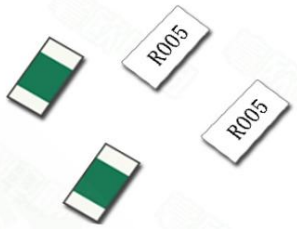
HoYH Ceramic Alloy Resistor Series Specifications

■ Features



① Ceramic alloy chip, encapsulation process, good welding performance

② High reliability, high overload capacity, high product accuracy

③ Wide temperature range of non-inductive design

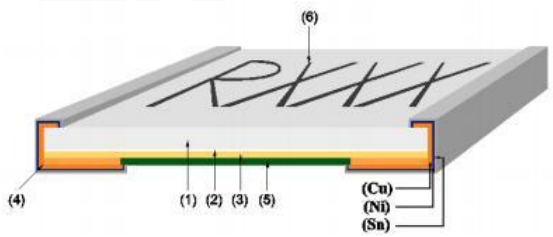
④ Resistance temperature coefficient TCR × 10-6/℃ ≤ 100ppm

⑤ ROHS compliance and halogen-free requirements

■ Product Electrical Parameters

Product Model	power	Resistance Range	temperature coefficient	Operating Temperature Range	Resistance Accuracy
0603	1/2W	2mΩ ~ 9mΩ	±100 ppm/℃	-55℃-+155℃	±1%
		10mΩ ~ 75mΩ	±50 ppm/℃		±0.5% 、±1%
0805	3/4W	2mΩ ~ 9mΩ	±100 ppm/℃		±1%
		10mΩ ~ 200mΩ	±50 ppm/℃		±0.5% 、±1%
1206	1W	3mΩ ~ 9mΩ	±100 ppm/℃		±1%
		10mΩ ~ 500mΩ	±50 ppm/℃		±0.5% 、±1%
2010	1.5W	2mΩ ~ 9mΩ	±100 ppm/℃		±1%
		10mΩ ~ 400mΩ	±50 ppm/℃		±0.5% 、±1%
2512	2W	2mΩ ~ 9mΩ	±100 ppm/℃		±1%
		10mΩ ~ 400mΩ	±50 ppm/℃		±0.5% 、±1%
3921	3W	2mΩ ~ 9mΩ	±100 ppm/℃		±1%
		10mΩ ~ 100mΩ	±50 ppm/℃		±0.5% 、±1%

■ product mix



serial number	Part Name
(1)substrates	Aluminium oxide ceramic substrates
(2)coherent sheaf (math.)	epoxy resin (chemistry)
(3)Resistor body	copper alloy
(4)two-sided electrode (e.g. on both sides of the pole)	Sn、Ni、Cu
(5)protective layer against welding	Fire-rated epoxy resin, meets UL-94-V0 requirements (green).
(6)solder mask	Fire rated epoxy resin, UL-94-V0 compliant (black)

