后芮驷(上海)电子有限公司

Horus International Electronics Co., LTD.

承认书

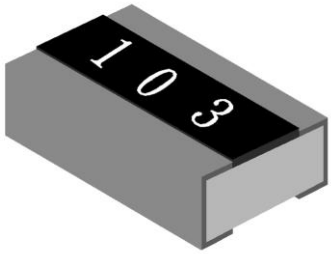
SPECIFICATION FOR APPROVAL

编号:

品名	DESCRIPTION：	车用宽电极电阻
规格	SPEC :	HRS-QRWXXXXXXXXXXXZ
包装	PACKAGE:	卷装
客户	CUSTOMER：	
客户料号	CUSTOMER P/N:	

APPROVED BY	
CUSTOMER	HORUS

■ Automotive Wide Terminal Chip Resistor— QRW Series



■ Application

— Automotive electronics

— Navigation equipment,TPMS

— Heating, Ventilating and Air conditioning

— Indoor lighting, Central door locking, Wiper module

■ Features

— Small size and light weight

— Reliability, high quality

— CCD visual quality inspection

— AEC-Q200 Compliant

— Excellent Resistance to Vulcanization (ASTM-B-809-95 & EIA-977 Specification)

■ Parts Number Explanation

■ **Example:**

QRW	0612	J	10R0	P	05	Z
Product Type	**Size (Inch)**	**Resistor Tolerance**	**Resistor Value**	**Package**	**Quantity**	**Optional**
QRW	0508 0612 1020 1218 1225	F：±1% J：±5%	10mR=R010 100mR=R100 1R=1R00 10R=10R0 100R=100R 1K=1K00 1M=1M00	P：Paper Taping (0508、0612) E：Embossed Taping (1020~1225)	04：4000PCS 05：5000PCS	Z：Default H: High Power

■ Standard Electrical Specifications

Item / Type	Rated Power at 70℃	Max Working Voltage	Max Overload Voltage	T.C.R. (PPM/℃)	Resistance Range	
					F(±1%)	J(±5%)
QRW0508	0.75W	200V	400V	±200	1Ω≦R<10Ω	
				±100	10Ω≦R≦1MΩ	
QRW0612	0.75 W			±200	1Ω≦R<10Ω	
				±100	10Ω≦R≦10MΩ	
QRW1020	1 W			±200	1Ω≦R<10Ω	
				±100	10Ω≦R≦10MΩ	
QRW1218	1 W			±200	1Ω≦R<10Ω	
				±100	10Ω≦R≦10MΩ	
QRW1225	2W			±200	1Ω≦R<10Ω	
				±100	10Ω≦R≦10MΩ	

- For non-standard parts, please contact our sales dept.
- Operating Temperature Range ：−55℃～＋155℃

■ High Power Electrical Specifications

Item / Type	Rated Power at 70℃	Max Working Voltage	Max Overload Voltage	T.C.R. (PPM/℃)	Resistance Range	
					F(±1%)	J(±5%)
QRW0508	1W	200V	400V	±150	1Ω≦R<10Ω	
				±100	10Ω≦R≦1MΩ	
QRW0612	1.5 W			±100	1Ω≦R<10Ω	
				±100	10Ω≦R≦10MΩ	
QRW1020	2 W			±100	1Ω≦R<10Ω	
				±100	10Ω≦R≦10MΩ	
QRW1218	2 W			±100	1Ω≦R<10Ω	
				±100	10Ω≦R≦10MΩ	
QRW1225	3W			±100	1Ω≦R<10Ω	
				±100	10Ω≦R≦10MΩ	

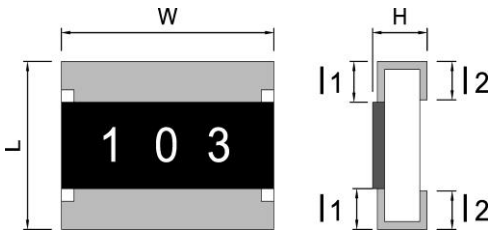
- For non-standard parts, please contact our sales dept.
- Operating Temperature Range ：−55℃～＋155℃

