

HoMAT Series-Metal Alloy Low Resistance Chip Resistor

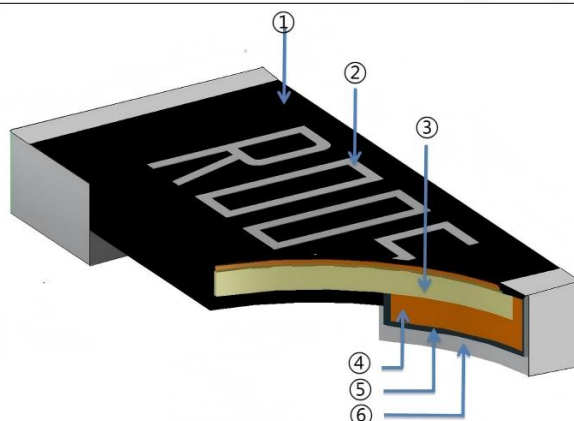
■ Features

- ① Lead free
- ② Excellent long term stability
- ③ Low Resistance / Low TCR
- ④ RoHs compliant and halogen free
- ⑤ High precision current sensing and voltage division

■ Applications

- ① Power supply
- ② Industrial product
- ③ Measuring instrument
- ④ Entertainment product
- ⑤ Battery management system

■ Construction



1	2	3	4	5	6
Over-Coat	Marking	Metal Alloy Plate	Cu Plated	Ni Plated	Sn Plated

Part Numbering

Selection Example: HoMAT2512-2W-5mR-1%

Ho	MAT	2512	2W	5mR	1%
↓	↓	↓	↓	↓	↓
makers	Product Type	Dimensions (LxD)	Power Rating	Resistance	Resistance Tolerance
Ho	MAT	1206	1/2W, 3/4W, 1W, 1.5W	1mR ~ 75mR	0.5% 1% 2% 5%
		2512	1W, 2W, 3W	0.5mR ~ 450mR	
		2725	4W	0.25mR ~ 3mR	
		2728	4W	4mR ~ 450mR	
		4527	2W, 3W, 5W	0.5mR ~ 500mR	



