1. Scope

1.1 This specification for approve relates to the Metal Strip Chip Resistors manufactured by HEKETAI

1.2 Low Resistance / Low TCR

1.3 Excellent long term stability

1.4 RoHs compliant and halogen free.

1.5 Lead free.

1.6 High precision current sensing and voltage division.

2. Part No. System

Part No. includes 16 codes shown as below:

2.1 1st~7th codes: Part name. E.g.: RMS0805, RMS1206, RMS2512，RMS2825，RMS2528 ，RMS4527

2.2 8th code: Temprature coefficient. E.g.: A=±100PPM /°C S=±75PPM/°C F=±50PPM/°C

2.3 9th~12th codes: Resistance Value.

2.3.1 If value belongs to standard value of ≥5% series, 9th code would be zero,10th~11th codes are significant figures of the resistance and 12th code is the power of ten.

2.3.2 If value belongs to standard value of ≤2% series, 9th~11th codes are significant figures of the resistance, and 12th code is the power of ten.

2.3.3 12th codes listed as following:

$0=10^0$ $1=10^1$ $2=10^2$ $3=10^3$ $4=10^4$ $5=10^5$ $6=10^6$ $J=10^{-1}$ $K=10^{-2}$ $L=10^{-3}$ $M=10^{-4}$ $N=10^{-5}$ $P=10^{-6}$

2.4 13th code: Tolerance. E.g.: D=±0.5% F=±1% G=±2% J=±5% K= ±10%

2.5 14th~15th codes: Power rating.

E.g.: W=Normal Size “1~G” = “1~16”

Wattage	1/32	3/4	1/2	1/3	1/4	1/8	1/10	1/16	1/20	1
Normal Size	WH	07	W2	W3	W4	W8	WA	WG	WM	1W

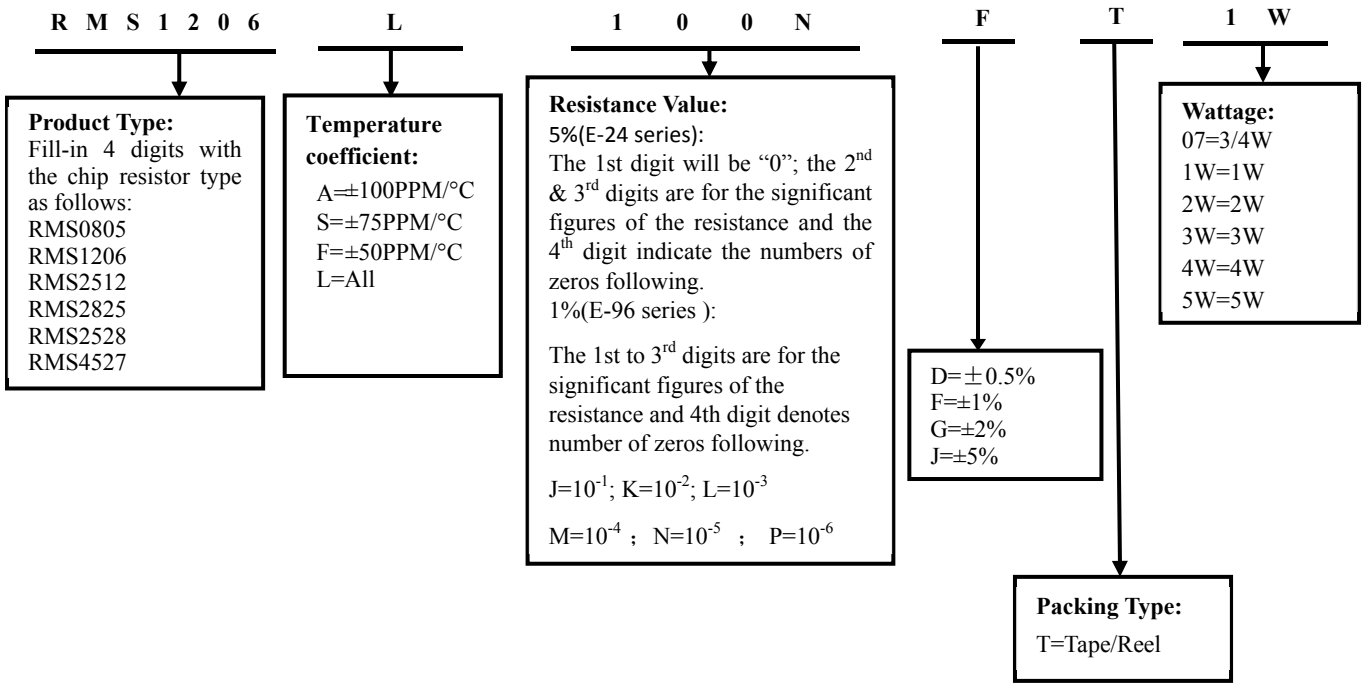
If power rating is lower or equal than 1 watt, 14th code would be “W” and 15th code would be a number or letter.