■ Low Ohm Chip Resistor Electrical Specifications

Item / Type	Rated Power at 70℃	Rated Voltage Range	Max Overload Voltage	T.C.R. (PPM/℃)	Resistance Range (mΩ) F(±1%)、J±(5%)
QRW0612	0.75W	0.087~0.86V	2.154V	±1800	10≦R<50
				±800	50≦ R<100
				±600	100≦R<1000
QRW1020	1W	0.10~0.99V	2.475V	±1800	10≦R<50
				±800	50≦ R<100
				±600	100≦R<1000
QRW1218	1W	0.10~0.99V	2.475V	±1800	10≦R<50
				±800	50≦ R<100
				±600	100≦R<1000
QRW1225	2W	0.14~1.41V	3.518 V	±1800	10≦R<50
				±800	50≦ R<100
				±600	100≦R<1000

- For non-standard parts, please contact our sales dept.
- Operating Temperature Range ：−55℃～＋155℃

■ Type Dimension



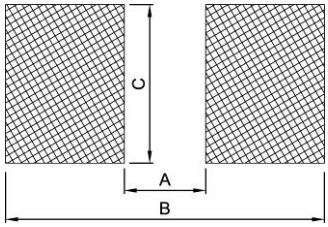
QRW0508/QRW0612/ QRW1020/
QRW1218/ QRW1225

■ Dimension Unit: mm

TYPE	L	W	H	l_1	l_2
QRW0508	1.25 ± 0.10	2.00 ± 0.10	0.55 ± 0.10	0.25 ± 0.20	0.50 ± 0.20
QRW0612	1.60 ± 0.20	3.20 ± 0.20	0.55 ± 0.10	0.30 ± 0.20	0.50 ± 0.20
QRW1020	2.50 ± 0.20	5.00 ± 0.20	0.55 ± 0.10	0.40 ± 0.20	0.75 ± 0.20
QRW1218	3.10 ± 0.10	4.60 ± 0.10	0.55 ± 0.05	0.40 ± 0.20	0.50 ± 0.20
QRW1225*Z	3.20 ± 0.20	6.50 ± 0.20	0.55 ± 0.20	0.40 ± 0.20	0.75 ± 0.20
QRW1225*H	3.20 ± 0.20	6.50 ± 0.20	0.65 ± 0.20	0.40 ± 0.20	0.75 ± 0.20

● General Information

■ Recommend Land Pattern Design

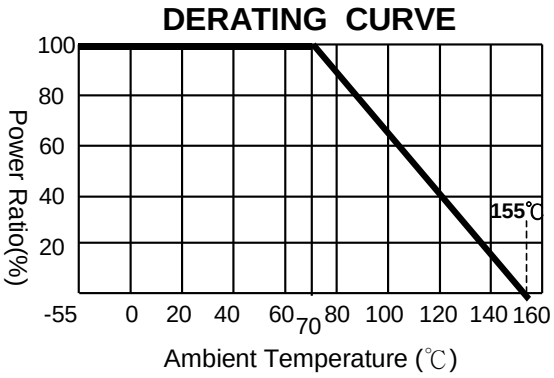


■ Dimension Unit:mm

Item \ Type	0508	0612	1020	1218	1225
A	0.4	0.60	0.75	2.04	0.85
B	1.8	2.90	3.40	4.24	3.70
C	2.00	3.20	5.00	4.80	6.40

■Performance Characteristics

■ Power Derating Curve



Power rating or current rating is in the case based on continuous full-load at ambient temperature of 70℃.
For operation at ambient temperature in excess of 70℃, the load should be derated in accordance with figure of derating Curve.

