



Frontier Electronics Corp.®

SMD CURRENT SENSE METAL STRIP CHIP RESISTORS

M SERIES





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FEATURES & APPLICATIONS

- Low and stable TCR
- High power rating
- Inductance lower than 1.0nH
- High reliability
- Low Profile
- RoHS compliant & Halogen Free
- Battery chargers
- Overcurrent protection circuits
- DC/DC converters
- Power Supplies (Linear and switch-mode)
- Stepper Motor Controller
- Computers

ORDERING INFORMATION

1206	G	J	R005	G	T	C	S
Size	Series	Wattage	Resistance	Tolerance	Packaging	Termination	Code
1206 (3216) 2512 (6432)	M: Metal Strip	F: 1/2 W H: 1 W J: 2 W	R005: 5 mΩ R100: 100 mΩ	F: ±1% J: ±5%	T: Paper Carrier 7" Reel E: Embossed Carrier 7" Reel R: Embossed Carrier 10" Reel	C: Tin (Sn)	S: Standard

VALUES

Size	Power Rating @ 70°C Max. (W)	Tolerance	TCR (ppm/°C)	Resistance (mΩ)
1206	1/2 & 1	F, J	< ±70	3, 4, 5, 6, 7, 8, 9, 10, 15, 18, 20, 25, 30
2512	1	F, J	< ±70	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 15, 20, 25, 30, 33, 35, 40, 50, 70, 75, 80, 100
	2	F, J	< ±70	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 15, 20, 22, 25, 30, 33, 35, 40, 50, 60, 70, 75, 80, 100

- a) Rated Continue Working Voltage (RCWV) = $(P \times R)^{1/2}$, Rated Continue Working Current (I) = $(P/R)^{1/2}$
b) RCWV: Working Voltage(V), I: Current(A), P: Rated Power (W), R: Resistance Value (Ohms)
c) Please keep the surface temperature do not exceed 105°C when operating
d) R-value might be variance depend on soldering conditions. It is strongly suggested to use the recommend solder pad to design your circuits

OPERATION AND STORAGE TEMPERATURE

As a Component

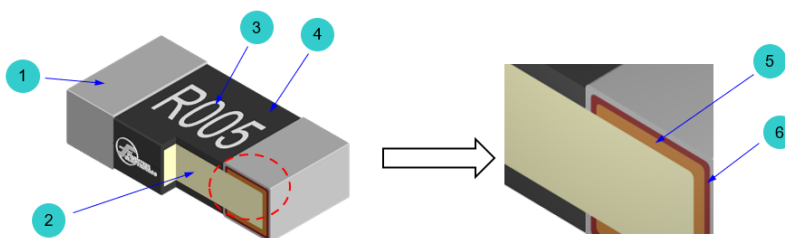
Operation Temperature Range: -55 to +155 °C
Storage Temperature Range: -55 to +155 °C

Original Packaging

Storage Temperature Range: +5 ~ +40 °C, Humidity: 30 to 70% relative humidity

CONSTRUCTION

1	2	3	4	5	6
External Layer (Sn)	Metal Alloy	Marking	Coating	Middle layer (Ni)	First layer (Ni-Cr)



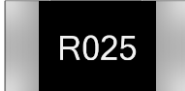
DIMENSIONS

TYPE	M1	M2	M3	M4	M5	M6	M7
1206	3.10	1.65	0.60	0.60	1.30	2.10	1.80
from 3mΩ to 30mΩ	(0.122)	(0.065)	(0.024)	(0.024)	0.05	0.08	0.07
Tol.	±0.2 (±0.008)	±0.2 (±0.008)	±0.2 (±0.008)	±0. (±0)	Typ.	Typ.	Typ.
2512	6.40	3.25	0.75	2.00	3.00	1.30	4.00
from 1mΩ to 30mΩ	(0.252)	(0.128)	(0.03)	(0.079)	0.12	0.05	0.16
Tol.	±0.2 (±0.008)	±0.2 (±0.008)	±0.2 (±0.008)	±0.2 (±0.008)	Typ.	Typ.	Typ.
2512	6.20	3.25	0.60	0.80	1.60	4.40	3.70
from 4mΩ to 100 Ω	(0.244)	(0.128)	(0.024)	(0.031)	0.06	0.17	0.15
Tol.	±0.2 (±0.008)	±0.2 (±0.008)	±0.2 (±0.008)	±0.2 (±0.008)	Typ.	Typ.	Typ.

