High Resistance Resistors (HMCR Series)

Features:

- RoHS Compliant (5/6) and Halogen Free
- RuO_2 resistive material for reliable performance
- Resistance up to 100GΩ
- Tolerance as low as 1%

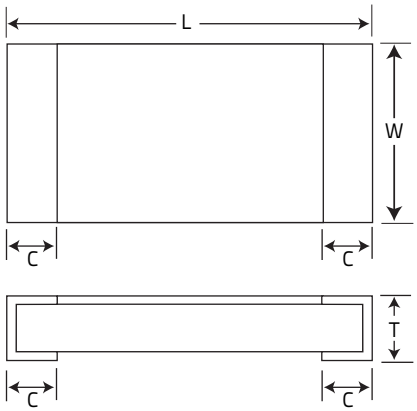
Part Number Structure

HMCR	1206	-	8W	-	107	J	T
Series	**Size**		**Power Rating**		**Resistance Code**	**Tolerance**	**Packaging**
	0402		16W = 0.06W		107 = 100MΩ	F = ±1% (≤100MΩ)	T = Tape & Reel
	0603		10W = 0.10W		108 = 1GΩ	J = ±5%	
	0805		8W = 0.125W		1006 = 100MΩ	K = ±10%	
	1206		1W = 1W			M = ±20%	
	2512					N = ±30%	

Example P/N: HMCR1206-8W-107JT

Standard temination finish is 100% matte Tin (Sn) over Nickel.

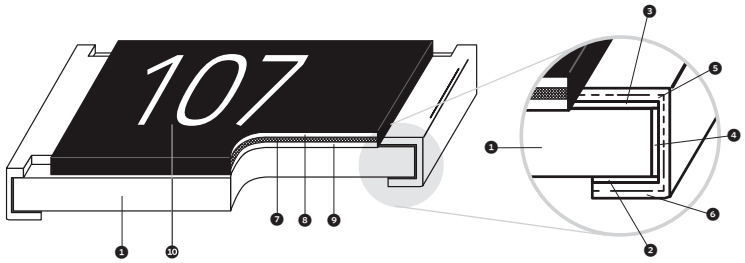
Dimensions



Unit: inches (mm)

Size (inches)	L	W	T	C
0402	0.040 ± 0.002 (1.0 ± 0.05)	0.020 ± 0.001 (0.5 ± 0.02)	0.014 ± 0.002 (0.35 ± 0.05)	0.008 ± 0.004 (0.2 ± 0.01)
0603	0.063 ± 0.004 (1.6 ± 0.1)	0.031 ± 0.004 (0.8 ± 0.1)	0.018 ± 0.004 (0.45 ± 0.1)	0.012 ± 0.006 (0.30 ± 0.15)
0805	0.079 ± 0.006 (2.0 ± 0.15)	0.050 ± 0.006 (1.25 ± 0.15)	0.018 ±0.006 (0.45 ± 0.15)	0.014 ± 0.006 (0.35 ± 0.15)
1206	0.126 ± 0.006 (3.2 ± 0.15)	0.063 ± 0.006 (1.6 ± 0.15)	0.022 ± 0.006 (0.56 ± 0.15)	0.020 ± 0.008 (0.50 ± 0.20)
2512	0.248 ± 0.006 (6.3 ± 0.15)	0.248 ± 0.006 (6.3 ± 0.15)	0.022 ± 0.006 (0.56 ± 0.15)	0.024 ± 0.008 (0.60 ± 0.20)

Structure



1	Alumina Substrate	6	Tin Plating
2	Backside Electrode	7	Primary Coating
3	Topside Electrode	8	Secondary Layer
4	Edge Electrode	9	Resistive layer
5	Nickel Plating	10	Marking

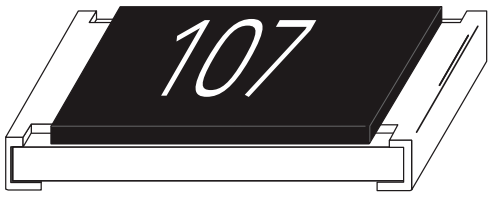
High Resistance Resistors (HMCR Series)