■ Voltage Rating or Current Rating

Resistance Range: ≧1Ω
Rated Voltage: The resistor shall have a DC continuous working voltage or a RMS AC continuous working voltage at commercial-line frequency and wave form corresponding to the power rating, as determined formula as following:

E(RCWV)=$\sqrt{P \times R}$

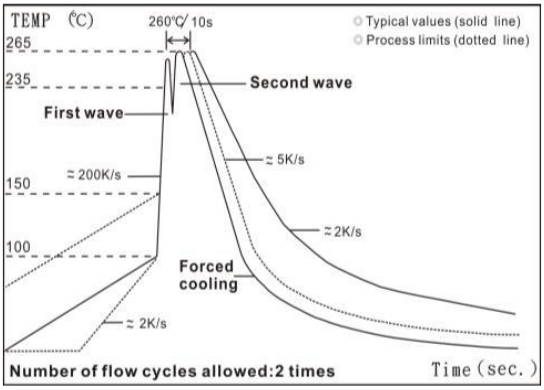
E=Rated voltage(V)
P=Power rating(W)
R=Nominal resistance(Ω)

● Reliability Test and Requirement

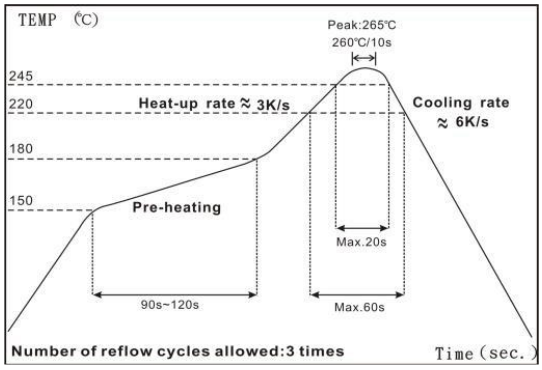
Test Item	Test Method	Procedure	Requirements
Temperature Coefficient of Resistance (T.C.R)	JIS-C-5201-1 4.8 IEC-60115-1 4.8	At 25℃ / -55℃ and 25℃ /+155℃, 25℃ is the reference temperature	As Spec
Short Time Overload	JIS-C-5201-1 4.13 IEC-60115-1 4.13	Z:6.25*Rated power or Max Overload voltage whichever is less for 5 seconds. H:5*Rated power or Max Overload voltage whichever is less for 5 seconds.	±1%：±(1.0%+0.05Ω) ±5%：±(2.0%+0.1Ω) Value <1Ω： ±(2.0%+0.1Ω)
Leaching	JIS-C-5201-1 4.18 IEC-60068-2-58 8.2.1	260±5℃ for 30 seconds.	Individual leaching area ≦5% Total leaching area ≦ 10%
Resistance to Soldering Heat	JIS-C-5201-1 4.18 IEC-60115-1 4.18	260±5℃ for 10 seconds.	±1%：±(0.5%+0.05Ω) ±5%：±(1.0%+0.05Ω) Value <1Ω：±(1.0%+0.05Ω)
Insulation Resistance	JIS-C-5201-1 4.6 IEC-60115-1 4.6	Apply 100VDC for 1 minute.	≧10GΩ
Temperature Cycling	JESD22 Method JA-104	1000 Cycles (-55°C to +125°C) Measurement at 24±4 hours after test conclusion. 30min maximum dwell time at each temperature extreme.	±1%：±(0.5%+0.05Ω) ±5%：±(1.0%+0.10Ω)
Resistance to Solvent	MIL-STD-202 Method 215	Add Aqueous wash chemical - OKEM Clean or equivalent.	±1%：±(0.5%+0.05Ω) ±5%：±(0.5%+0.05Ω)
Biased Humidity	MIL-STD-202 Method 103	1,000 hours; 85°C / 85% RH, 10% of operating power. Measurement at 24±4 hours after test conclusion.	±1%：±(1.0%+0.05Ω) ±5% ：±(3.0%+0.05Ω)
High Temperature Exposure (Storage)	MIL-STD-202 Method 108	1000 hrs. @ T=155°C. Unpowered. Measurement at 24±4 hours after test conclusion.	±1%：±(0.5%+0.05Ω) ±5% ：±(2.0%+0.05Ω)
Operational Life	MIL-STD-202 Method 108	Condition D Steady State TA=125°C at derated power. Measurement at 24±4 hours after test conclusion.	±1%：±(1.0%+0.05Ω) ±5% ：±(3.0%+0.10Ω)
External Visual	MIL-STD-883 Method 2009	Electrical test not required. Inspect device construction, marking and workmanship.	—
Mechanical Shock	MIL-STD-202 Method 213	Wave Form : Tolerance for half sine shock pulse. Peak value is 100g's. Normal duration(D) is 6(ms)	±1%：±(1.0%+0.05Ω) ±5%：±(2.0%+0.1Ω)
Vibration	MIL-STD-202 Method 204	5 g's for 20 min., 12 cycles each of 3 orientations. Note: Test from 10-2000 Hz	±1%：±(1.0%+0.05Ω) ±5%：±(2.0%+0.1Ω)
ESD	AEC-Q200- 002 or ISO/DIS 10605	Human body model 0508、0612：1KV 1020 and above：2KV	±(3%+0.05Ω)
Solderability	J-STD-002	(1) 4 hrs 155℃ dry heat (2) 245±5℃ 3 sec.	±1%：±(0.5%+0.05Ω) ±5%：±(1.0%+0.05Ω)
Terminal Strength (SMD)	AEC Q200-006	Pressurizing force for 60 seconds 0508/0612：8N ; 1020 and above：17.7N	No broken
Board Flex	AEC Q200-005	Bending once for 60 seconds 0508/0612/1020/1218/1225：3mm	±1%：±(1.0%+0.05Ω) ±5%：±(1.0%+0.05Ω)
Sulfur Test	ASTM-B-809-95 EIA-977	105±2℃, no rating power for 1000 hrs (not include type 0508)	△R：±(2.0%+0.05 Ω)