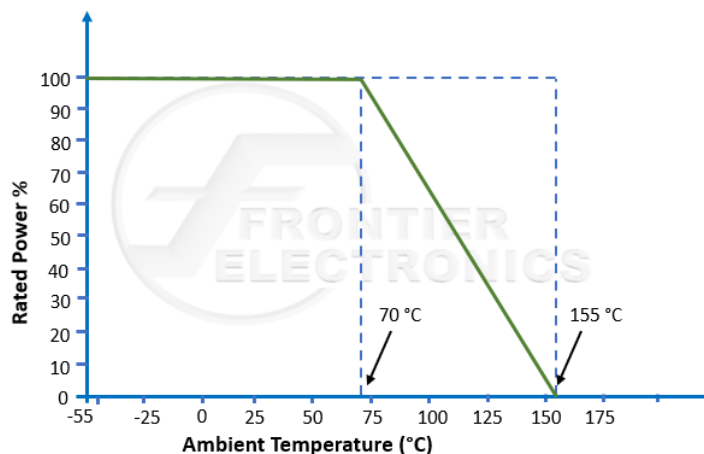
mm (In)



MARKING

SIZE	RESISTANCE CODE	MARKING
1206 and 2512	R is first digit followed by 3 significant digits 0.025Ω = R025 0.005Ω = R005	 

DERATING CURVE



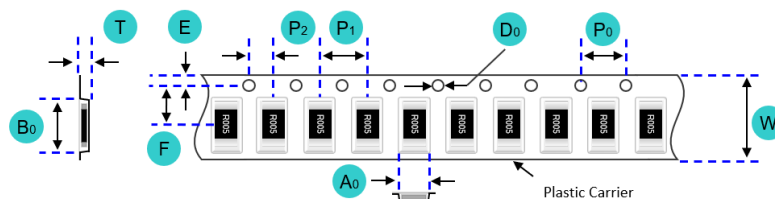
The maximum amount of power that the resistor can dissipate without failing or degrading. This rating is based on the ambient temperature. Other factors affecting its performance are: Size, construction and Material

PACKAGING

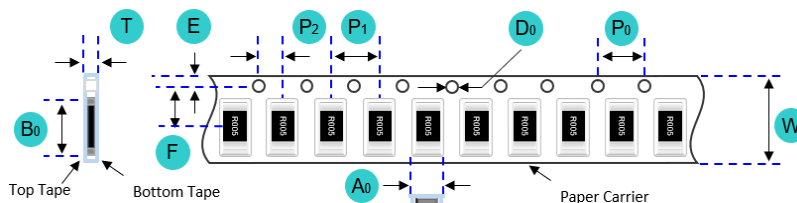
Size	Ao	Bo	W	F	E	P1	P2	P0	D	T
1206	2.0 (0.079)	3.6 (0.142)	8.0 (0.315)	3.5 (0.138)	1.75 (0.069)	4.0 (0.157)	2.0 (0.079)	4.0 (0.157)	1.5 (0.059)	1.2 (0.047)
Tol.	±0.20 (±0.008)	±0.20 (±0.008)	±0.30 (±0.012)	±0.05 (±0.002)	±0.10 (±0.004)	±0.10 (±0.004)	±0.05 (±0.002)	±0.10 (±0.004)	±0.05 (±0.002)	max (max)
2512 1W	3.5 (0.138)	6.75 (0.266)	12 (0.472)	5.5 (0.217)	1.75 (0.069)	4.0 (0.157)	2.0 (0.079)	4.0 (0.157)	1.5 (0.059)	1.2 (0.047)
Tol.	±0.20 (±0.008)	±0.20 (±0.008)	±0.30 (±0.012)	±0.1 (±0.004)	±0.10 (±0.004)	±0.10 (±0.004)	±0.05 (±0.002)	±0.10 (±0.004)	±0.05 (±0.002)	max (max)
2512 2W	3.6 (0.142)	6.9 (0.272)	12 (0.472)	5.5 (0.217)	1.75 (0.069)	4.0 (0.157)	2.0 (0.079)	4.0 (0.157)	1.5 (0.059)	1.2 (0.047)
Tol.	±0.20 (±0.008)	±0.20 (±0.008)	±0.30 (±0.012)	±0.1 (±0.004)	±0.10 (±0.004)	±0.10 (±0.004)	±0.05 (±0.002)	±0.10 (±0.004)	±0.05 (±0.002)	max (max)