E.g.: 1W=1W 4W=4W

2.6. 16th code: Packaging Type. E.g.: C=Bulk T=Tape/Reel

3. Ordering Procedure

(Example: RMS1206 1W ±1% 1mΩ T/R-5000)



4. Marking

4.1 RMS0805 products no marking.

4.2 All the other products marking are 4 digits.

(1) "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.

(2) 0Ω product marking is 0R

4.3 The criteria to distinguishing the mark on the surface of products are that characters can be identified.

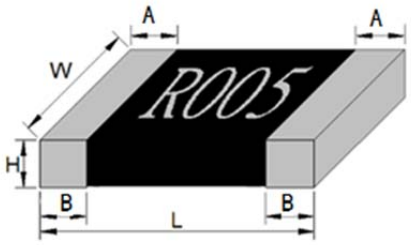
5. Standard Electrical Specifications

Type	Rating Power at 70℃	T.C.R. (ppm/℃)	Max. Rating Current (A)	Max. Overload Current (A)	Resistance Range (mΩ)		Operating Temperature Range (℃)
					0.5% (D)	1.0% (F) 2.0% (G) 5.0% (J)	
RMS0805	1W	≦±100	31.62	63.24	---	1	-55~+170℃
		≦±75	25.81	44.72	---	1.5~2	
		≦±50	15.81	31.62	---	2.5~15	
RMS1206	1W	≦±50	31.62	63.24	7~50	1~50	
	1.5W	≦±50	38.72	77.49	7~10	1~10	
RMS2512	2W	≦±75	63.24	141.42	---	0.5~0.75	
	2W	≦±50	44.72	100.00	16~450	1~450	
	3W	≦±75	77.45	154.91	---	0.5~0.75	
	3W	≦±50	54.77	109.54	7~100	1~100	
RMS2825	4W	≦±75	126.49	252.98	---	0.25~0.3	
		≦±50	89.44	178.88		0.5~3	
RMS2528	4W	≦±50	31.62	63.24	7~450	4~450	
RMS4527	3W	≦±75	77.45	173.20	---	0.5	
	3W	≦±50	54.77	122.47	7~60	1~60	
	5W	≦±75	100.00	173.20	---	0.5	
	5W	≦±50	70.71	122.47	7~500	1~500	

Jumper Specifications

Type	Rating Power at 70℃	Max. Rating Current	Resistance (mΩ)	Operating Temperature Range (℃)
RMS0805	1W	70.7A	≦0.2	-55~+170℃
RMS1206	1W	70.7A		
RMS2512	2W	100A		

