

Part Numbering System:

DRD	06	F	B	R002
<u>Series Name</u> Chip Resistor: DRD: Metal Foil Low Ohm Power Chip Resistor	<u>Type</u> Inch (mm) 02-0402(1005) 03-0603(1608) 05-0805(2012) 06-1206(3216) 12-2512(6432)	<u>Tolerance</u> B= ± 0.1% D= ± 0.5% F= ± 1% J= ± 5 % P : Jumper	<u>Package</u> A=4Kpcs/7"Reel B=5Kpcs/7"Reel C=10Kpcs/7"Reel M=15Kpcs/7"Reel D=10Kpcs/10"Reel E=20Kpcs/10"Reel	<u>Resistance</u> R002=0.002 Ω R10=0.10 Ω

FEATURE

1. Ultra low and stable TCR performance
2. High power rating and compact size
3. High reliability and stability
4. Reduced size of final equipment
5. RoHS exemption free & Lead free
6. ASTM B-809 105C 1000hrs compliant

APPLICATION

- Power supply
- PDA
- Digital meter
- Computer
- Automotives
- Battery charger
- DC-DC power converter

DESCRIPTION

The resistors are constructed in a high grade low resistive metal foil which adhere on top of ceramic substrate body. The resistive layer is covered with a protective coat and printed a resistance marking code over it. Finally, the two external end terminations are added. For ease of soldering the outer layer of these end terminations is a Lead free terminations.

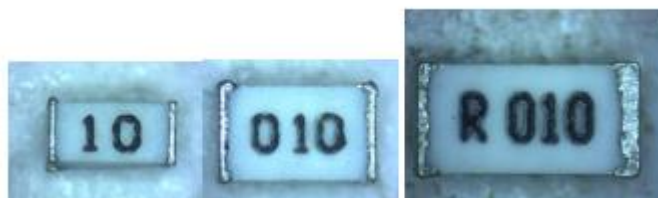


Fig 1. Construction of 0603/0805/1206

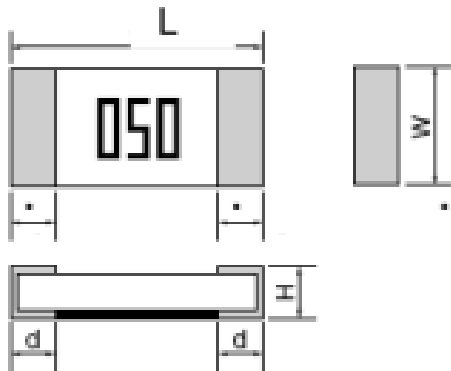
QUICK REFERENCE DATA

Item	General Specification				
Series No.	DRD12	DRD06	DRD05	DRD03	DRD02
Size code	2512 (6432)	1206 (3216)	0805 (2012)	0603 (1608)	0402 (1005)
Resistance Tolerance	±5% , ±1%, ±0.5% (only for TC50)				
Resistance Range	2-450mΩ, 700 mΩ	3-700mΩ	3-500mΩ	5-75mΩ	5 - 25 mΩ
TCR (ppm/°C) +25 ~ +125°C	2~9mΩ: ±100 10~700mΩ: ±50	3~9mΩ: ±100 10~700mΩ: ±50	3~9mΩ: ±100 10~500mΩ: ±50	5~9mΩ: ±100 10~75mΩ: ±50	5~25mΩ: ±100
Max. power at T _{amb} =70°C	2W	1W	3/4W	1/2W	1/3W
Operation Temperature	-55 ~ +155°C				

Note : Max. Operation Current : So called RCWC (Rated Continuous Working Current) is determined by

$$RCWC = \sqrt{\text{Rated Power} / \text{Resistance Value}} \text{ listed above.}$$