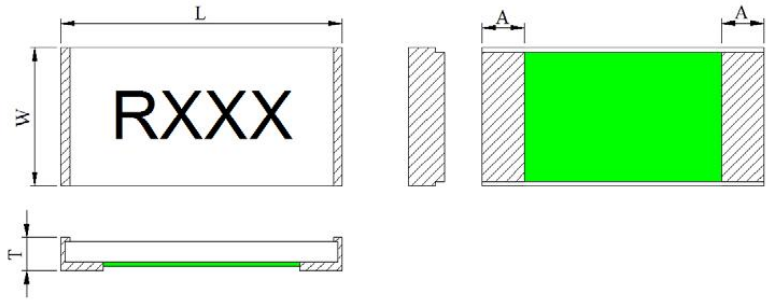
■ Product Selection

Selection Example: HoYH1206-1W-100mR-1% **HoYH**

H o Y H 1 2 0 6 1 W 1 0 0 m R 1 %

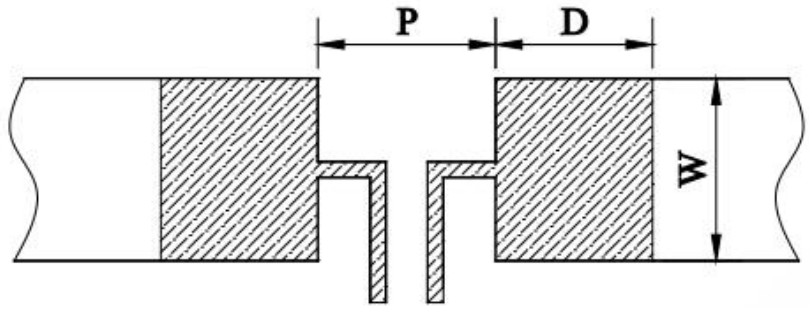
makers	product category	seal inside	rating	Resistance Range	accurate
Millio Electronics	YH	0603	1/2W	2mΩ~9mΩ	1%
				10mΩ~75mΩ	0.5%、1%
		0805	3/4W	2mΩ~9mΩ	1%
				10mΩ~200mΩ	0.5%、1%
		1206	1W	3mΩ~9mΩ	1%
				10mΩ~500mΩ	0.5%、1%
		2010	1.5W	2mΩ~9mΩ	1%
				10mΩ~400mΩ	0.5%、1%
		2512	2W	2mΩ~9mΩ	1%
				10mΩ~400mΩ	0.5%、1%
		3921	3W	2mΩ~9mΩ	1%
				10mΩ~100mΩ	0.5%、1%

■ Product Size(Unit:mm)



seal inside	W(mm)	L(mm)	T(mm)	A(mm)
HoYH0603-1/2W- 2mR~5mR	0.90±0.20	1.70±0.20	0.65±0.20	0.50±0.20
HoYH0603-1/2W- 6mR~75mR	0.90±0.20	1.70±0.20	0.65±0.20	0.40±0.20
HoYH0805-3/4W-2mR~3mR	1.35±0.20	2.10±0.20	0.65±0.20	0.65±0.20
HoYH0805-3/4W -4mR~200mR	1.35±0.20	2.10±0.20	0.65±0.20	0.50±0.20
HoYH1206-1W -2mR~4mR	1.70±0.20	3.30±0.20	0.65±0.2	1.20±0.30
HoYH1206-1W-5mR~500mR	1.70±0.20	3.30±0.20	0.65±0.2	0.68±0.30
HoYH2010-1.5W-2mR~3mR	2.60±0.20	5.10±0.20	0.65±0.20	2.10±0.30
HoYH2010-1.5W-4mR~400mR	2.60±0.20	5.10±0.20	0.65±0.20	0.70±0.30
HoYH2512-2W- 2mR	3.20±0.30	6.40±0.30	0.65±0.20	2.80±0.30
HoYH2512-2W - 3mR	3.20±0.30	6.40±0.30	0.65±0.20	2.60±0.30
HoYH2512-2W -4mR~400mR	3.20±0.30	6.40±0.30	0.65±0.20	1.05±0.30
HoYH3921-3W -2mR	5.10±0.30	11.10±0.30	0.65±0.20	4.90±0.30
HoYH3921-3W- 3mR	5.10±0.30	11.10±0.30	0.65±0.20	4.55±0.30
HoYH3921-3W - 4mR~100mR	5.10±0.30	11.10±0.30	0.65±0.20	2.36±0.30