6. Dimension



Unit:mm

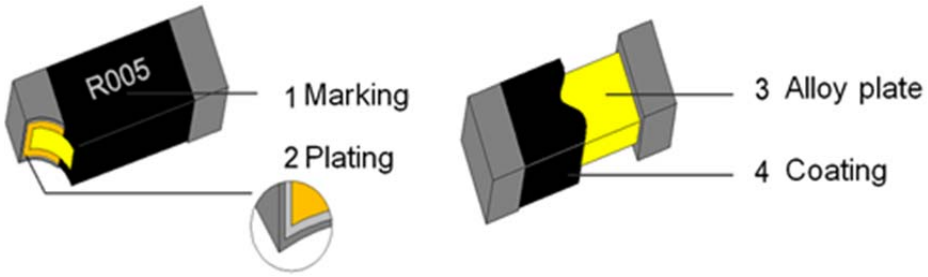
Type	Power Rating	Resistance Range	L	W	H	A	B
RMS0805	1W	1mΩ	2.100±0.200	1.500±0.200	0.500±0.200	/	0.400±0.200
		1.5mΩ			0.350±0.200		
		2mΩ					
		2.5~3mΩ					
		4~8mΩ					
		9~15mΩ					
RMS1206	1W	1mΩ	3.200±0.254	1.650±0.254	0.770±0.254	0.508±0.254	0.508±0.254
		2mΩ			0.650±0.254		
		3~20mΩ			0.550±0.254		
		21~50mΩ			0.470±0.254		
	1.5W	1mΩ			0.770±0.254		
		2mΩ			0.650±0.254		
		3~10mΩ			0.550±0.254		
RMS2512	2W	0.5mΩ	6.35±0.254	3.18±0.254	0.770±0.254	1.150±0.254	2.200±0.254
		1 mΩ			0.700±0.200	1.800±0.200	1.800±0.200
		2~15mΩ				0.900±0.200	0.900±0.200
		16~75mΩ			0.600±0.254	1.05±0.254	1.100±0.254
		76~100mΩ			0.550±0.254	0.75±0.254	
		101~135mΩ			0.470±0.254		
		136~200mΩ			0.400±0.254		
		201~450mΩ					0.850±0.254
	3W	0.5mΩ			0.770±0.254	1.150±0.254	2.200±0.254
		1mΩ			0.670±0.254		
		1.5mΩ					1.400±0.254
		2mΩ					1.150±0.254
		2.5~6mΩ			0.550±0.254	0.75±0.254	1.100±0.254
		7~75mΩ			0.600±0.254		
		76~100mΩ			0.550±0.254		
RMS2825	4W	0.25mΩ	6.800±0.254	6.350±0.254	0.770±0.254	1.15±0.254	2.300±0.254
		0.3mΩ					1.800±0.254
		0.5mΩ			0.650±0.254		2.300±0.254
		1mΩ					1.800±0.254
		1.5mΩ					1.500±0.254
		2~3mΩ			0.550±0.254		
RMS2528	4W	4~450mΩ	6.600±0.254	6.700±0.254	0.580±0.254	0.40±0.254	1.050±0.254
RMS4527	3W	0.5mΩ	11.300±0.500	6.600±0.500	0.770±0.254	0.90±0.254	3.000±0.254
		1mΩ			0.650±0.254		
		1.5~5mΩ					2.000±0.254
		6~60mΩ			0.550±0.254		
	5W	0.5mΩ			0.800±0.254	0.65±0.254	3.000±0.254
		1mΩ			0.680±0.254		
		1.5~5mΩ					2.000±0.254
		6~500mΩ			0.580±0.254		

JumperDimension

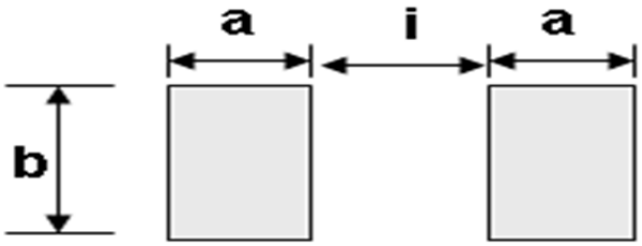
Unit:mm

Type	Power Rating	Resistance Range	L	W	H	A	B
RMS0805	1W	< 0.2mΩ	2.10±0.20	1.500±0.20	0.35±0.20	/	0.40±0.20
RMS1206	1W	< 0.2mΩ	3.200±0.250	1.650±0.250	0.650±0.254	0.508±0.254	0.508±0.254
RMS2512	2W	< 0.2mΩ	6.350±0.250	3.180±0.250	0.650±0.254	1.15±0.254	1.100±0.254

7. Structure



8. Recommend land pattern



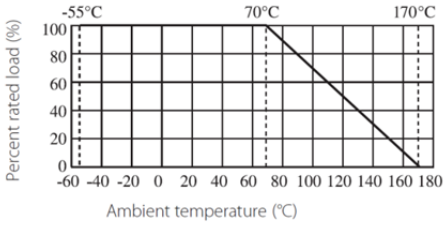
Unit：mm

Type	Resistance Range	a	b	i
RMS0805-1W	1~15mΩ	1.00	1.80	1.00
RMS1206 –1W,1.5W	Jumper：≦0.2mΩ	1.46	2.15	1.68
	1mΩ~100mΩ	1.46	2.15	1.68
RMS2512 -2W	Jumper：≦0.2mΩ	2.30	3.68	3.15
	0.5mΩ	3.40	3.68	0.95
	1mΩ~15mΩ	1.90	3.68	3.50
	16mΩ~200mΩ	2.30	3.68	3.15
	201mΩ~500mΩ	2.05	3.68	3.65
RMS2512 -3W	0.5mΩ~1mΩ	3.40	3.68	0.95
	1.5mΩ	2.35	3.68	1.35
	2mΩ	2.10	3.68	2.55
	2.5mΩ~100mΩ	2.30	3.68	3.15
RMS2825 - 4W	0.25mΩ；0.5mΩ	3.25	6.85	1.70
	0.3mΩ；1mΩ~3mΩ	2.75	6.85	2.70
RMS2528 - 4W	4mΩ~450mΩ	2.05	7.20	3.90
RMS4527-3W,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

9. Derating Curve

Resistors shall have a power rating based on continuous load operation at an ambient temperature of 70 ℃. For temperature in excess of 70 ℃ , The load shall be derate as shown in figure 1.

