Data Sheet

Customer:	
Product:	**Molding E-Beam Welded Metal Strip Resistor — WMR Series**
Sizes.:	**1206/2010/2512/2725/2728/4527**
Issued Date:	**20-May-25**
Edition:	**REV.A7**

RoHS Compliant

HONG KONG HELISTO INDUSTRIAL LIMITED
香港海利斯特实业有限公司

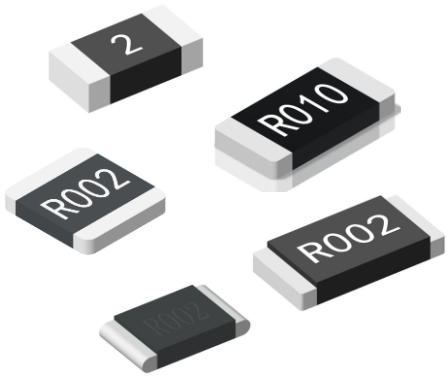
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20-May-25	**20-May-25**	**20-May-25**		
Mandy Chang	***Ben Chang***	***Ben Chang***		

Molding E-Beam Welded Metal Strip Resistor

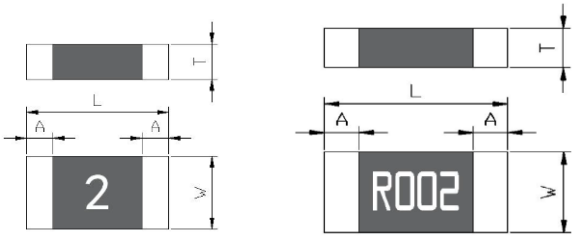
Molding E-Beam Welded Metal Strip Resistor



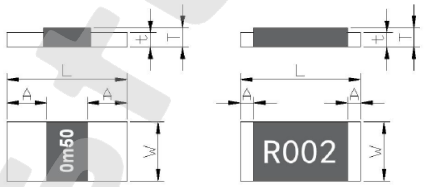
Features

- E-beam welded metal strip resistors, pure copper Electrodes are the ideal solution for current sensing applications
- Excellent reliability, stability, Auti-pulse capability
- Special welding process, all-metal construction, Supports low resistance , High temperature resistant resin molded encapsulation, strong weather resistance
- Low thermal EMF(<1 μV/°C)
- Ultra-low parasitic inductance , fast response, can be used for high frequency AC current detection.
- AEC-Q200 Reliability Testing passed
- RoHS compliant