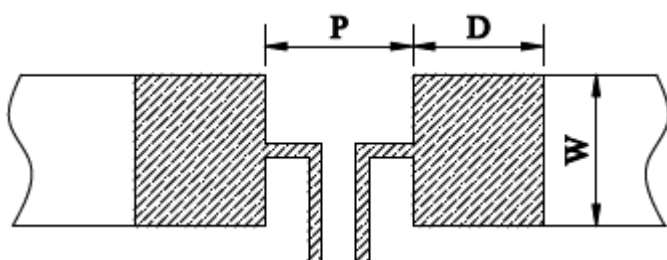
MECHANICAL DATA



Type	Size (inch)	R-value	L (mm)	W (mm)	H (mm)	d (mm)
DRD12	2512	R002	6.4±0.30	3.2±0.30	0.65±0.20	2.8±0.30
		R003	6.4±0.30	3.2±0.30	0.65±0.20	2.6±0.30
		R004-R009	6.4±0.30	3.2±0.30	0.65±0.20	1.05±0.30
		R010-R049	6.4±0.30	3.2±0.30	0.65±0.20	1.05±0.30
		R050-R700	6.4±0.30	3.2±0.30	0.65±0.20	1.05±0.30
DRD06	1206	R003	3.3±0.20	1.7±0.20	0.65±0.20	1.20±0.30
		R004-R008	3.3±0.20	1.7±0.20	0.65±0.20	0.68±0.30
		R009-R049	3.3±0.20	1.7±0.20	0.65±0.20	0.68±0.30
		R050-R700	3.3±0.20	1.7±0.20	0.65±0.20	0.68±0.30
DRD05	0805	R003	2.10±0.20	1.35±0.20	0.65±0.20	0.65±0.20
		R004	2.10±0.20	1.35±0.20	0.65±0.20	0.50±0.20

DRD05	0805	R005-R007	2.10±0.20	1.35±0.20	0.65±0.20	0.50±0.20
		R008-R049	2.10±0.20	1.35±0.20	0.65±0.20	0.50±0.20
		R050-R500	2.10±0.20	1.35±0.20	0.65±0.20	0.5±0.20
DRD03	0603	R005	1.7±0.20	0.9±0.20	0.65±0.20	0.50±0.20
		R006-R009	1.7±0.20	0.9±0.20	0.65±0.20	0.40±0.20
		R010-R049	1.7±0.20	0.9±0.20	0.65±0.20	0.40±0.20
		R050-R100	1.7±0.20	0.9±0.20	0.65±0.20	0.40±0.20
DRD02	0402	R005-R025	1.0±0.10	0.55±0.10	0.30±0.05	0.23±0.10

RECOMMENDED SOLDER LAND PATTERN



Type	R-value	P (mm)	W (mm)	D (mm)
DRD12	R002	0.60	3.57	4.35
	R003	0.90	3.57	4.20
	R004-R009	3.10	3.57	3.10
	R010-R700	3.10	3.57	3.10
DRD06	R003	0.60	1.84	2.10
	R004-R008	1.20	1.84	1.80
	R009-R700	1.20	1.84	1.80
DRD05	R003	0.50	1.44	1.55
	R004-R007	0.80	1.44	1.40
	R008-R500	0.80	1.44	1.40
DRD03	R005	0.50	0.92	1.35
	R006-R009	0.60	0.92	1.30
	R010-R075	0.60	0.92	1.30
DRD02	R005-R025	0.40	0.60	0.60

MARKING

Each resistor is marked with a four-digit code on 2512/1206 & three-digit code on 0805 & two-digit on 0603 protective coating to designate the nominal resistance value.0402 has n marking.

Example:

$$\begin{aligned} R020 &= 0.02\Omega \text{ (DR12D/ DRD06)} \\ 020 &= 0.02\Omega \text{ (DRD05)} \\ 20 &= 0.02 \Omega \text{ (DRD03)} \end{aligned}$$

FUNCTIONAL DESCRIPTION

Derating curve

The power that the resistor can dissipate depends on the operating temperature; see Fig.2

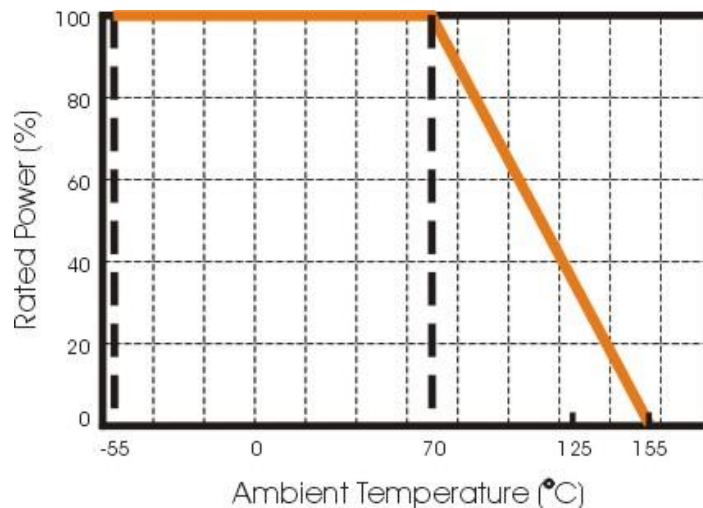


Fig.2 Maximum dissipation in percentage of rated power
As a function of the ambient temperature

STORAGE CONDITIONS

Under airtight in temperature $+10^{\circ}\text{C} \sim 40^{\circ}\text{C}$ 、 relative humidity $\leq 75\%$ can store 2 years.

Without dew in temperature $+10^{\circ}\text{C} \sim 60^{\circ}\text{C}$ 、 relative humidity be 95% maximum value for 30days.