Figure 1



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

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

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

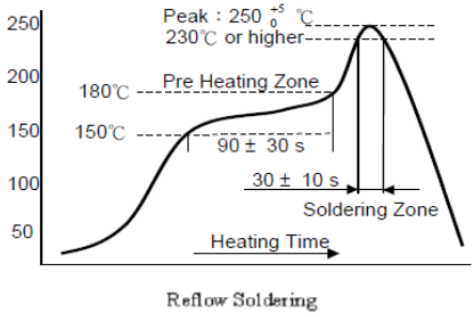
10. Performance Specification

Test Item	Test Method	Procedure	Requirements
Temperature Coefficient	JIS C 5201-1 4.8	Natural resistance changes per temp. Degree centigrade $\frac{R_2-R_1}{R_1(t_2-t_1)} \times 10^6$ (PPM/℃) R1: resistance value at room temp. (t_1) R2: resistance value at room temp. +100℃ (t_2) Test pattern: room temp. (T1), room temp. +100℃(t_2)	List by specification
Short-time overload	JIS-C-5201 .4.13	Permanent resistance change after the application of a potential of 5 times power rate for 5 seconds	ΔR≤±0.5%
Operational Life	JIS-C-5201 4.25.1	Permanent Resistance change after 1000 hours operating at rated working current or Max .Working Current whichever less with duty cycle of 1.5hours "ON"，0.5 hour "OFF" at 70±2°C ambient.	ΔR≤±1.0%
High Temp. Exposure	MIL-STD-202 108A	Exposed to a temperature of 170±2°C for 1000H.	ΔR≤±1.0%
Biased Humidity	MIL-STD-202 Method 103	1000 hours 85°C/85%RH. Note: Specified conditions:10% of operating power. Measurement at 24±4 hours after test conclusion.	ΔR≤±0.5%
Rapid change of temperature	JIS-C-5201 4.19	30 min at -55 °C and 30 min at 170°C; 100 cycles	ΔR≤±0.5%
Terminal bending	JIS-C-5201 4.33	2mm， 60Sec	ΔR≤±0.50%
Resistance to Solder Heat	JIS-C-5201 4.18	Dip the resister into a temperature of 260±5°C and hold it for a 10±1 seconds.	ΔR≤±0.5%
Solderability	JIS-C-5201 4.17	The area covered with a new, smooth, clean, shiny and continuous surface free from concentrated pinholes. Temperature of solder: 245±3°C; Dwell time in solder: 2~3 seconds.	>95% Coverage
Dielectric Withstanding Voltage	JIS-C-5201 4.7	Applied 500 VAC for 1 minute , and Limit surge current 50 mA (max.)	No short or burned on the appearance
Terminal Strength	JIS-C-5201 4.16	5N , 10 seconds	No broken

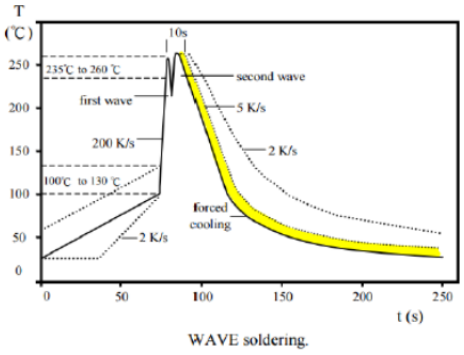
For Jumper

Test Item	Test Method	Procedure	Requirements
Short Time Overload	JIS C 5201-1 4.13	Permanent resistance change after the application of a potential of 4 times power rate for 5 seconds	≦0.2mΩ
Temperature Cycling	JIS-C-5201 4.19	30 min at -55 °C and 30 min at 170°C; 100 cycles	≦0.2mΩ
High Temperature Exposure	MIL-STD-202 108A	Exposed to a temperature of 170±2°C for 1000H.	≦0.2mΩ
Bias Humidity	MIL-STD-202 Method 103	1000 hours 85°C/85%RH. Note: Specified conditions:10% of operating power . Measurement at 24±4 hours after test conclusion.	≦0.2mΩ
Operational Life	JIS C 5201-1 4.25	Permanent Resistance change after 1000 hours operating at rated working current or Max .Working Current whichever less with duty cycle of 1.5hours "ON"，0.5 hour "OFF" at 70±2°C ambient.	≦0.2mΩ
Solderability	JIS-C-5201 4.17	The area covered with a new, smooth, clean, shiny and continuous surface free from concentrated pinholes. Temperature of solder : 245±3°C; Dwell time in solder: 2~3 seconds.	>95% coverage

11. Soldering Profile



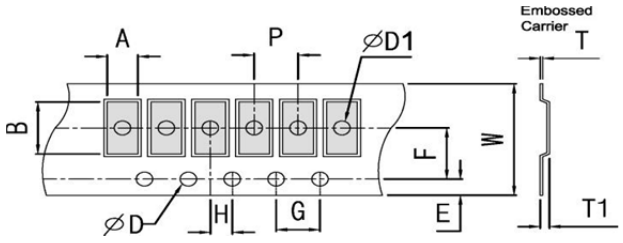
Reflow Soldering



WAVE soldering.