■ Recommended Customer Soldering Parameters

■ Wave solder Temperature condition



■ Solder reflow Temperature condition



■ Rework temperature（hot air equipment）：350℃, 3~5seconds

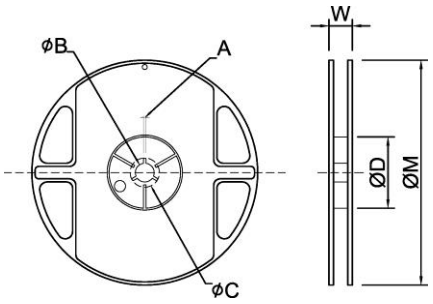
■ Recommended reflow methods

IR, vapor phase oven, hot air oven

If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements.

■ Appendix For SMD Chip Resistor

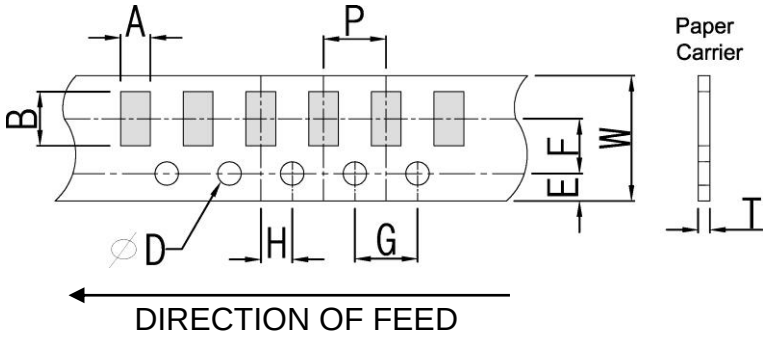
● Packaging Information



■ Dimension Unit:mm

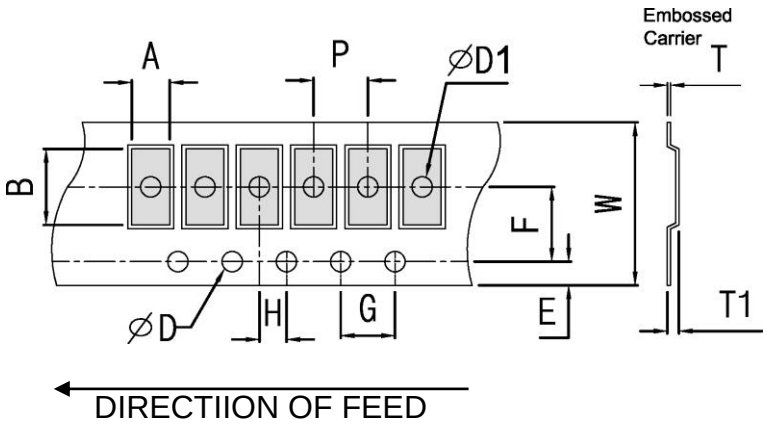
TYPE	SIZE		A	øB	øC	øD	W	øM
0508/0612	7”	5K/Reel	2.0±0.5	13.5±1.0	21±1.0	60±1.0	11.5±2.0	178±2.0
1020/1218/1225	7”	4K/Reel	2.0±0.5	13.5±1.0	21±1.0	60±1.0	16.0±2.0	178±2.0