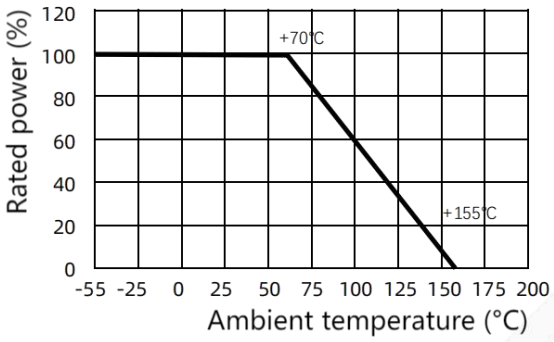
■ Recommended Pad Size



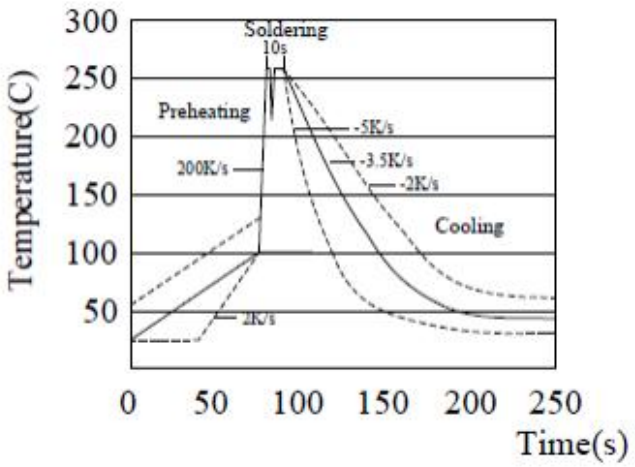
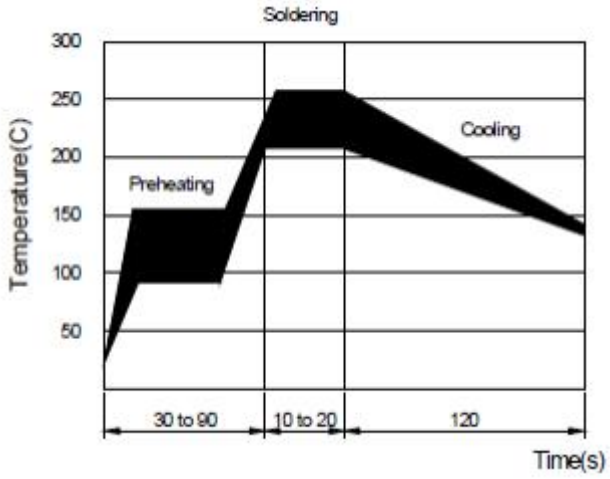
seal inside	P(mm)	W(mm)	D(mm)
HoYH0603-1/2W 2mR~5mR	0.50	0.92	1.35
HoYH0603-1/2W 6mR~75mR	0.60	0.92	1.30
HoYH0805-3/4W 2mR~6mR	0.80	1.44	1.40
HoYH0805-3/4W 7mR~200mR	0.80	1.44	1.40
HoYH1206-1W 2mR~4mR	0.60	1.84	2.10
HoYH1206-1W 5mR~8mR	1.20	1.84	1.80
HoYH1206-1W 9mR~500mR	1.20	1.84	1.80
HoYH2010-1.5W 2mR~3mR	0.70	2.88	3.65
HoYH2010-1.5W 4mR~9mR	2.70	2.88	2.65
HoYH2010-1.5W 10mR~400mR	2.70	2.88	2.65
HoYH2512-2W 2mR	0.90	3.57	4.35
HoYH2512-2W 3mR	0.90	3.57	4.20
HoYH2512-2W 4mR~400mR	3.10	3.57	3.10
HoYH3921-3W 2mR	1.10	5.75	6.45
HoYH3921-3W 4mR~100mR	5.00	5.75	4.50

■ power curve

Operating Temperature Range -55 to +155°C Resistance Temperature up to 70°C Power Reduction Diagram



■ Suggested welding parameters

Wave soldering curve	Reflow soldering curve
preheat: 100℃~130℃, max.100 sec. Solder: 250℃~265℃ max. 10 sec. Maximum temperature :260±5℃,max.10sec.	preheat: 145 ± 15℃, max.120 sec. Solder: min. 220℃, max. 60 sec. Maximum temperature :260±5℃,max.10sec.
	

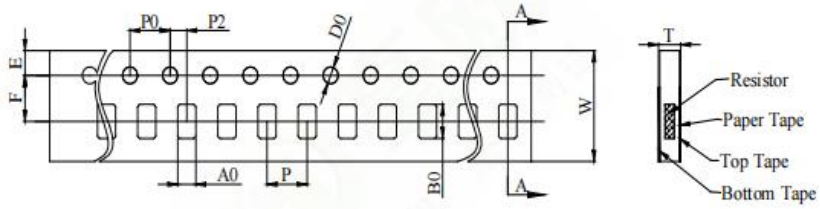
■ The formula for calculating the rated current

The formula for calculating the rated current			
$I=\sqrt{P/R}$	I	P	R
	Current rating(A)	Rated power(W)	Resistance value(Ω)