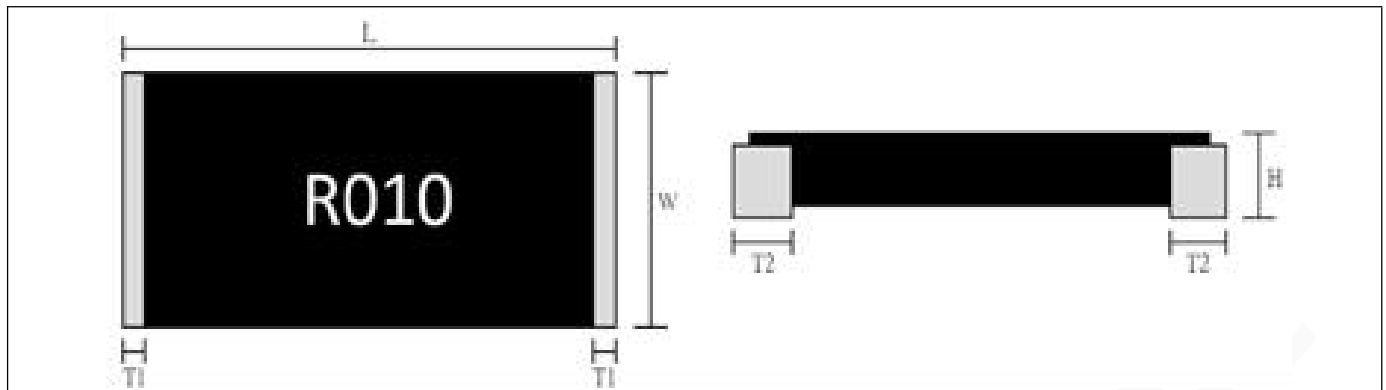
■ Standard Electrical Specifications

TYPE	Rating Power at 70 °C	T.C.R. (ppm/°C)	Max. Rating Current	Max. Overload Current	Resistance Range (mΩ)		Material	Operating Temperature Range (°C)
					0.5%	1%、2%、5%		
1206	0.5W	≤±50	22.36	50.00	5~75	1~75	R001 : MnCuSn R002~R007: MnCu R008~R075: FeCrAl	-55°C~+170°C
	0.75W		27.38	61.23				
	1W		31.62	70.71	5~50	1~50		
	1.5W		38.72	86.60	5~10	1~10		
2512	1W	≤±75	44.72	100.00	---	0.5~0.8	R0005~R0008 : MnCuSn	
	1W	≤±50	31.62	70.71	1~450	1~500	R001~R006 : MnCu R007~R500 : FeCrAl	
	2W	≤±75	63.24	141.42	---	0.5~0.8	R0005~R0008 : MnCuSn	
	2W	≤±50	44.72	100.00	1~450	1~450	R001~R006 : MnCu R007~R450 : FeCrAl	
	3W	≤±75	77.45	173.20	---	0.5~0.8	R0005~R0008 : MnCuSn	
	3W	≤±50	54.77	122.47	1~100	1~100	R001~R006 : MnCu R007~R100 : FeCrAl	
2725	4W	≤±100	141.42	282.84	---	0.2	R0002~R0004 : MnCuSn	
		≤±50	126.49	252.98		0.25~3	R0005~R0025 : MnCu R003 : FeCrAl	
2728	4W	≤±50	31.62	63.24	7~450	4~450	R004~R450 : FeCrAl	
4527	2W	≤±75	63.24	141.42	---	0.5	R0005 : MnCuSn	
	2W	≤±50	44.72	100.00	5~100	1~100	R001~R040 : MnCu R041~R100 : FeCrAl	
	3W	≤±75	77.45	173.20	---	0.5	R0005 : MnCuSn	
	3W	≤±50	54.77	122.47	5~60	1~60	R001~R040 : MnCu R041~R060 : FeCrAl	
	5W	≤±75	100.00	173.20	---	0.5	R0005 : MnCuSn	
	5W	≤±50	70.71	122.47	5~500	1~500	R001~R040 : MnCu R041~R500 : FeCrAl	

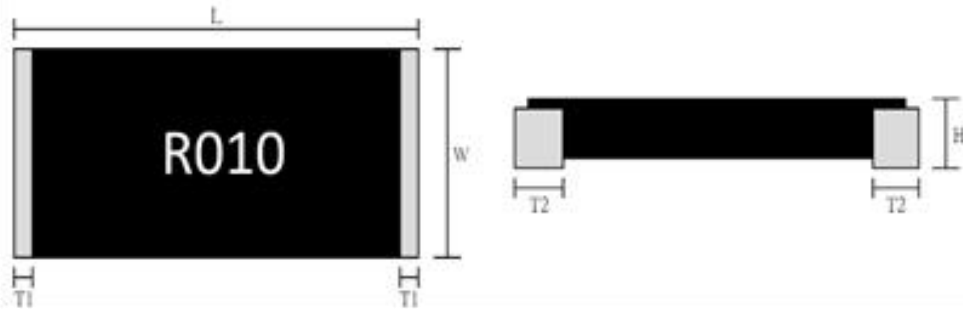
■ Jumper Specifications

Type	Rating Power at 70°C	Max. Rating Current	Resistance (mΩ)	Material	Operating Temperature Range (°C)
1206	1W	70.7A	≤0.2	Jumper : Cu	-55~+170°C
2512	2W	100A			
	3W	122A			