■ Tapping Specification



■ Dimension Unit:mm

Packaging	Type	A	B	W	E	F	G	H	T	øD	P
Paper Type	0508	1.50±0.15	2.25±0.15	8.0±0.2	1.75±0.1	3.5±0.05	4.0±0.1	2.0±0.05	0.75±0.1	$1.50^{+0.10}_{-0}$	4.0±0.1
	0612	1.90±0.2	3.50±0.2	8.0±0.2	1.75±0.1	3.5±0.05	4.0±0.1	2.0±0.05	0.75±0.1		4.0±0.1

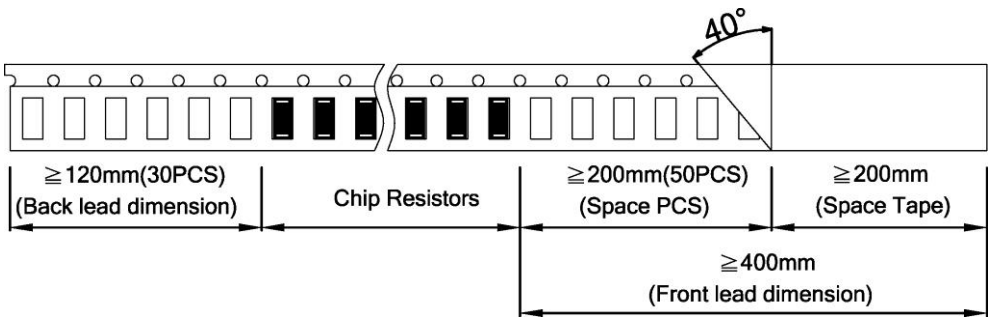


■ Dimension Unit:mm

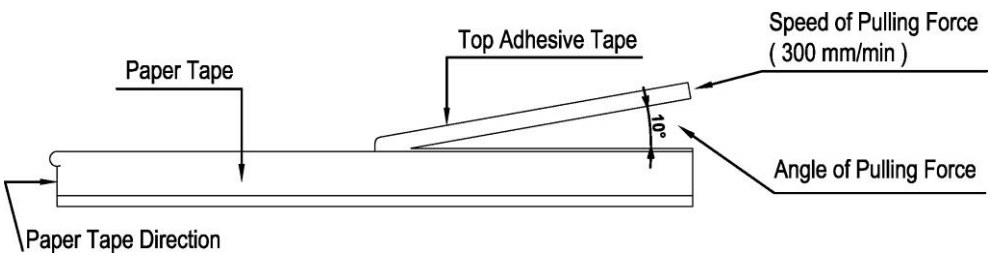
Packaging	Type	A	B	W	E	F	G	H	T	ØD	ØD1	T1	P
Embossed Type	1020	2.80±0.2	5.60±0.2	12±0.1	1.75±0.1	5.5±0.05	4.0±0.1	2.0±0.05	0.23±0.1	$1.50^{+0.10}_{-0}$	1.50±0.1	0.85±0.15	4.0±0.1
	1225*Z	3.40±0.2	6.70±0.2	12±0.1	1.75±0.1	5.5±0.05	4.0±0.1	2.0±0.05	0.23±0.1		1.50±0.1	0.85±0.15	
	1225*H	3.40±0.2	6.70±0.2	12±0.1	1.75±0.1	5.5±0.05	4.0±0.1	2.0±0.05	0.23±0.1		1.50±0.1	1.0±0.15	
	1218	3.30±0.2	4.60±0.2	12±0.1	1.75±0.1	5.5±0.05	4.0±0.1	2.0±0.05	0.23±0.1		1.50±0.1	0.85±0.15	

