Specification

Manufacturer: Shenzhen Haoou Electronics Co., LTD HoMAT2728

Application: This specification is suitable for selection of HoMAT2728 series of sealed alloy resistance products of Shenzhen Haoou Electronics Co., LTD.

■ Features

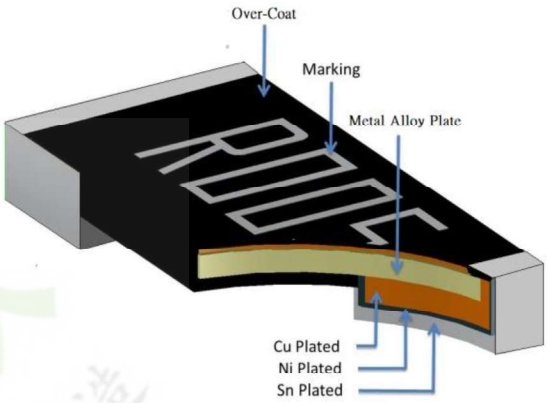
Low Resistance / Low TCR

Excellent long term stability

RoHs compliant and halogen free.

Lead free.

High precision current sensing and voltage division.



■ Application

Entertainment product

Power supply

Measuring instrument

Industrial product

Battery management system

■ Parts Number Explanation

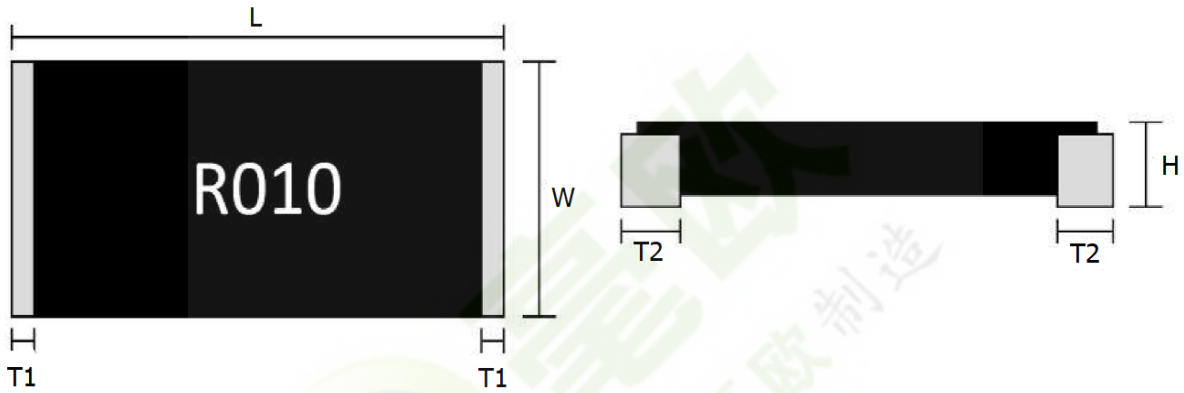
Example:

Ho	MAT	2728	4W	4mR	1%
制造商	产品系列	封装	额定功率	阻值	精度
毫欧电子	封体合金	2728	4W	4~450mR	D=±0.5% F=±1% G=±2% J=±5%

■ Standard Electrical Specifications

TYPE	Rating Power at 70℃	T.C.R. (ppm/℃)	Max. Rating Current	Max. Overload Current	Resistance Range (mΩ)		Material	Operating Temperature Range (℃)
					0.5% (D)	1.0% (F) 2.0% (G) 5.0% (J)		
MAT2728	4W	≦±50	31.62A	63.24A	7~450	4~450	4mR~450mR:FeCrAl	- 55 ~ + 170

■ Type Dimension



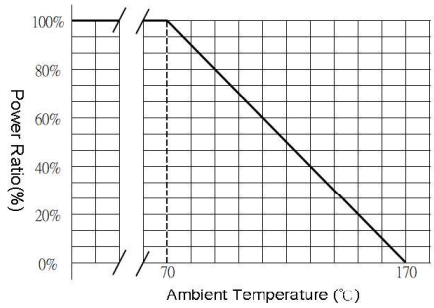
Type	Power Rating	Resistance Range	L	W	H	T1	T2
MAT2728	4W	4mR~450mR	6.60±0.254	6.70±0.254	0.58±0.254	0.40±0.254	1.05±0.254

■Performance Characteristics

Power Derating Curve

The Operating Temperature Range: -55°C ~+170°C.

For resistors operated in ambient temperatures above 70°C, power rating must be derating in accordance with the curve below.



Rating Current

The following equation may be used to determine the DC (Direct Current) or AC (Alternating Current) (RMS, root mean square value) of normal rated power. However, if the result value exceeds the highest current of regulated standards (paragraph 5), the highest normal rated power is to be used.

$$I = \sqrt{P/R}$$

I = Rating current (A)
P= Rating Power (W)
R= Resistance(Ω)

Marking Format:

- All the other products marking are 4 digits.
- "R" designates the decimal location in ohms

  e.g. 1mΩ the product marking is R001.

  25mΩ the product marking is R025.