■ Dimensions

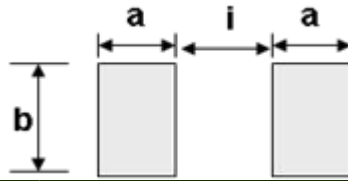


Type	Power Rating	Resistance Range	L	W	H	T1	T2	
1206	0.5W 0.75W	1mΩ	3.200±0.254	1.650±0.254	0.820±0.254	0.508±0.254	0.508±0.254	
		2mΩ			0.700±0.254			
		3mΩ			0.600±0.254			
		4~20mΩ			0.550±0.254			
		21~50mΩ			0.470±0.254			
		51~75mΩ			0.400±0.254			
	1W	1mΩ			0.820±0.254			
		2mΩ			0.700±0.254			
		3mΩ			0.600±0.254			
		4~20mΩ			0.550±0.254			
		21~50mΩ			0.470±0.254			
	1.5W	1mΩ			0.820±0.254			
		2mΩ			0.700±0.254			
		3mΩ			0.600±0.254			
		4~10mΩ			0.550±0.254			
2512	1W	451~500mΩ	6.350±0.254	3.050±0.254	0.350±0.254	0.750±0.254	0.850±0.254	
	1W 2W	0.5mΩ			0.820±0.254	1.980±0.254	2.00±0.254	
		0.6mΩ			0.700±0.254	1.150±0.254	2.100±0.254	
		0.75mΩ					1.980±0.254	
		0.8mΩ					1.860±0.254	
		1mΩ			2.200±0.254			
		1.1mΩ			1.900±0.254			
		1.5mΩ			1.400±0.254			
		2~5mΩ			0.550±0.254	1.050±0.254	1.150±0.254	
		6mΩ					1.100±0.254	
		7~10mΩ						0.750±0.254
		11~75mΩ						
		76~100mΩ						
		101~135mΩ			0.600±0.254			
		136~200mΩ			0.550±0.254			
		201~450mΩ			0.470±0.254	0.850±0.254		
					0.400±0.254			



Type	Power Rating	Resistance Range	L	W	H	T1	T2	
2512	3W	0.50mΩ	6.350±0.254	3.050±0.254	0.820±0.254	1.980±0.254	2.000±0.254	
		0.60mΩ					2.100±0.254	
		0.75mΩ			0.700±0.254	1.150±0.254	1.980±0.254	
		0.8mΩ					1.860±0.254	
		1mΩ			2.200±0.254			
		1.1mΩ			1.900±0.254			
		1.5mΩ			1.400±0.254			
		2~5mΩ			1.150±0.254			
		6mΩ			0.550±0.254	0.75±0.254	1.100±0.254	
		7~10mΩ			0.600±0.254	1.150±0.254		
		11~75mΩ			0.550±0.254	0.75±0.254		
		76~100mΩ						
		2725			4W	0.2mΩ	6.900±0.254	6.350±0.254
0.25mΩ			2.287±0.254					
0.3mΩ	0.950±0.254		1.975±0.254					
0.35mΩ			1.710±0.254					
0.4mΩ			1.440±0.254					
0.5mΩ			2.080±0.254					
0.6mΩ	0.850±0.254		1.780±0.254					
0.8mΩ			1.300±0.254					
1mΩ	0.650±0.254		1.15±0.254	1.800±0.254				
1.5~1.6mΩ				0.550±0.254		1.500±0.254		
2~3mΩ								
2728	4W	4~450mΩ	6.600±0.254	6.700±0.254	0.580±0.254	0.400±0.254	1.050±0.254	
4527	2W	0.5mΩ	11.300±0.500	6.600±0.500	0.770±0.254	0.900±0.254	3.000±0.254	
		1mΩ			0.650±0.254		2.000±0.25	
		1.5~20mΩ			0.550±0.254			
		21~100mΩ			0.770±0.254	0.900±0.254	3.000±0.254	
	3W	0.5mΩ			0.650±0.254		2.000±0.254	
		1mΩ			0.550±0.254		0.650±0.254	3.000±0.254
		1.5~20mΩ			0.800±0.254			2.000±0.254
		21~60mΩ			0.680±0.254			
	5W	0.5mΩ			0.580±0.254	0.650±0.254		
		1mΩ			0.650±0.254		0.508±0.254	
		1.5~20mΩ						
		21~500mΩ						
	1206	1W			< 0.2mΩ	3.200±0.254	1.650±0.254	0.650±0.254
2512	2W / 3W	< 0.2mΩ	6.350±0.254	3.050±0.254	0.650±0.254	1.15±0.254	1.100±0.254	