mm (In)

Plastic carrier

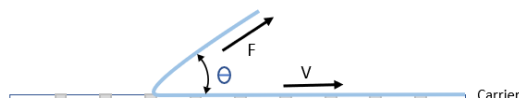


Paper Carrier



Top Cover Tape Removing Force

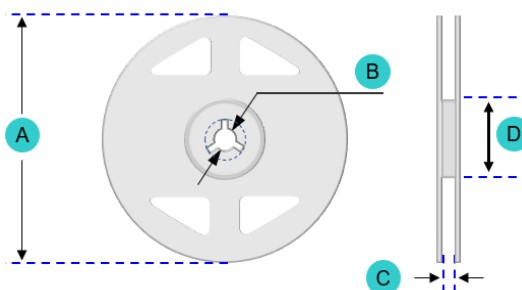
- Speed: around 300 mm/min
- Force: 0.1N Min. and 0.7N Max.
- Angle: 15° Max.



Reel Dimensions

Size	Reel Qty	A	B	C	D
1206	7" Reel 4Kpcs Paper Carrier	178 (7.008)	13 (0.512)	9 (0.354)	60 (2.362)
	Tol.	±2.0 (±0.079)	±0.2 (±0.008)	±0.5 (±0.02)	±1.0 (±0.039)
	7" Reel 4Kpcs Plastic Carrier	178 (7.008)	13 (0.512)	14 (0.551)	60 (2.362)
	Tol.	±2.0 (±0.079)	±0.2 (±0.008)	±0.2 (±0.008)	±1.0 (±0.039)
2512	10" Reel 8Kpcs Plastic Carrier	254 (10)	13 (0.512)	14 (0.551)	100 (3.937)
	Tol.	±2.0 (±0.079)	±0.2 (±0.008)	±0.2 (±0.008)	±1.0 (±0.039)

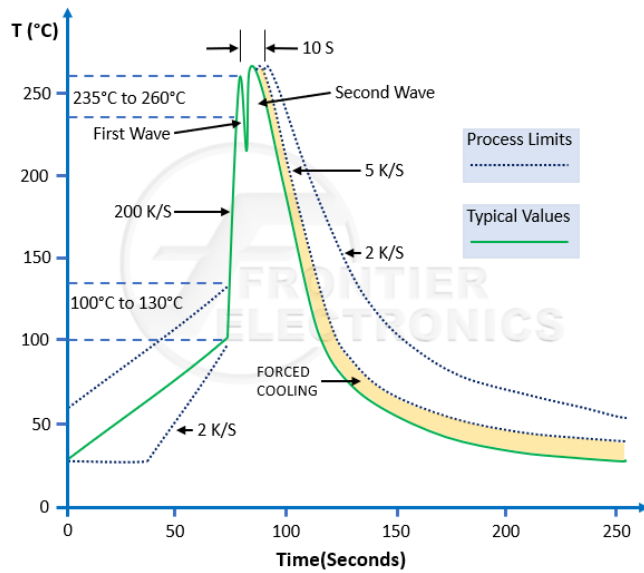
mm (In)





SOLDER PROFILES

SOLDER WAVE



REFLOW

