

FrelTec GmbH

Mathildenstr. 10A
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Germany

Low Ohm - Metal Strip Chip Resistor SMD

SMD

SPECIFICATION

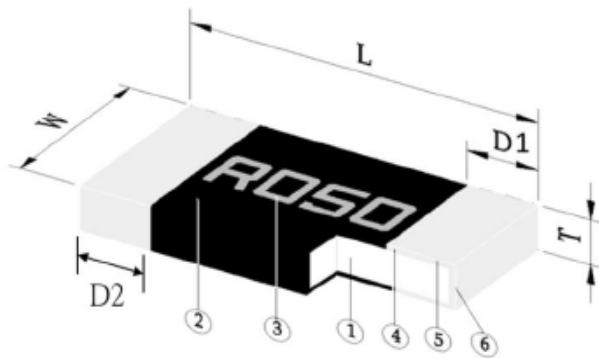
Part
Number

044	06*	R010*	J*	T05*	O	D
Type	Size	Value	Tolerance	Packing	TCR	Power Rating
044 : SMD Low Ohm Metal Strip Chip Resistor	06 : 1206	The last digit is the multiplier	J : $\pm 5\%$	E04: Tape and Reel for 4k pc (7"reel)	D : $\pm 25\text{ppm}/^\circ\text{C}$	J: 1W
	20 : 2010	which denotes the number of zero following	F : $\pm 1\%$	T05: Tape and Reel for 5k pc (7"reel)	E : $\pm 50\text{ppm}/^\circ\text{C}$	L: 2W
	25 : 2512		D : $\pm 0,5\%$		O : $\pm 75\text{ppm}/^\circ\text{C}$	M: 3W
		Example:			F : $\pm 100\text{ppm}/^\circ\text{C}$	
		97R6=				
		R100 = 0,1Ohm				
		R050 = 0,05Ohm				
		R001: 0,001Ohm			* not all combination is possible	

All products according to RoHS (2015/863/EU)

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Construction



① Alloy Plate	④ Internal Electrode
② Overcoat	⑤ Barrier Layer
③ Marking	⑥ Solder Plating

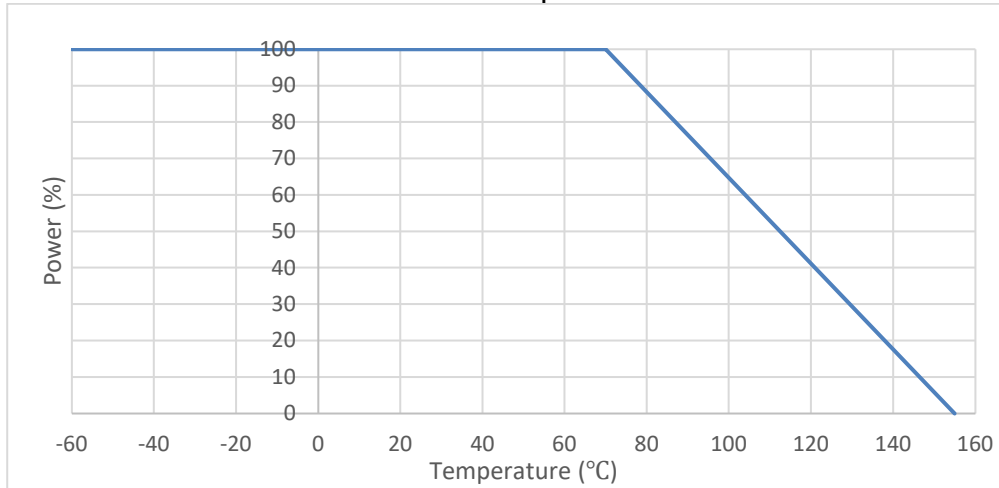
Size	L [mm]	W [mm]	T [mm]	D1 [mm]	D2 [mm]
1206	3,15±0,10	1,45±0,10	0,55±0,10	0,55±0,15	0,55±0,15
2010	5,00±0,15	2,40±0,15	0,55±0,15	0,80±0,20	0,80±0,20
2512 2 to 200mOhm	6,40±0,25	3,20±0,25	0,70±0,20	0,90±0,30	0,90±0,30
2512 1,5mOhm	6,40±0,25	3,20±0,25	0,70±0,20	0,90±0,30	1,45±0,30
2512 1mOhm	6,40±0,25	3,20±0,25	0,70±0,20	0,90±0,30	1,85±0,30