Dimensions

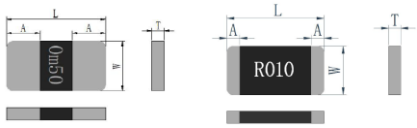


WMR06



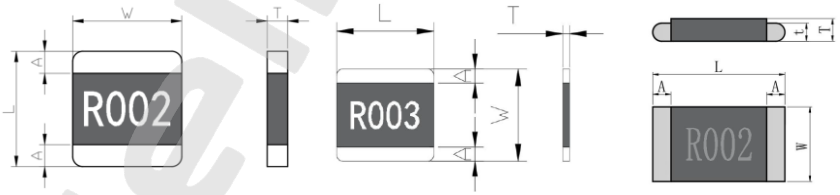
0M50 – R001 R002 – R200

WMR10



0M50 –R004 R005 – R050

WMR12



WMR25 WMR28 WMR27

Type	Size (Inch)	Resistance (mΩ)	Material	L (mm)	W (mm)	T (mm)	A (mm)	t (mm)	TCR (PPM/°C)
WMR06	1206	1	Manganin	3.20±0.20	1.65±0.20	0.80±0.15	0.70±0.20	-	±150
		2 – 8	Manganin				0.60±0.20	-	±100
		9 – 25	Kamar				0.60±0.20	-	±75
		9 – 25	FeCrAl				0.60±0.20	-	±50
WMR10	2010	0.5 – 1	Manganin	5.10±0.20	2.50±0.20	0.80±0.15	1.70±0.20	0.60±0.10	±175
		2 – 7	Manganin				0.55±0.20		±100
		8 – 200	Kamar				0.55±0.20		±75
WMR12	2512	0.5 – 1	Manganin	6.40±0.20	3.20±0.20	0.80±0.15	2.30±0.20	-	±150
		1 – 4	Manganin				1.50±0.20	-	±100
		5 – 50	Manganin				0.85±0.20	-	±100
		3 -4	FeCrAl				1.50±0.20	-	±50
		5 -50	FeCrAl				0.85±0.20	-	±25
		3 -4	Kamar				1.50±0.20	-	±50
		5 -50	Kamar				0.85±0.20	-	±50
WMR25	2725	0.2, 0.25	Manganin	6.80±0.25	6.50±0.25	1.20±0.10	1.70±0.15	-	±200
		0.5	Manganin				1.20±0.15	-	±200
		1, 2, 2.5	FeCrAl				1.20±0.15	-	±25
		3	FeCrAl				1.00±0.15	-	±25
WMR28	2728	3 – 50	FeCrAl	7.20±0.20	6.80±0.20	1.00±0.10	1.10±0.15	-	±50
WMR27	4527	1 – 5	Manganin	11.60±0.50	6.60±0.50	2.00±0.20	1.60±0.50	1.60±0.10	±75
		6	Kamar						±75
		7 – 100	Kamar						±50

Molding E-Beam Welded Metal Strip Resistor

■Part Numbering

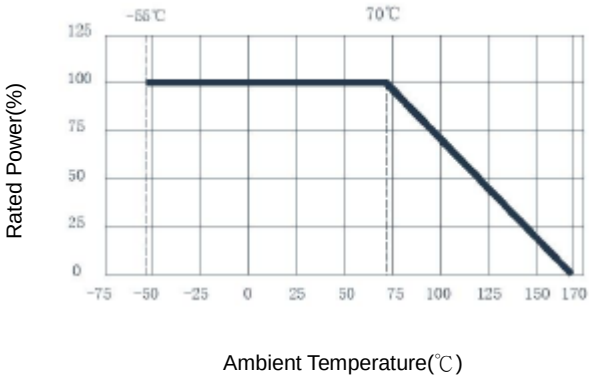
WMR	12	F	T	D	R	R005	K
Product Type	Dimensions	Resistance Tolerance	Packaging Code	TCR (PPM/℃)	Power Rating	Resistance	Material Code
	06: 1206 10: 2010 12: 2512 25: 2725 28: 2728 27: 4527	D: ±0.5% F: ±1% J: ±5%	T: Taping Reel	C: ±25 D: ±50 W: ±75 E: ±100 K: ±150 12: ±175 F: ±200	S: 2W R: 3W H: 4W D: 5W 9: 9W	0M50: 0.0005Ω R001: 0.001Ω R010: 0.01Ω R100: 0.1Ω	M: Manganin K: Kamar F: FeCrAl

■Standard Electrical Specifications

Type	Power Rating	Material	Resistance Range(mΩ)			TCR (PPM/°C)
			±0.5%	±1%	±5%	
WMR06 (1206)	2W	Manganin	-	1		±150
			-	2 – 8		±100
		Kamar	-	9 – 25		±75
		FeCrAl	-	9 – 25		±50
WMR10 (2010)	2W	Manganin	-	0.5 – 1		±175
		Manganin	-	2 – 7		±100
		Kamar	-	8 – 200		±75
WMR12 (2512)	3W	Manganin	0.5 -1			±150
		Manganin	1 -50			±100
		FeCrAl	3 -4			±50
		FeCrAl	5 -50			±25
		Kamar	3 -50			±50
WMR25 (2725)	4W	Manganin	0.2, 0.25, 0.5	0.2, 0.25, 0.5		±200
		FeCrAl	1, 2, 3	1, 2, 2.5, 3		±25
WMR28 (2728)	5W	FeCrAl	3 – 50			±50
WMR27 (4527)	9W	Manganin	-	1 -5		±75
		Kamar	-	6		±75
		Kamar		7 -100		±50