Electrical Specifications and Range

	Size	0402	0603	0805	1206	2512
	Power Rating at 70°C (W)	0.063W (1/16W)	0.063W (1/16W)	0.10W (1/10W)	0.125W (1/8W)	1W
	Max. Working Voltage	√PR or 50V whichever is less	√PR or 50V whichever is less	√PR or 75V whichever is less	√PR or 150V whichever is less	√PR or 300V whichever is less
	Operating Temp. Range	-50°C to +155°C	-50°C to +125°C	-50°C to +125°C	-50°C to +125°C	-50°C to +125°C
Tolerance	TCR	Resistance Range	Resistance Range	Resistance Range	Resistance Range	Resistance Range
±1% (F)	±200ppm	10MΩ - 20MΩ	-	-	-	-
	±400ppm	22.1MΩ - 100MΩ	22.1MΩ - 100MΩ	22.1MΩ - 100MΩ	22.1MΩ - 100MΩ	22.1MΩ - 100MΩ
	0 to -2000ppm	-	-	-	-	-
	±2000ppm	-	-	-	-	-
±5% (J)	±200ppm	10MΩ - 20MΩ	-	-	-	-
	±400ppm	20.5MΩ - 100MΩ	22MΩ - 100MΩ	22MΩ - 100MΩ	22MΩ - 100MΩ	20.5MΩ - 100MΩ
	0 to -2000ppm	-	100MΩ - 270MΩ	-	-	-
	-1500 to -2000ppm	-	-	-	100MΩ - 150GΩ	100MΩ - 150GΩ
	±2000ppm	-	-	100MΩ - 1GΩ	-	-
±10% (K)	±200ppm	-	-	-	-	-
	±400ppm	-	-	-	-	-
	0 to -2000ppm	-	100MΩ - 1GΩ	-	-	-
	-1500 to -2000ppm	-	-	-	100MΩ - 150GΩ	100MΩ - 150GΩ
	±2000ppm	-	-	100MΩ - 1GΩ		-
±20% (M)	±200ppm	-	-	-	-	-
	±400ppm	-	-	-	-	-
	0 to -2000ppm	-	100MΩ - 150GΩ	-	-	-
	±2000ppm	-	-	100MΩ - 10GΩ	-	-
	-1500 to -2000ppm	-	-	-	100MΩ - 150GΩ	100MΩ - 150GΩ
	±4000ppm	-	-	100MΩ - 150GΩ	-	-
±30% (N)	±200ppm	-	-	-	-	-
	±400ppm	-	-	-	-	-
	0 to -2000ppm	-	100MΩ - 150GΩ	100M - 10GΩ	-	-
	-1500 to -2000ppm	-	-	-	100MΩ - 150GΩ	100MΩ - 150GΩ
	±2000ppm	-	-	100M - 10GΩ	-	-
	±4000ppm	-	-	-	-	-

NOTE: Overload Voltage=2.5*√(P*R).

Marking Code



1% E-24 values for 0603 size and larger, maybe marked with the standard 3 digit marking code.
1% E-96 values for 0805 size and larger, will be marked with standard 4 digit marking code.
5% E-24 values for 0603 size and larger, will be marked with standard 3 digit marking code.
0603 - 1% E-96 values will be marked with a standard 3 digit alpha numeric code

(Please see page XXXX for alpha numeric codes).

Note: 0402 cannot be marked.

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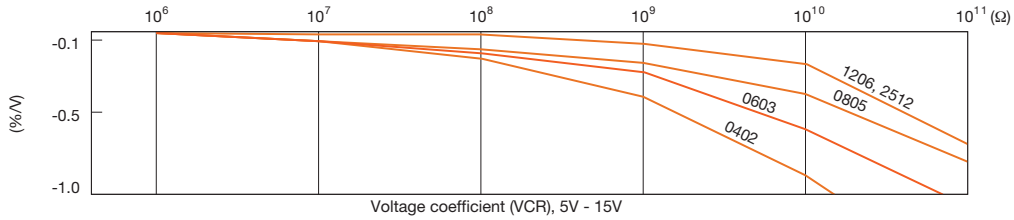
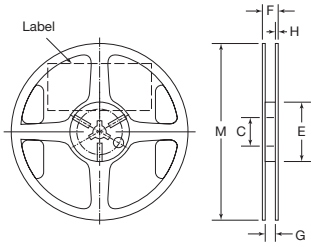
Rev. 09/2014-E