■ Recommend Land Pattern

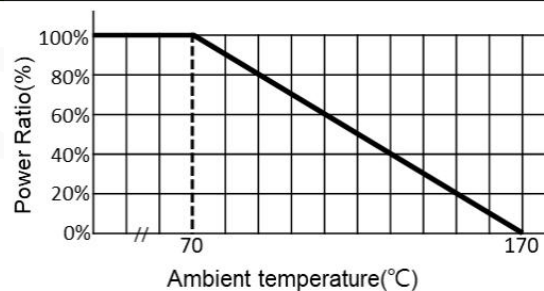


Type	Resistance Range	a	b	i
1206 – 0.5W/0.75W/1W/1.5W	Jumper : ≤0.2mΩ	1.46	2.15	1.68
	1mΩ~75mΩ	1.46	2.15	1.68
2512 -1W, 2W, 3W	Jumper : ≤0.2mΩ	2.30	3.68	3.15
	0.5mΩ~1mΩ	3.24	3.68	1.27
	1.1mΩ/1.5mΩ	3.20	3.68	1.35
	2~5mΩ	2.60	3.68	2.55
	6mΩ~200mΩ	2.30	3.68	3.15
	201mΩ~500mΩ	2.05	3.68	3.65
2725 - 4W	0.2~0.35mΩ	2.90	6.7	1.28
	0.4~0.8mΩ	3.25	6.85	1.70
	1~3mΩ	2.75	6.85	2.70
2728 - 4W	4mΩ~450mΩ	2.05	7.20	3.90
4527 – 2W,3W,5W	0.5mΩ~1.5mΩ	4.50	8.74	4.50
	2.0mΩ~100mΩ	3.50	8.74	6.50
	101mΩ~500mΩ	3.50	8.74	6.50

■ 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, the highest normal rated power is to be used.

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

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

■ 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°C /+150°C , 25°C 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: 1206-0.5W: 5 times of rated power 1206-0.75W: 5 times of rated power 1206-1W: 5 times of rated power 1206-1.5W: 5 times of rated power 2512-1W: 5 times of rated power 2512-2W: 5 times of rated power 2512-3W: 5 times of rated power*(Note)* 2725-4W: 4 times of rated power 2728-4W: 4 times of rated power 4527-2W: 5 times of rated power 4527-3W: 5 times of rated power 4527-5W: 3 times of rated power for 5 seconds.	4527: $\Delta R/R1 \leq \pm 2.0\%$ The others: $\Delta R/R1 \leq \pm 0.5\%$
High Temperature Exposure	JIS-C5201-1 4.25 IEC 60068-2-2	At 170°C for 1000 hours.	4527: $\Delta R/R1 \leq \pm 2.0\%$ The others: $\Delta R/R1 \leq \pm 1.0\%$
Resistance to Soldering Heat	JIS-C-5201-1 4.18 IEC-60115-1 4.18	260±5°C for 10 seconds.	$\Delta R/R1 \leq \pm 0.5\%$
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.	$\Delta R/R1 \leq \pm 0.5\%$
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.	$\Delta R/R1 \leq \pm 0.5\%$
Load Life (Endurance)	JIS-C-5201-1 4.25 IEC-60115-1 4.25.1	70±2°C , RCWV or Max. working voltage whichever is less for 1000 hrs with 1.5 hrs "ON" and 0.5 hr "OFF" .	4527: $\Delta R/R1 \leq \pm 2.0\%$ The others: $\Delta R/R1 \leq \pm 1.0\%$
Solderability	JIS-C-5201-1 4.17 IEC-60115-1 4.17	245±5°C 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	$\Delta R/R1 \leq \pm 0.5\%$ No broken
Moisture Resistance	MIL-STD 202 Method 106	T=24 hours / Cycle ,10Cycles . Steps 7a& 7b not required. Unpowered . (Figure 1)	$\Delta R/R1 \leq \pm 0.5\%$