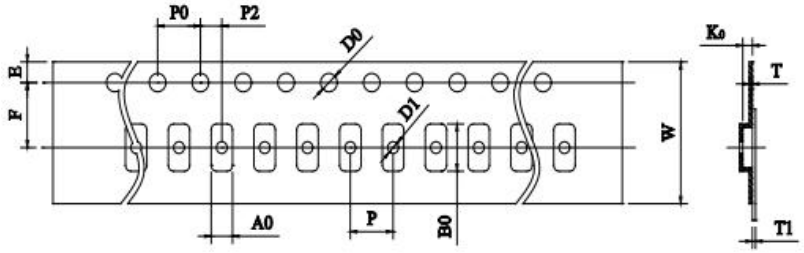
■ Reliability testing

Test Method	condition	Acceptance criteria
Transient overload test	P= 2.5Pr ; T=25±2°C , t = 5sec.	±(1.0%+0.5mΩ) IEC60115-1 4.13
High temperature test	T = +155±2°C ; t = 1000h	±(1.0%+0.5mΩ) IEC60115-1 4.25
Low temperature test	T = -55±2°C ; t = 1000h	±(1.0%+0.5mΩ) IEC60115-1 4.25
Humidity load life test（60℃、95%RH）	Vtest = Vmax ; T=60±2°C ; RH=95% ; t= 90min ON , 30min OFF , 1000h	±(2.0%+0.5mΩ) IEC60115-1 4.25
Hot and cold shock test	[-55°C 30min. → R.T. 3min. → +155°C 30min. → R.T. 3min],100Cycles	±(1.0%+0.5mΩ) IEC60115-1 4.19
Load life test at 70°C	Vtest = Vmax ; T=70±2°C ;t= 90min ON , 30min OFF,1000h	±(2%+0.5mΩ) IEC60115-1 4.25
Solderability test	Dip into solder at T = 245 ±5°C , t = 3±0.5sec.	The covered area >95% IEC60115-1 4.17
Resistance to Solder Heat	Through Reflow T= 275 ±5°C , t =20±1sec.	±(1.0%+0.5mΩ) IEC60115-1 4.18
Mechanical thermal shock test	acceleration a =100G ,Amplitude time t =11ms, 5 times shock	±(1.0%+0.5mΩ) IEC60115-1 4.21
Substrate flexure test	spacing between two support points, Span between fulcrums： 90mm ; amplitude / Bend Width：2mm ; Test board：Glass- Epoxy Board ; Thickness =1.6mm	±(1.0%+0.5mΩ) IEC60115-1 4.33

■ Carrier tape size

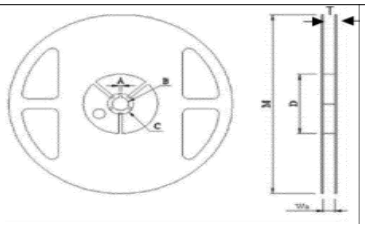


seal inside	W	A0	E	P0	B0	T	P	D0	P2	F
0603	8±0.3	1.18±0.2	1.75±0.1	4±0.1	1.98±0.2	0.75±0.2	4±0.1	1.5±0.1	2±0.1	3.5±0.15
0805	8±0.3	1.68±0.2	1.75±0.1	4±0.1	2.38±0.2	0.87±0.2	4±0.1	1.5±0.1	2±0.1	3.5±0.15
1206	8±0.3	2.05±0.2	1.75±0.1	4±0.1	3.65±0.2	0.87±0.2	4±0.1	1.5±0.1	2±0.1	3.5±0.15



seal inside	W	A0	E	P0	B0	T	P	D0	T1	P2	F	K0
2010	12±0.3	2.85±0.2	1.75±0.1	4±0.1	5.45±0.2	0.25±0.2	4±0.1	1.5±0.1	Max0.1	2±0.1	5.5±0.1	0.8±0.2
2512	12±0.3	3.4±0.2	1.75±0.1	4±0.1	6.75±0.2	0.28±0.2	4±0.1	1.5±0.1	Max0.1	2±0.1	5.5±0.1	1.0±0.2
3921	24±0.3	5.5±0.2	1.75±0.1	4±0.1	11.5±0.2	0.3±0.2	8±0.1	1.5±0.1	Max0.1	2±0.1	11.5±0.1	0.9±0.2

■ Reel Specifications



seal inside	A±5（mm）	N±2（mm）	W1±1（mm）	Quantitie（PCS）	Weights（g）
0603	178	60	9.0	5,000	130±30
0805	178	60	9.0	5,000	150±30
1206	178	60	9.0	5,000	160±40
2010	178	60	13	4,000	210±40
2512	178	60	13	4,000	270±50
3921	178	60	24.5	2,000	510±60

■ Usage Precautions

- ◆ During the use of the product, pay attention to the surface protection, to prevent the surface of the product bumps, scratches and other defects.
- ◆ Avoid mechanical stress when installing and using the product.
- ◆ The long-term use of the product power should be less than or equal to the rated power, to avoid long-term use of overload caused by the resistance drift.
- ◆ When using the product in high temperature or poor heat dissipation conditions, refer to the power reduction curve for derating applications.

■ Storage Instructions

- ◆ Can be stored for 2 years under airtight condition with temperature +10℃～40℃ and relative humidity≦75%.
- ◆ Up to 30 days of non-open air storage at temperatures ranging from +10℃ to 60℃ and a relative humidity of 95%.
- ◆ The product needs to be stored in a clean and dry environment free from harmful gases.
- ◆ Avoid removing the product from the packaging until it has been used.

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Version number	Date of revision	Modifications	Reason for modification	Change the person	Reviewers
Ho-A1	2025-06-10	Update the datasheet content template	Uniform formatting	YongkangHuang	Wenyi Leng