  100mΩ the product marking is R100.
- "m" designates the decimal location in milli-ohms

  e.g. 0.25mΩ the product marking is 0m25.

  0.5mΩ the product marking is 0m50.

  5.5mΩ the product marking is 5m50.

  25.5mΩ the product marking is 25m5.
- 0Ω product marking is 0R.
- The criteria to distinguishing the mark on the surface of products are that characters can be identified.

Reliability test and requirement

Test Item	Test Method	Procedure	Requirements
Temperature Coefficient of Resistance (T.C.R)	JIS-C-5201-1 4.8 IEC-60115-1 4.8	At 25℃ /+150℃, 25℃ is the reference temperature	As Spec
Short Time Overload	JIS-C-5201-1 4.13 IEC-60115-1 4.13	The number of rated power are as follows: • MAT2728-4W: 4 times of rated power for 5 seconds.	• The others:Δ R/R1≦ ±0.5%
High Temperature Exposure	JIS-C5201-1 4.25 IEC 60068-2-2	At 170℃ for 1000 hours.	• The others:Δ R/R1≦±1.0%
Resistance to Soldering Heat	JIS-C-5201-1 4.18 IEC-60115-1 4.18	260±5℃ for 10 seconds.	ΔR/R1≦± 0.5%
Temperature Cycling	JESD22 Method JA-104	1000 Cycles (-55°C to +155°C) Measurement at 24±4 hours after test conclusion. 30min maximum dwell time at each temperature extreme.	ΔR/R1≦± 0.5%
Biased Humidity	MIL-STD-202 Method 103	1,000 hours; 85°C / 85% RH, 10% of operating power. Measurement at 24±4 hours after test conclusion.	ΔR/R1≦± 0.5%
Load Life (Endurance)	JIS-C-5201-1 4.25 IEC-60115-1 4.25.1	70±2℃, RCWV or Max. working voltage whichever is less for 1000 hrs with 1.5 hrs〝ON〞and 0.5 hr〝OFF〞.	• The others: ΔR/R1≦±1.0%
Solderability	JIS-C-5201-1 4.17 IEC-60115-1 4.17	245±5℃ for 3 seconds.	>95% coverage
Dielectric Withstanding Voltage	JIS-C5201-1 4.7	Applied 500VAC for 1 minute.	No short or burned on the appearance.
Core Body Strength	JIS-C5201-1 4.15	Central part pressurizing force：5N , 10 seconds	No broken
Terminal Strength (SMD)	AEC Q200-006	Pressurizing force 17.7N for 60 seconds	No broken
Bending Strength	JIS-C-5201-1 4.33 IEC-60115-1 4.33	Bending once 2mm for 10 seconds	ΔR/R1≦± 0.5% No broken
Moisture Resistance	MIL-STD 202 Method 106	T=24 hours / Cycle ,10Cycles . Steps 7a& 7b not required. Unpowered . (Figure 1)	ΔR/R1≦± 0.5%

For Jumper

Test Item	Test Method	Procedure	Requirements
Short Time Overload	JIS-C-5201-1 4.13 IEC-60115-1 4.13	4 times of rated power for 5 seconds.	≦0.2m Ω
Temperature Cycling	JESD22 Method JA-104	1000 Cycles (-55°C to +155°C) Measurement at 24±4 hours after test conclusion. 30min maximum dwell time at each temperature extreme.	≦0.2m Ω
High Temperature Exposure	JIS-C5201-1 4.25 IEC 60068-2-2	At 170℃ for 1000 hours.	≦0.2m Ω
Biased Humidity	MIL-STD-202 Method 103	1,000 hours; 85°C / 85% RH, 10% of operating power. Measurement at 24±4 hours after test conclusion.	≦0.2m Ω
Load Life (Endurance)	JIS-C-5201-1 4.25 IEC-60115-1 4.25.1	70±2℃, RCWV or Max. working voltage whichever is less for 1000 hrs with 1.5 hrs 〝ON〞 and 0.5 hr 〝OFF〞.	≦0.2m Ω
Solderability	JIS-C-5201-1 4.17 IEC-60115-1 4.17	245±5℃ for 3 seconds.	>95% coverage