■ 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.	$\leq 0.2\text{m}\Omega$
Temperature Cycling	JESD22 Method JA-104	1000 Cycles (-55°C to $+155^{\circ}\text{C}$) Measurement at 24 ± 4 hours after test conclusion. 30min maximum dwell time at each temperature extreme.	$\leq 0.2\text{m}\Omega$
High Temperature Exposure	JIS-C5201-1 4.25 IEC 60068-2-2	At 170°C for 1000 hours.	$\leq 0.2\text{m}\Omega$
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.	$\leq 0.2\text{m}\Omega$
Load Life (Endurance)	JIS-C-5201-1 4.25 IEC-60115-1 4.25.1	$70\pm 2^{\circ}\text{C}$, RCWV or Max. working voltage whichever is less for 1000 hrs with 1.5 hrs "ON" and 0.5 hr "OFF" .	$\leq 0.2\text{m}\Omega$
Solderability	JIS-C-5201-1 4.17 IEC-60115-1 4.17	$245\pm 5^{\circ}\text{C}$ for 3 seconds.	$>95\%$ coverage

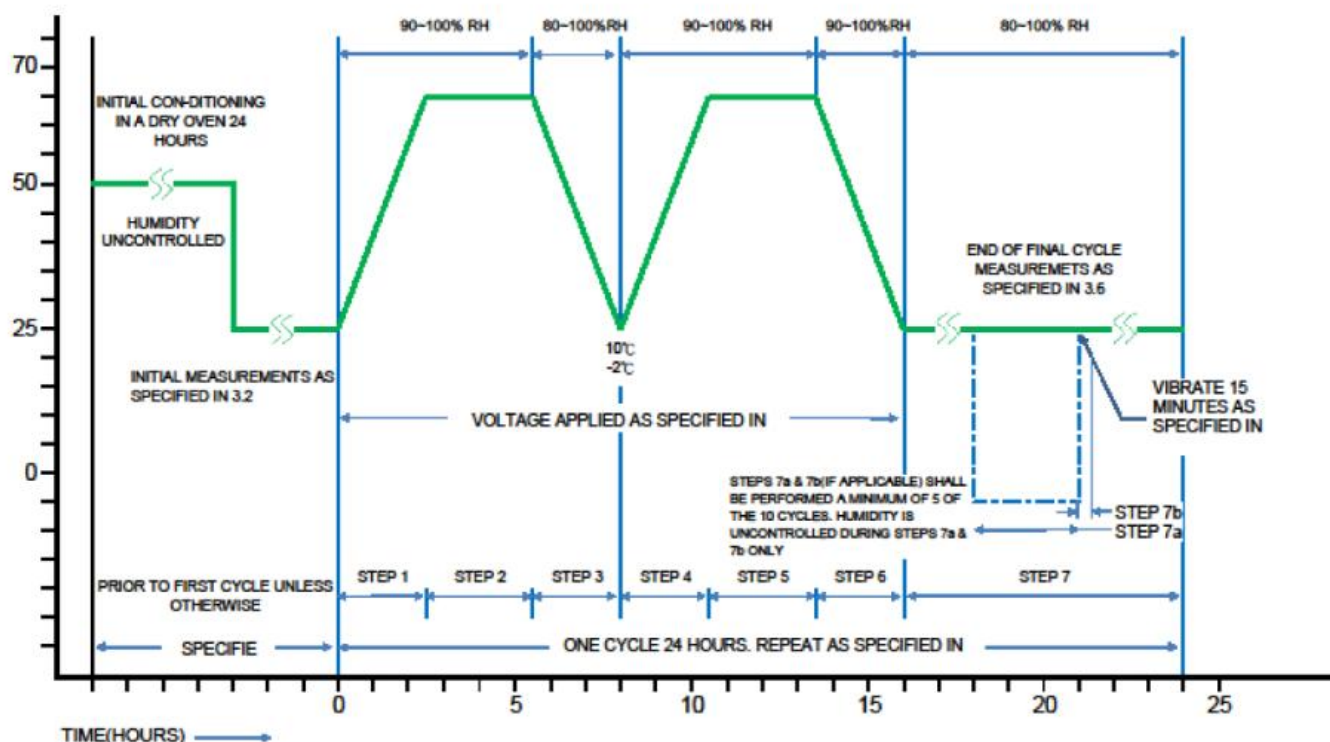
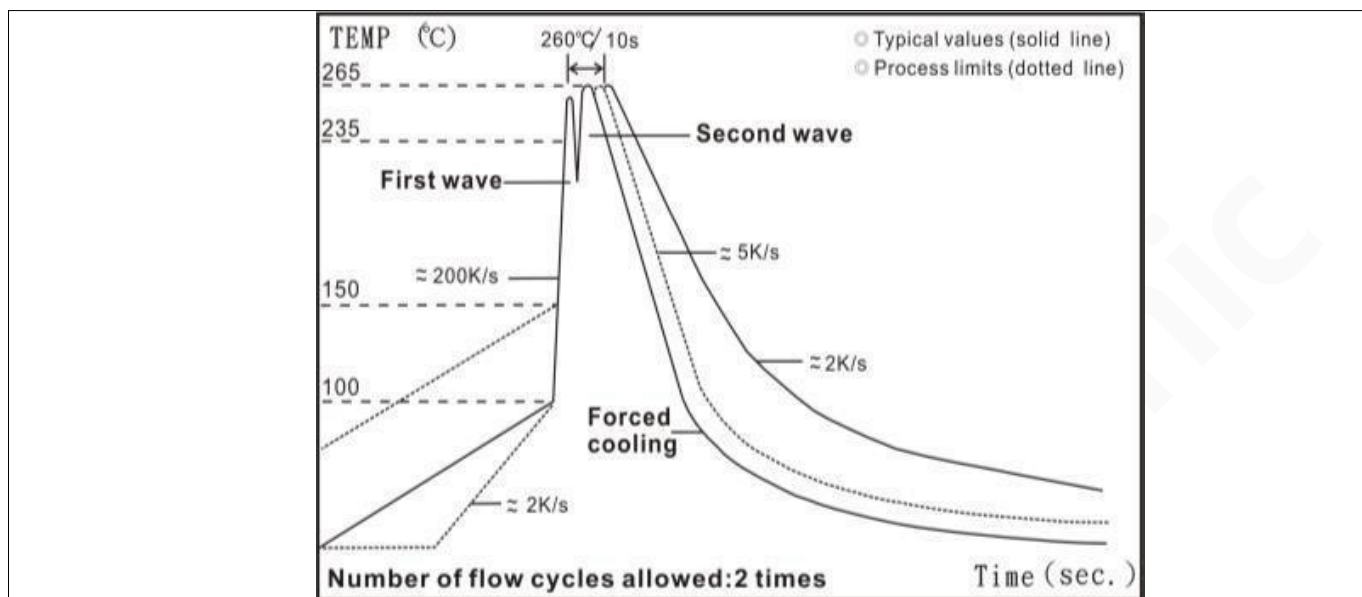