■Operating Temperature: -55 ~ +170℃

■Derating Curve



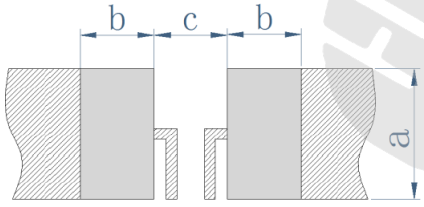
■Environmental Characteristics

Item	Requirement	Test Method
Temperature Coefficient of Resistance (T.C.R.)	Within the specified value	**IEC60115-1 4.8** Measured value 20℃ ~ +130℃, reference value +20℃
Solderability	No visible damage, weldable area 95% minimum	**IEC60115-1 4.17** 245°C for 3 seconds
Short time overload	No visible damage, ΔR±1.0% maximum	**IEC60115-1 4.13** 5 times rated voltage, 5 sec
Resistance to solder heat	No visible damage, ΔR±0.5% maximum	**IEC60115-1 4.18** 260℃ for 10 sec
Bending Strength	Within the specified value	**IEC60115-1 4.33** Bending amplitude 2 mm for 60+5 seconds
Flammability	No ignition of the tissue paper or scorching or the pinewood board	**UL-94** V-0 or V-1 are acceptable. Electrical test not required
Insulation Resistance	>1000MΩ	**IEC60115-1 4.6** Apply 100VDC for 1 minute
Dielectric Withstand Voltage	No breakdown or arcing	**IEC60115-1 4.7** Apply 100VAC for 60±5 seconds
Resistance to solvents	Marking Unsmeared	**IEC60115-1 4.29** IPA, 23±5℃, Duration: 5 ± 0.5 minute
High temperature and humidity	No visible damage, ΔR±1.0% maximum	**AEC-Q200 Test 7/MIL-STD-202 method 103** Temperature 85 ℃, humidity 85% of the conditions applied 10% of the rated power (current) or component limit current (whichever is less), for 1000 hours
High temperature storage	No visible damage, ΔR±1.0% maximum	**IEC60115-1 4.25.3** 1000 hrs @ 170℃, without load
Low temperature load	No visible damage, ΔR±0.5% maximum	**IEC60115-1 4.36** -55℃, No load for 1.5 hour, rated voltage load for 45 min, no load for 15 min
Temperature cycling	No visible damage, ΔR±1.0% maximum	**IEC60115-1 4.19** -55℃ @ 30 min ~ +155℃ @ 30 min, 1000 cycles
Load life	No visible damage, ΔR±1.0% maximum	**IEC60115-1 4.25.1** 1000h @ 70℃, rated current or component limit current (whichever is less), 90 min on, 30 min off

■Storage Temperature: 5°C~35℃ ; Humidity: 40%~75% RH

■Shelf life: 1 years Max

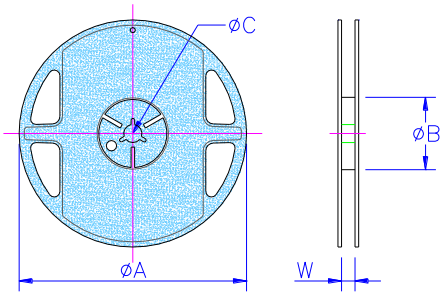
■Recommend Land Pattern



Type	Resistance (mΩ)	a (mm)	b (mm)	c (mm)
WMR06	1 – 25	1.78	1.27	1.4
WMR10	0.5 – 1	3.0	2.4	1.4
	2 – 200	3.0	1.6	3.0
WMR12	0.5 – 1	3.7	3.0	1.3
	1 – 4	3.7	2.3	2.8
	5 – 50	3.7	1.9	3.6
WMR25	0.2 – 0.25	6.86	3.18	1.32
	0.5 – 3	6.86	2.28	3.12
WMR28	3 – 50	7.82	2.75	3.51
WMR27	1 – 100	8.7	3.4	8.0