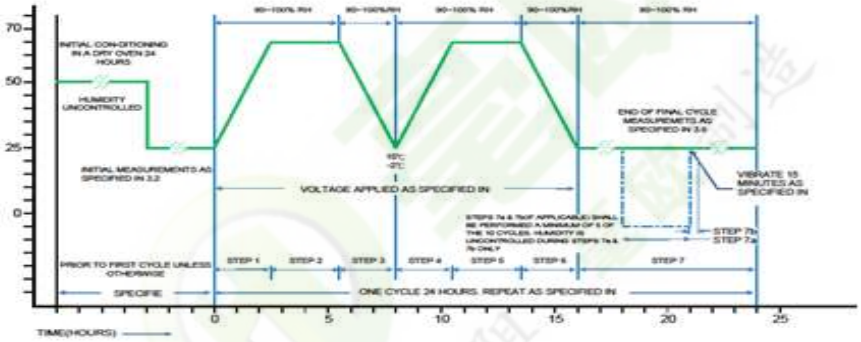
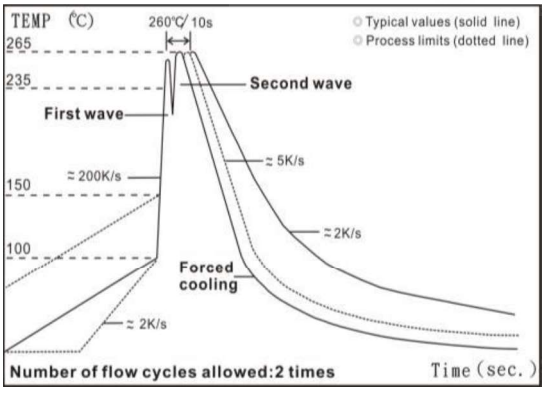


Figure 1

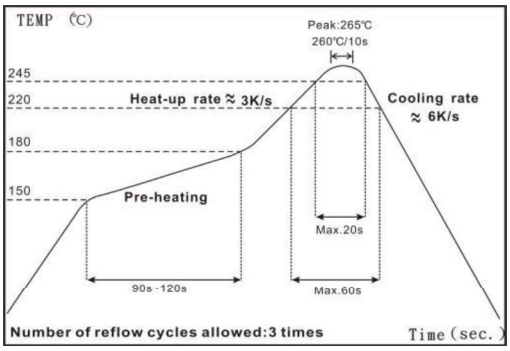
Recommended Customer Soldering Parameters

Wave solder Temperature condition

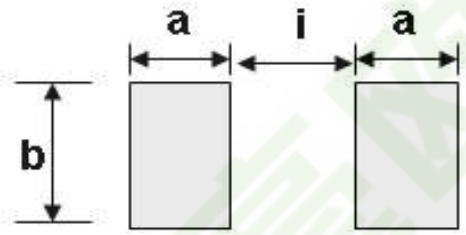


Recommended Customer Soldering Parameters

Solder reflow Temperature condition



Recommend Land Pattern Design



Unit: mm

TYPE	Resistance Range	a	b	i
MAT2728 - 4W	4mΩ~450mΩ	2.05	7.20	3.90

Packing Quantity

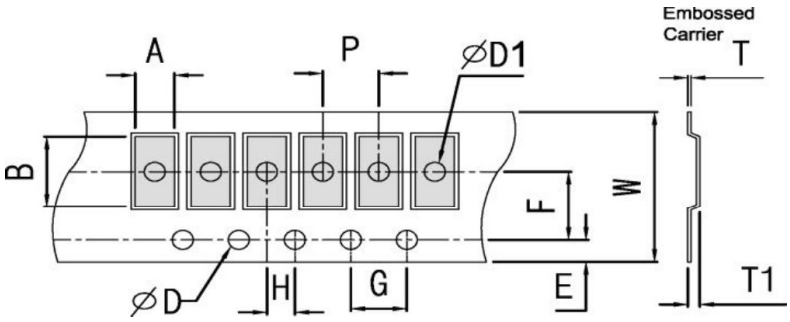
TYPE	PCS /Reel	Parts Number Explanation
MAT2728	2000 / 1000	Z: 2000PCS 1: 1000PCS

Plating Thickness:

Ni:≧ 2 μm

Sn(Tin):≧ 3 μm

■ Embossed Dimensions



Unit: mm

Item	Resistance Range (mΩ)	W	P	E	F	ØD	ØD1	G	H	A	B	T1	T
2728	4~450mR	12.0±0.30	8.0±0.10	1.75±0.10	5.5±0.10	$1.50^{+0.1}_{-0}$	1.55±0.10	4.0±0.10	2.0±0.10	7.10±0.10	7.05±0.10	0.95±0.10	0.20±0.05

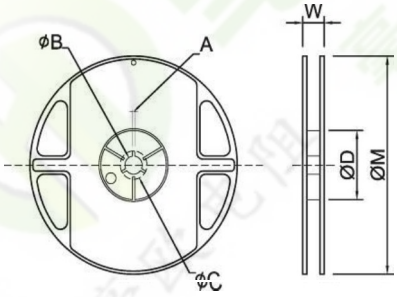
■ Storage Temperature

Storage time at the environment temp: 25±5℃& humidity: 60±20% is valid for one year from the date of delivery

■ Appendix For SMD Chip Resistor

● Packaging Information

■ Reel Dimensions



■ Dimension

Unit: mm

Reel Type / Tape	A	ϕB	ϕC	ϕD	W	ϕM
7” reel for 12 mm embossed	2.5±0.5	13.5±0.5	17.7±0.5	60.0±0.5	16.2±0.5	178±1.0
7” reel for 24 mm embossed	2.0±0.5	13.2±0.5	17.7±0.5	60.0±0.5	24.4±2.0	178±1.0

■ Storage Temperature

Storage time at the environment temp: 25±5℃& humidity: 60±20% is valid for one year from the date of delivery