■ Packing Material Data/Storage Data

■ Front & Back Lead Dimension

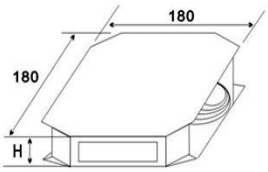


■ Top Adhesive Peel Off Strength：10~70g

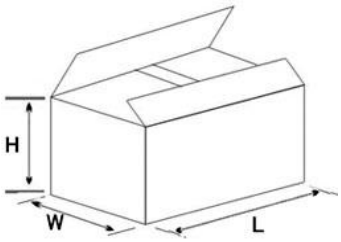


■ Package

Inner Box Size	
Reel	Size H(mm)
1	13
2	24
3	36
5	60
10	113



External Box Size			
Contain (Kpcs)	Length (mm)	Width (mm)	Height (mm)
25K	180	180	60
50K	180	180	110
150K	430	200	200
300K	400	400	200



■ Storage Data：

Storage time at the environment temp: 25±5℃& humidity: 60±20% is valid for one year from the date of delivery.

■ Product Testing Method:

Our products are tested with our company's tapping & testing equipments by using four-feet probe to touch at the back of both electrodes. Supposed different testing points or methods are requested, please advise beforehand and customized-made production is available.

■ Standard Resistance Values in a Decade

Marking code:

- QRW0508:No Marking
- 1%: marking code, please refer to E96 and E24 data form as below
  Ex: 120K, The marking code is 1203 in E24
  121K, The marking code is 1213 in E96
  5%: marking code, please refer to E24 data form as below
  Ex: 120K, The marking code is 124 in E24
- Note: jumper zero ohm resistor marking code is one 「0」

E96	E48	E96	E48	E96	E48	E96	E48
100	100	169	169	287	287	487	487
102		174		294		499	
105	105	178	178	301	301	511	511
107		182		309		523	
110	110	187	187	316	316	536	536
113		191		324		549	
115	115	196	196	332	332	562	562
118		200		340		576	
121	121	205	205	348	348	590	590
124		210		357		604	
127	127	215	215	365	365	619	619
130		221		374		634	
133	133	226	226	383	383	649	649
137		232		392		665	
140	140	237	237	402	402	681	681
143		243		412		698	
147	147	249	249	422	422	715	715
150		255		432		732	
154	154	261	261	442	442	750	750
158		267		453		768	
162	162	274	274	464	464	787	787
165		280		475		806	

E96	E48	
825	825	
845		
866	866	
887		
909	909	
931		
953	953	
976		

E24	E12	E6	E3
10	10	10	10
11			
12	12		
13			
15	15	15	
16			
18	18		
20			
22	22	22	22
24			
27	27		
30			
33	33	33	
36			
39	39		
43			
47	47	47	47
51			
56	56		
62			
68	68	68	
75			
82	82		
91			

According to IEC publication 63

■ mΩ Resistance Codes

Resistance	Code	Resistance	Code	Resistance	Code	Resistance	Code
10mΩ	R010	70mΩ	R070	0.18Ω	R180	0.47Ω	R470
15mΩ	R015	75mΩ	R075	0.20Ω	R200	0.50Ω	R500
20mΩ	R020	80mΩ	R080	0.22Ω	R220	0.56Ω	R560
30mΩ	R030	90mΩ	R090	0.25Ω	R250	0.60Ω	R600
40mΩ	R040	0.10Ω	R100	0.27Ω	R270	0.65Ω	R650
50mΩ	R050	0.11Ω	R110	0.30Ω	R300	0.68Ω	R680
56mΩ	R056	0.12Ω	R120	0.33Ω	R330	0.70Ω	R700
60mΩ	R060	0.13Ω	R130	0.36Ω	R360	0.75Ω	R750
65mΩ	R065	0.15Ω	R150	0.40Ω	R400	0.80Ω	R800
68mΩ	R068	0.16Ω	R160	0.43Ω	R430	0.90Ω	R900