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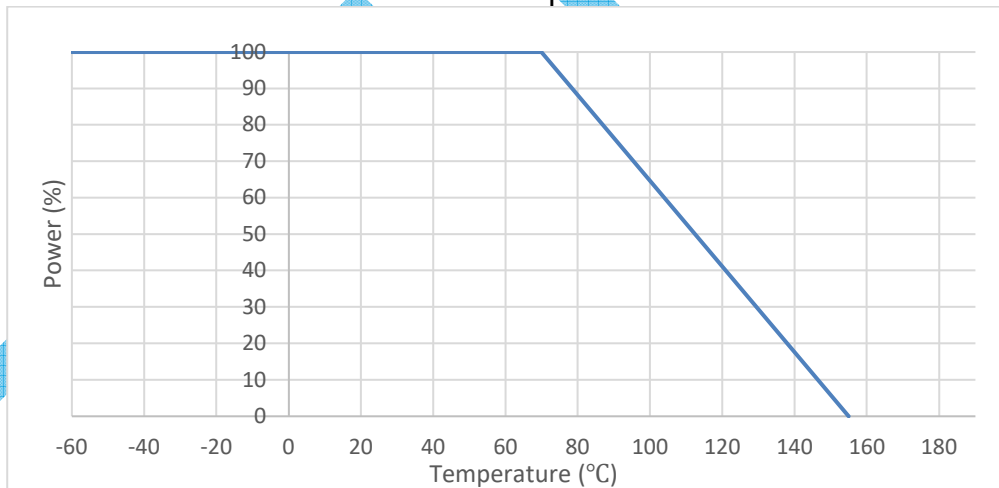
Power Derating Curve

For resistors operated in ambient temperatures above 70 °C , power rating shall be derated in accordance with figure below, Operating Temperature Range : -55°C 170°C

Ambient Temperature:



Terminal Temperature



044 Series

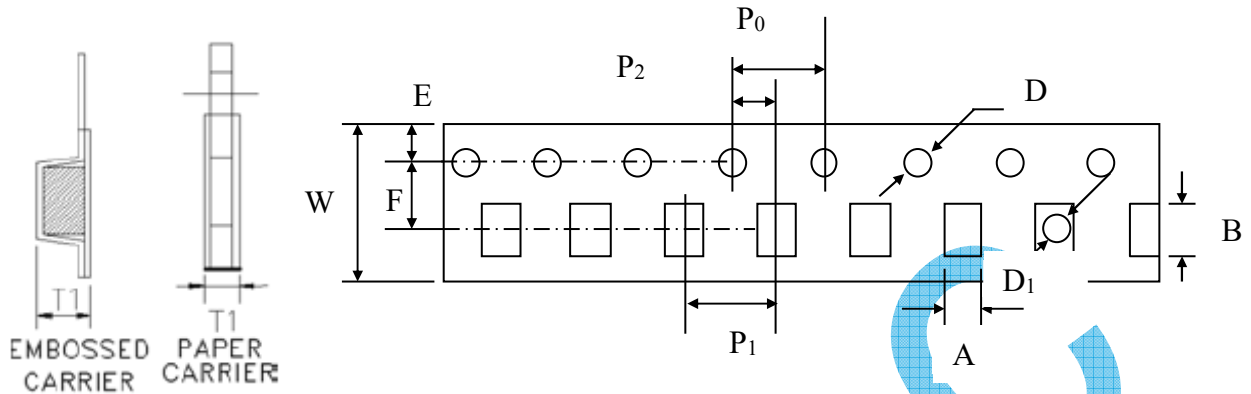
	Power Rating at 70°C	Rated Terminal Temp.	Operating Temp. Range	Resistance Range (mΩ)			TCR (PPM/°C)
				D(±0,5%)	F(±1%)	F(±5%)	
1206	1W	110°C	-55°C ~ +170°C	8, 10, 12, 15, 20, 25, 30, 33, 40			±50
				3, 4, 5, 7, 8, 10, 12, 15, 20, 25, 30, 33, 40			±75
							±100
2010	1W			4, 5, 10, 15, 20, 30, 50, 68, 75, 100			±75
	2W			4, 5, 10, 15, 20, 30, 50, 68, 75			
2512	2W 3W			3, 4, 5, 6, 7, 18, 20, 22, 25, 30, 33, 35, 39, 40, 47, 50, 60, 68, 70, 75, 80, 82, 90, 91, 100, 120, 150, 180, 200			±25
				1, 1.5, 2, 2.5, 3, 4, 5, 6, 7, 8, 8.5, 9, 10, 12, 15, 18, 20, 22, 25, 30, 33, 35, 39, 40, 47, 50, 60, 68, 70, 75, 80, 82, 90, 91, 100, 120, 150, 180, 200			±50
							±75