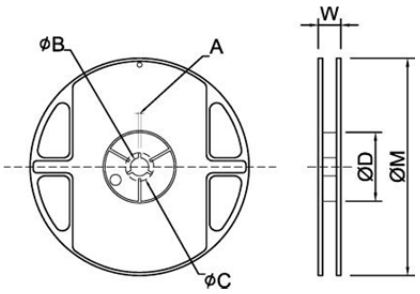
12. Packing of Surface Mount Resistors

12.1 Embossed Dimensions:(Unit: mm)



Type	Resistance Range	W	P	E	F	ϕD	ϕD1	G	H	A	B	T1	T
LR05	1~15mΩ	8.0±0.30	4.0±0.10	1.75±0.10	3.5±0.10	$1.50^{+0.1}_{-0}$	1.0±0.10	4.0±0.10	2.0±0.10	2.03±0.10	3.55±0.10	0.80±0.20	0.20±0.05
LR06	1mΩ	8.0±0.30	4.0±0.10	1.75±0.10	3.5±0.10		1.0±0.10	4.0±0.10	2.0±0.10	2.03±0.10	3.55±0.10	1.10±0.10	0.20±0.05
	2~100mΩ											0.85±0.10	
LR12	0.5mΩ	12.0±0.30	4.0±0.10	1.75±0.10	5.5±0.10		1.55±0.10	4.0±0.10	2.0±0.10	3.50±0.10	6.80±0.10	1.10±0.10	0.20±0.05
	1~500mΩ											0.90±0.10	
LR25	0.25~3mΩ	12.0±0.30	8.0±0.10	1.75±0.10	5.5±0.10		1.55±0.10	4.0±0.10	2.0±0.10	6.81±0.10	7.16±0.10	1.05±0.10	0.25±0.05
LR28	4~450mΩ	12.0±0.30	8.0±0.10	1.75±0.10	5.5±0.10		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
LR27	0.5~500mΩ	24.0±0.30	12.0±0.10	1.75±0.10	11.5±0.10		1.50±0.10	4.0±0.10	2.0±0.10	7.38±0.10	12.0±0.10	1.05±0.10	0.30±0.10

12.2 Dimension of Reel：(Unit: mm)



Type	Taping	Qty/Reel	A	ΦB	ΦC	ΦD	W	ΦM
RMS0805	Embossed	5,000pcs	2.0±0.5	13.0±0.5	21.0±0.5	60.0±1.0	10.0±1.0	178±2.0
RMS1206	Embossed	5,000pcs	2.0±0.5	13.0±0.5	21.0±0.5	60.0±1.0	10.0±1.0	178±2.0
RMS2512	Embossed	4,000pcs	2.0±0.5	13.0±0.5	21.0±0.5	60.0±1.0	13.8±1.0	178±2.0
RMS2825	Embossed	2,000pcs 1,000pcs	2.5±0.5	13.5±0.5	17.7±0.5	60.0±1.0	16.2±1.0	178±2.0
RMS2528	Embossed	2,000pcs 1,000pcs	2.5±0.5	13.5±0.5	17.7±0.5	60.0±1.0	16.2±1.0	178±2.0
RMS4527	Embossed	1,000pcs 500pcs	2.0±0.5	13.2±0.5	17.7±0.5	60.0±1.0	24.4±2.0	178±2.0

13. Note

13.1 HEKETAI recommend the storage condition temperature: 25±5℃, humidity :60±20%.
(Put condition for individual product).
Even under HEKETAI recommended storage condition, solderability of products over 1 year old. (Put condition for each product) may be degraded.

13.2 Store / transport cartons in the correct direction, which is indicated on a carton as a symbol.
Otherwise bent leads may occur due to excessive stress applied when dropping of a carton.

13.3 Product performance and soldered connections may deteriorate if the products are stored in the following places:
a. Storage in high Electrostatic.
b. Storage in direct sunshine、rain and snow or condensation.
c. Where the products are exposed to sea winds or corrosive gases, including Cl_2, H_2S_3 NH_3, SO_2, NO_2.