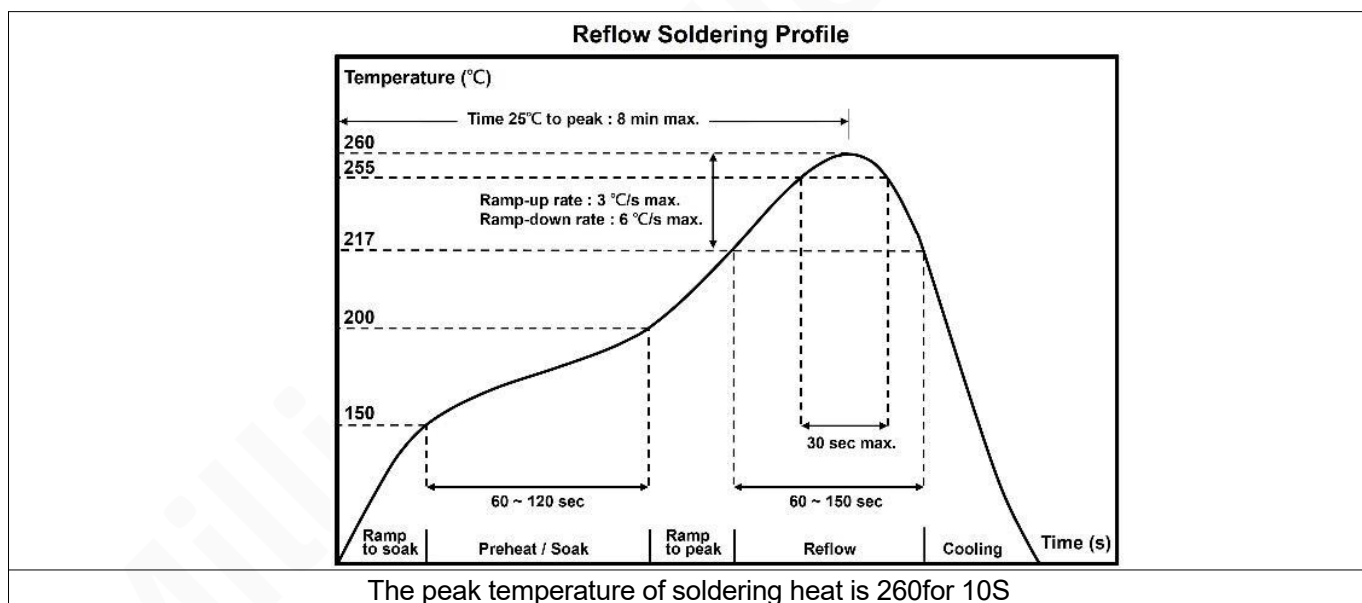
Figure 1

■ Recommended Customer Soldering Parameters

■ Wave solder Temperature condition



■ Packaging



■ Soldering Iron: temperature $350^{\circ}\text{C} \pm 10^{\circ}\text{C}$, dwell time shall be less than 3 sec

■ Recommend reflow methods

IR, vapor phase oven, hot air oven

If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements

■ Plating Thickness

Ni: $\geq 2\mu\text{m}$

Sn(Tin): $\geq 3\mu\text{m}$

■ Storage Temperature

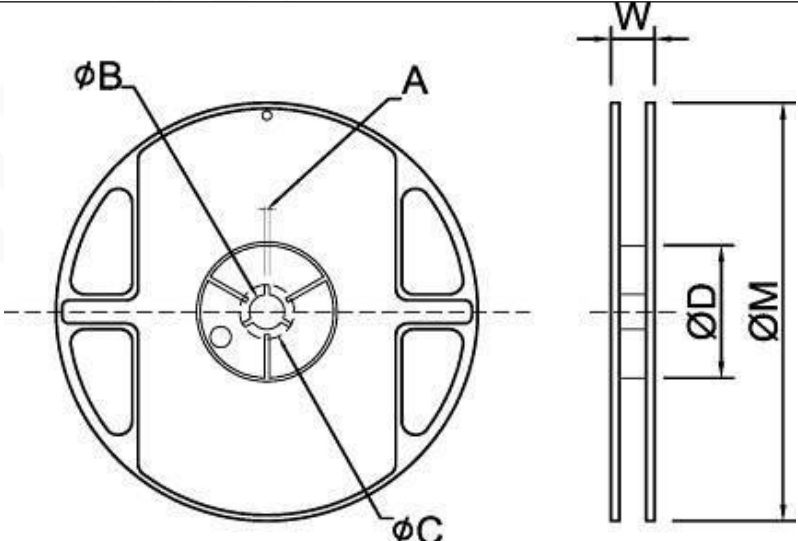
Storage time at the environment temp: $25\pm 5^\circ\text{C}$ & humidity: $60\pm 20\%$ is valid for two years.

■ Packing Quantity

Type	PCS /Reel	Parts Number Explanation
1206	5000	Z: 5000PCS
1206 R001	4000	Z: 4000PCS
2512	4000	Z: 4000PCS
2725(R ≥ 1)	2000	Z: 2000PCS 1: 1000PCS
2725 (0.8 $\geq R \geq 0.2$)	1000	Z: 1000PCS
2728	2000 / 1000	Z: 2000PCS 1: 1000PCS
4527	1000 / 500	Z: 1000PCS 0: 500PCS