Operating Current = $\sqrt{P/R}$

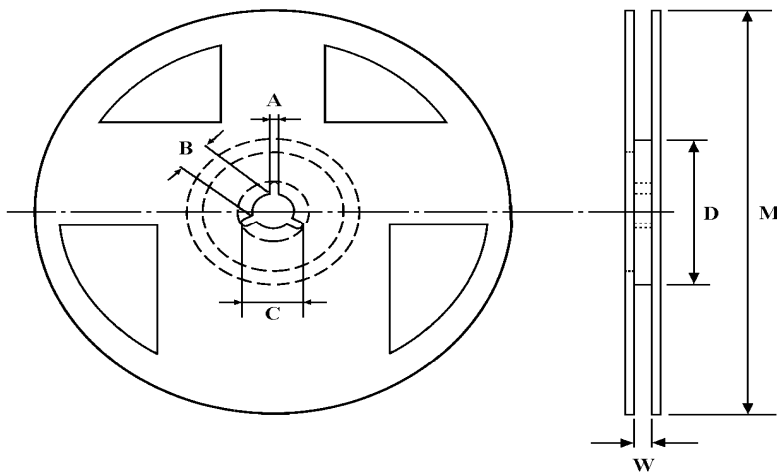
Operating Voltage = $\sqrt{R \cdot P}$

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SPECIFICATION

Tape And Reel Package

Type	A	B	W	E	F	P_0	P_1	P_2	ΦD	ΦD_1	T1
1206	$1,90 \pm 0,10$	$3,50 \pm 0,20$	$8,0 \pm 0,20$	$1,75 \pm 0,10$	$3,5 \pm 0,05$	$4,00 \pm 0,10$	$4,00 \pm 0,05$	$2,0 \pm 0,05$	$1,50^{+0,1}_{-0}$	-	$0,85 \pm 0,10$
2010	$2,80 \pm 0,10$	$5,40 \pm 0,20$	$12,0 \pm 0,30$	$1,75 \pm 0,10$	$5,5 \pm 0,05$	$4,00 \pm 0,10$	$4,00 \pm 0,10$	$2,0 \pm 0,05$	$1,50^{+0,1}_{-0}$	$1,50^{+0,25}_{-0}$	1,20
2512	$3,50 \pm 0,10$	$6,70 \pm 0,10$	$12,0 \pm 0,30$	$1,75 \pm 0,10$	$5,5 \pm 0,05$	$4,00 \pm 0,10$	$4,00 \pm 0,10$	$2,0 \pm 0,05$	$1,50^{+0,1}_{-0}$	$1,50^{+0,25}_{-0}$	1,20

