

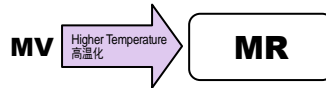
# MR Series

## 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

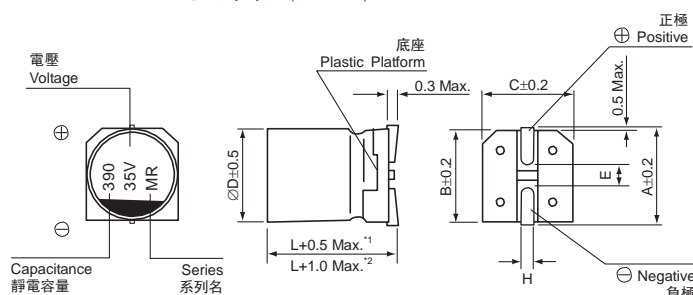
Items 項目	Characteristics 主要特性				
<b>Operation Temperature Range</b> 使用溫度範圍	-55 ~ +125°C				
<b>Voltage Range</b> 額定工作電壓範圍	16 ~ 50V				
<b>Capacitance Range</b> 靜電容量範圍	5.6 ~ 390µF				
<b>Capacitance Tolerance</b> 靜電容量允許偏差	±20% at 120Hz, 20°C				
<b>Leakage Current</b> 漏電流 (*1)	≤Specified value (after 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)。				
<b>Dissipation Factor (tan δ)</b> 損耗角正切	≤Specified value at 120Hz, 20°C. ≤規範值 (在 20°C 120Hz 環境下)。				
<b>ESR</b> 阻抗值 (*2)	≤Specified value at 100KHz, 20°C. ≤規範值 (在 20°C 100KHz 環境下)。				
<b>Stability at Low Temperature</b> 低溫特性	Measurement frequency 測試頻率: 100KHz				
	<table border="1"> <tr> <td rowspan="2">Impedance Ratio 阻抗比 ZT/Z20 (max.)</td> <td>Z(+125°C)/Z(20°C)</td> <td>≤1.25</td> </tr> <tr> <td>Z(-55°C)/Z(20°C)</td> <td>≤1.25</td> </tr> </table>	Impedance Ratio 阻抗比 ZT/Z20 (max.)	Z(+125°C)/Z(20°C)	≤1.25	Z(-55°C)/Z(20°C)
Impedance Ratio 阻抗比 ZT/Z20 (max.)	Z(+125°C)/Z(20°C)		≤1.25		
	Z(-55°C)/Z(20°C)	≤1.25			
<b>Damp Heat (Steady State)</b> 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			
<b>Endurance</b> 耐久性	After 3000 hours (1500 hours for Ø6.3) 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 (Ø6.3 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			
<b>Resistance to Soldering Heat</b> 耐焊接熱特性 (Please refer page 22 for soldering conditions) (焊接條件請查閱第 22 頁)	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			
<b>Marking</b> 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的兩個端子的末端。

(\*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 Ø5-Ø8 適用於 Ø5-Ø8  
\*2. Applicable to Ø10 and above 適用於 Ø10 和 Ø10 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/V1

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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 ØD×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)
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 12. 編帶標準請查閱第 12 頁。
- Soldering conditions and recommended land size are given in page 15. 焊接條件及推薦安裝尺寸請查閱第 15 頁。
- Please refer to page 13 for the minimum package quantity. 最小包裝數量請查閱第 13 頁。
- Please refer to page 10 for the Part Number System. 產品編碼規則請查閱第 10 頁。

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