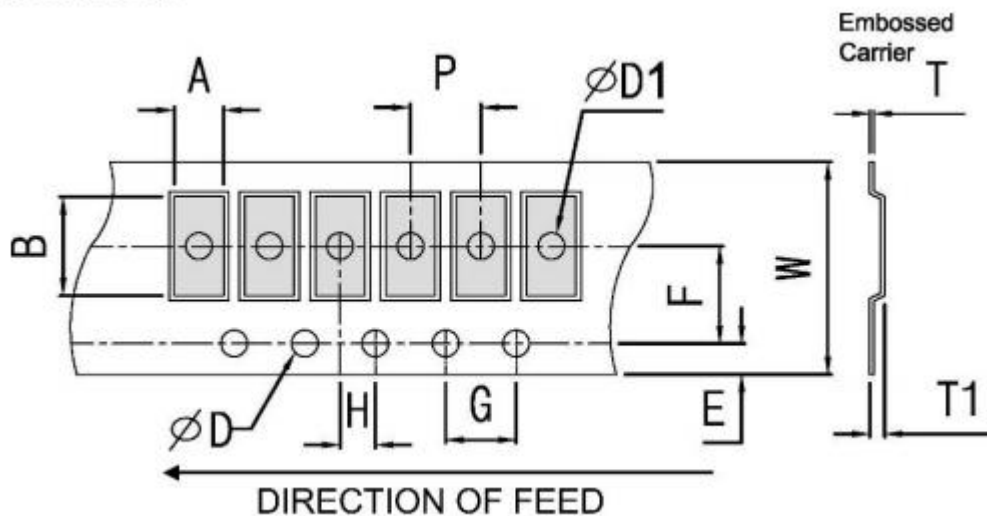
■ Packaging Information

■ Reel Dimensions



Reel Type / Tape	A	ΦB	ΦC	ΦD	W	ΦM
7" reel for 8 mm embossed (for 1206)	2.0 $\pm$ 0.5	13.2 $\pm$ 0.5	17.7 $\pm$ 0.5	60.0 $\pm$ 0.5	12.0 $\pm$ 0.5	178 $\pm$ 1.0
7" reel for 12 mm embossed	2.5 $\pm$ 0.5	13.5 $\pm$ 0.5	17.7 $\pm$ 0.5	60.0 $\pm$ 0.5	16.2 $\pm$ 0.5	178 $\pm$ 1.0
7" reel for 24 mm embossed	2.0 $\pm$ 0.5	13.2 $\pm$ 0.5	17.7 $\pm$ 0.5	60.0 $\pm$ 0.5	24.4 $\pm$ 2.0	178 $\pm$ 1.0

■ Embossed Dimensions



Item	Resistance Range (mΩ)	W ±0.3	P ±0.1	E ±0.1	F ±0.1	ΦD +0.1	ΦD1 ±0.1	G ±0.1	H ±0.1	A ±0.1	B ±0.1	T1 ±0.1	T ±0.05
1206	1mΩ	8	4	1.75	3.5	1.5	1	4	2	2.03	3.55	1.1	0.2
1206	0R/2~75mΩ	8	4	1.75	3.5		1	4	2	2.03	3.55	0.85	0.2
2512	0.5mΩ/1mΩ	12	4	1.75	5.5		1.55	4	2	3.5	6.75	1.1	0.2
2512	0R/0.6~0.8mΩ 1.1~500mΩ	12	4	1.75	5.5		1.55	4	2	3.5	6.75	0.9	0.2
2725	0.2~0.8mΩ	12	8	1.75	5.5		1.55	4	2	6.81	7.16	1.3	0.25
2725	1~3mΩ	12	8	1.75	5.5		1.55	4	2	6.81	7.16	1.05	0.25
2728	4~450mΩ	12	8	1.75	5.5		1.55	4	2	7.1	7.05	0.95	0.2
4527	0.5~500mΩ	24	12	1.75	11.5		1.5	4	2	7.38	12	1.05	0.3

■ Revision of curriculum vitae:

serial number	Contents of the modification	Modification Date	Reason for modification	releases	reviewer	auditor
1	Series Specification Format Updates	2025-11-07	Harmonization of formats	A0 to A1	YongKang Huang	YiWenLeng
2						
3						