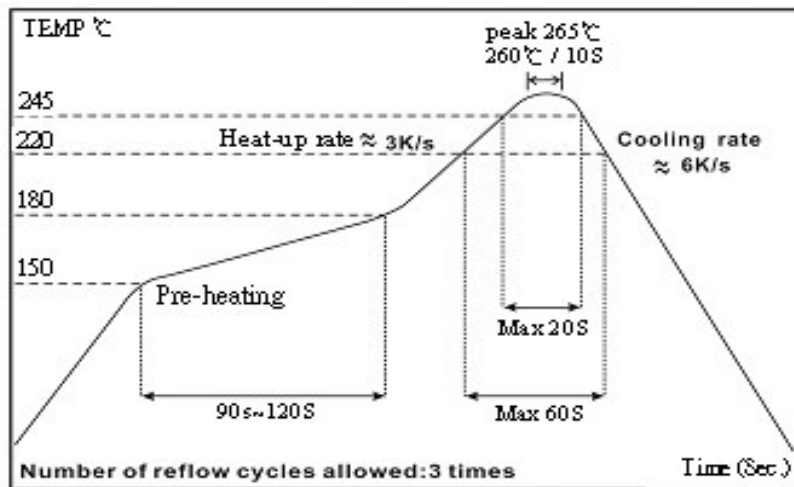


Type	M	B	D	W	T
1206	$178,5 \pm 1,5$	$13,0 \pm 0,2$	60^{+1}_{-0}	$9,0 \pm 0,5$	$12,5 \pm 0,5$
2010				$13,0 \pm 1,0$	$15,5 \pm 0,5$
2512				$13,0 \pm 1,0$	$15,5 \pm 0,5$

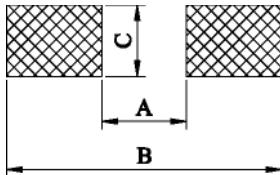
Stock period

The performance of these products, including the solderability, is guaranteed for 24 month, provided that they remain packed as they were when delivered and stored at a temperature of $25^{\circ}\text{C} \pm 3^{\circ}\text{C}$ and a relative humidity less than 80%RH

IR Reflow Soldering Profile



Recommended Land Pattern Design (mm):



Size	A	B	C
1206	1,50	4,30	1,70
1210	3,60	6,40	2,50
2512 2 to 200mOhm	4,00	8,00	3,50
2512 1 and 1,5mOhm	2,30	7,60	3,50

SMD Strip

FrelTec Ultra Low Ohm Metal

Item	Requirement	Test Method
Temperature Coefficient of Resistance (T.C.R.)	As Spec.	IEC60115-1 4.8 JIS-C-5201-1 4.8 +25°C ~125°C, 25°C is the reference temperature
Short Time Overload	±1,0%	IEC60115-1 4.13 JIS-C-5201-1 4.13 5*rated power for 5 seconds
Insulation Resistance	≥10G	IEC60115-1 4.6 JIS-C-5201-1 4.13 100V DC for 1 minute
Endurance	±1,0%	IEC60115-1 4.25 JIS-C-5201-1 4.25.1 70±2°C, rated power for 1000 hrs with 1,5 hrs "ON" and 0.5 hr "OFF"
Biased Humidity	±1,0%	MIL-STD-202 Method 103 1000 hrs 85°C/85%RH 10% of operating power
Dry Heat	±1,0%	IEC60115-1 4.23.2 JIS-C-5201-1 4.23.2 at +170°C for 1000 hrs
Bending Strength	±1,0%	JIS-C-5201-1 4.33 IEC-60115-1 4.33 Bending width 2mm once for 60 seconds
Solderability	95% min. coverage	JIS-C-5201-1 4.17 IEC-60115-1 4.17 245±5°C for 3 seconds
Resistance to Soldering Heat	±0,5%	JIS-C-5201-1 4.18 IEC-60115-1 4.18 260±5°C for 10 seconds
Rapid Change of Temperature	±1,0%	JIS-C-5201-1 4.19 IEC-60115-1 4.19 -55°C to +155°C, 5 cycles
Low Temperature Storage	±1,0%	IEC60115-1 4.23.4 JIS-C-5201-1 4.23.4 at -55°C for 2 hrs

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