0.12)	273 (273) (273)	35 (35) (41)	1800 (1800) (1700)	700 (700) (750)
56	560		6.3 × 8	0.12	280	35	1400	450	8 × 12	0.12	392	33	2000	780
68	680							10 × 10 (10 × 10.5)	0.12 (0.12)	476 (476)	30 (30)	2200 (2200)	740 (740)	
82	820		8 × 10 (8 × 10.5) (10 × 8)	0.12 (0.12) (0.12)	410 (410) (410)	30 (30) (36)	1900 (1900) (1800)	760 (760) (800)						
100	101							10 × 10 (10 × 12.7)	0.12 (0.12)	700 (700)	25 (29)	2400 (2600)	800 (990)	
120	121		8 × 12 (10 × 10.5)	0.12 (0.12)	600 (600)	29 (29)	2200 (2200)	850 (850)						
180	181		10 × 12.7	0.12	900	28	2600	1010						

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CAT.2019/V4

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□ DIMENSIONS & STANDARD RATINGS 規格尺寸及標準參數

WV (V)		50 (1H)					
Cap. 容量 (μF)	Parameter 參數	Case size $\varnothing\text{D}\times\text{L}$ (mm) 尺寸	Dissipation factor ($\tan \delta$) 損耗角正切	Leakage current (μA) 漏電流	ESR ($\text{m}\Omega$) max. 20°C, 100KHz 阻抗值	Ripple current (mA rms) 紋波電流	
						$\leq 105^\circ\text{C}$ (3)	$105^\circ\text{C}\leq 125^\circ\text{C}$ (3)
5.6	5R6	6.3 × 6	0.12	56	105	700	280
10	100	8 × 7 (8 × 7.5)	0.12 (0.12)	100 (100)	75 (75)	1000 (1000)	410 (410)
12	120	6.3 × 8	0.12	120	65	1100	380
22	220	8 × 10 (8 × 10.5) (10 × 8)	0.12 (0.12) (0.12)	220 (220) (220)	37 (37) (56)	1700 (1700) (1400)	680 (680) (730)
27	270	8 × 12	0.12	270	35	2000	760
33	330	10 × 10 (10 × 10.5)	0.12 (0.12)	330 (330)	31 (31)	2200 (2200)	630 (630)
47	470	10 × 12.7	0.12	470	30	2500	970

- Taping specifications are given in page 17. 編帶標準請查閱第 17 頁。
- Soldering conditions and recommended land size are given in page 22. 焊接條件及推薦安裝尺寸請查閱第 22 頁。
- Please refer to page 18 for the minimum package quantity. 最小包裝數量請查閱第 18 頁。
- Please refer to page 14 for the Part Number System. 產品編碼規則請查閱第 14 頁。

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