SOLDERING CONDITIONS

The robust construction of chip resistors allows them to be completely immersed in a solder bath of 260°C for max.10 seconds. Therefore, it is possible to mount Surface Mount Resistors on one side of a PCB and other discrete components on the reverse (mixed PCBs).

Typical examples of soldering processes that provide reliable joints without any damage are given in Fig3 as below.

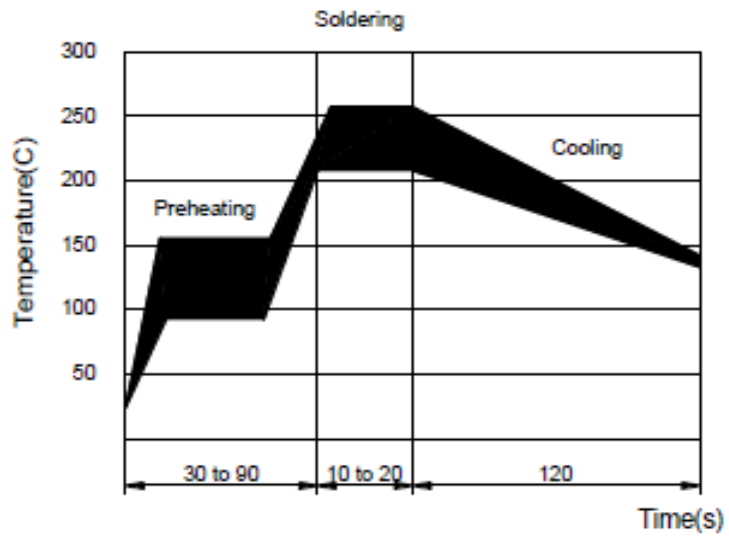
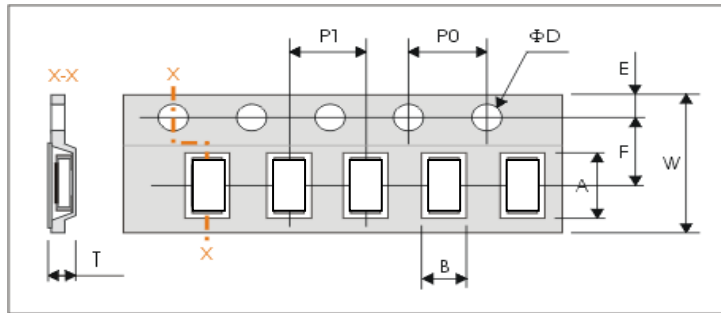


Fig 3. Infrared soldering profile for Chip Resistors

TEST & REQUIREMENTS

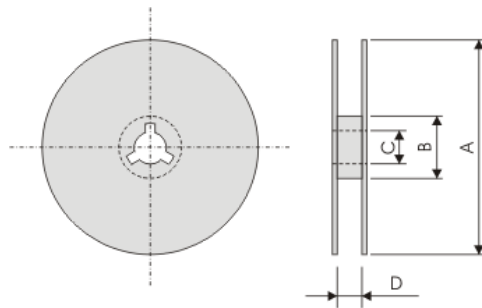
PACKAGING

Tape Specifications (unit :mm)



Symbol	A	B	W	F	E
DRD12	6.75±0.20	3.40±0.20	8.00±0.20	3.50±0.05	1.75±0.10
DRD06	3.65±0.20	2.05±0.20	8.00±0.20	3.50±0.05	1.75±0.10
DRD05	2.38±0.20	1.68±0.20	8.00±0.20	3.50±0.05	1.75±0.10
DRD03	1.98±0.20	1.18±0.20	8.00±0.20	3.50±0.05	1.75±0.10
DRD02	1.25±0.20	0.75±0.20	8.00±0.20	3.50±0.05	1.75±0.10
Symbol	P1	P0	ΦD	T	
DRD12	4.00±0.10	4.00±0.10	Φ1.50 ^{+0.1} _{-0.0}	1.3 max.	
DRD06	4.00±0.10	4.00±0.10	Φ1.50 ^{+0.1} _{-0.0}	1.0 max.	
DRD05	4.00±0.10	4.00±0.10	Φ1.50 ^{+0.1} _{-0.0}	1.0 max.	
DRD03	4.00±0.10	4.00±0.10	Φ1.50 ^{+0.1} _{-0.0}	1.0 max.	
DRD02	4.00±0.10	4.00±0.10	Φ1.50 ^{+0.1} _{-0.0}	0.50±0.05	

Reel Dimensions



Symbol	A	B	C	D
(unit : mm)	Φ180.0 -1.5	Φ60.0±1.0	13.0±0.2	9.0 +1.0

Taping Quantity

- 1206/0805/0603 chip resistors 5,000 pcs per reel.
- 2512 chip resistors 4,000 pcs per reel.
- 0402 chip resistors 10,000 pcs per reel.