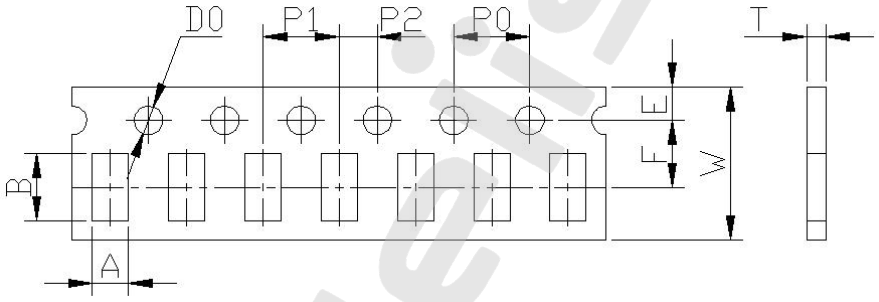
■Packaging

Reel Specifications & Packaging Quantity



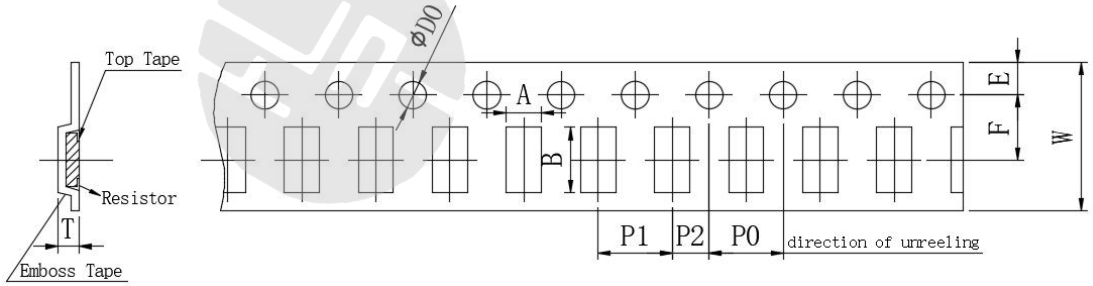
Type	Packaging Quantity		Tape Width	Reel Diameter	ΦA (mm)	ΦB (mm)	ΦC (mm)	W (mm)
WMR06	Paper	5K	8mm	7 inch	178.0±2.0	60.0±1.0	13.5±0.5	8.3±0.5
WMR10	Embossed	4K	12mm	7 inch	178.0±2.0	60.0±1.0	13.5±0.5	12.3±0.5
WMR12	Embossed	4K	12mm	7 inch	178.0±2.0	60.0±1.0	13.5±0.5	12.3±0.5
WMR25	Embossed	1K	12mm	7 inch	178.0±2.0	60.0±1.0	13.5±0.5	12.0±0.3
WMR28	Embossed	1K	12mm	7 inch	178.0±2.0	60.0±1.0	13.5±0.5	12.0±0.3
WMR27	Embossed	0.5K	24mm	7 inch	178.0±2.0	60.0±1.0	13.5±0.5	25.0±0.5

Paper Tape Specifications



Type	A (mm)	B (mm)	W (mm)	E (mm)	F (mm)	P0 (mm)	P1 (mm)	P2 (mm)	ΦD0 (mm)	T (mm)
WMR06	1.90	3.50	8.00	1.75	3.50	4.00	4.00	2.00	1.50	1.0

Embossed Plastic Tape Specifications



Type	A (mm)	B (mm)	W (mm)	E (mm)	F (mm)	P0 (mm)	P1 (mm)	P2 (mm)	ΦD0 (mm)	T (mm)
WMR10	2.80	5.40	12.00	1.75	5.50	4.00	4.00	2.00	1.50	1.20
WMR12	3.50	6.80	12.00	1.75	5.50	4.00	4.00	2.00	1.50	1.20
WMR25	6.9	7.20	12.00	1.75	5.50	4.00	8.00	2.00	1.50	1.50
WMR28	7.70	7.20	12.00	1.75	5.50	4.00	12.00	2.00	1.50	1.45
WMR27	7.40	11.80	24.00	1.75	11.50	4.00	12.00	2.00	1.50	2.30

REVISION HISTORY

REVISION	DATE	CHANGE NOTIFICATION	DESCRIPTION
Version A5	Apr 11 ,2025		-Add Storage conditions and Shelf life.
Version A6	Apr 16 ,2025		-Add 05% tolerance specification for WMR25. -Modify the Environmental Characteristics content. -Modify the Tape Specifications for WMR25.
Version A7	May 20 ,2025		-Modify the WMR06 dimensions – T dimension. -Modify the WMR06 recommended land pattern dimensions. -Modify the WMR06 tape specifications – T dimension.