VCR Characteristics

Item	Characteristics	Test method
Long-term Stability	±0.5%	At normal temperature and humidity for 1,000 hr.
High Temperature Loading	±1%	DC15V, 1.5 hr ON, 0.5 hr OFF, 1,000 hr 70°C
Resistance of Soldering Heat	±1%	Dip into 260°C solder bath for 10 seconds
Short-time Overload	±2%	Test for 5 sec using maximum overload voltage
Operating Temperature Range	-55~+125°C	



Reel Specifications

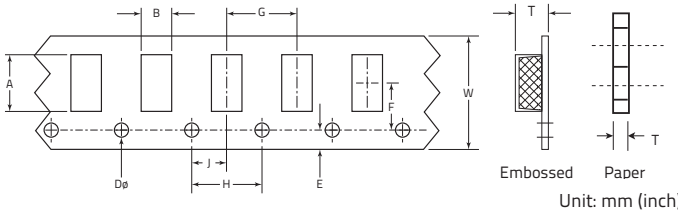


Unit: mm (inch)

C	E	F	G	H	M
13.0 ± 0.2 (0.51 ± 0.008)	60.0 ± 1.0 (2.36 ± 0.03)	11.4 ± 1.0 (0.45 ± 0.04)	9.0 ± .3 (0.35 ± 0.012)	1.5 ± .3 (0.06 ± 0.012)	180 ± 2.0 (7.09 ± 0.08)

Minimum of 30 empty pockets at the beginning of reel, 65 minimum empty pockets at the end.

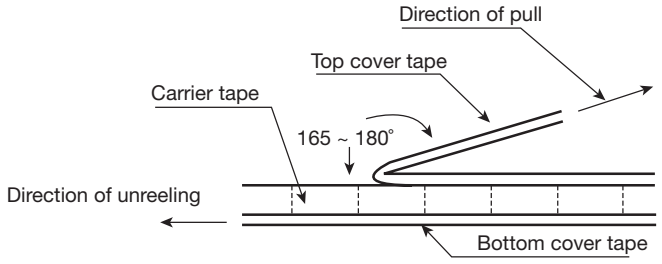
Tape Specifications



Unit: mm (inch)

Tape	Size	A	B	W	E	F	T	G	H	J	Dø
Paper	0402	1.16 ±0.10	0.70 ±0.10	8.0 ±0.10	1.75 ±0.05	3.50 ±0.05	0.40 ±0.03	2.00 ±0.05	4.00 ±0.10	2.00 ±0.05	1.55 ±0.05
	0603	1.90 ±0.10	1.10 ±0.05	8.0 ±0.10	1.75 ±0.05	3.50 ±0.05	0.60 ±0.03	4.00 ±0.10	4.00 ±0.10	2.00 ±0.05	1.55 ±0.05
	0805	2.37 ±0.20	1.60 ±0.05	8.0 ±0.10	1.75 ±0.05	3.50 ±0.05	0.75 ±0.05	4.00 ±0.10	4.00 ±0.10	2.00 ±0.05	1.55 ±0.05
	1206	3.55 ±0.05	2.00 ±0.05	8.0 ±0.10	1.75 ±0.05	3.50 ±0.05	0.75 ±0.05	4.00 ±0.10	4.00 ±0.10	2.00 ±0.05	1.55 ±0.05
Embossed	2512	6.65 ±0.10	3.40 ±0.10	12.00 ±0.10	1.75 ±0.10	5.50 ±0.05	1.00 +.02.0, -0	4.00 ±0.10	4.00 ±0.05	2.00 ±0.05	1.50 +0.1, -0

Peel Back Force and Direction Diagram



Peel back force and direction of peel back angle should follow EIA481-1-A. Peel back force should be between 0.1N – 1.3N and peel back angle of 165° – 180°.