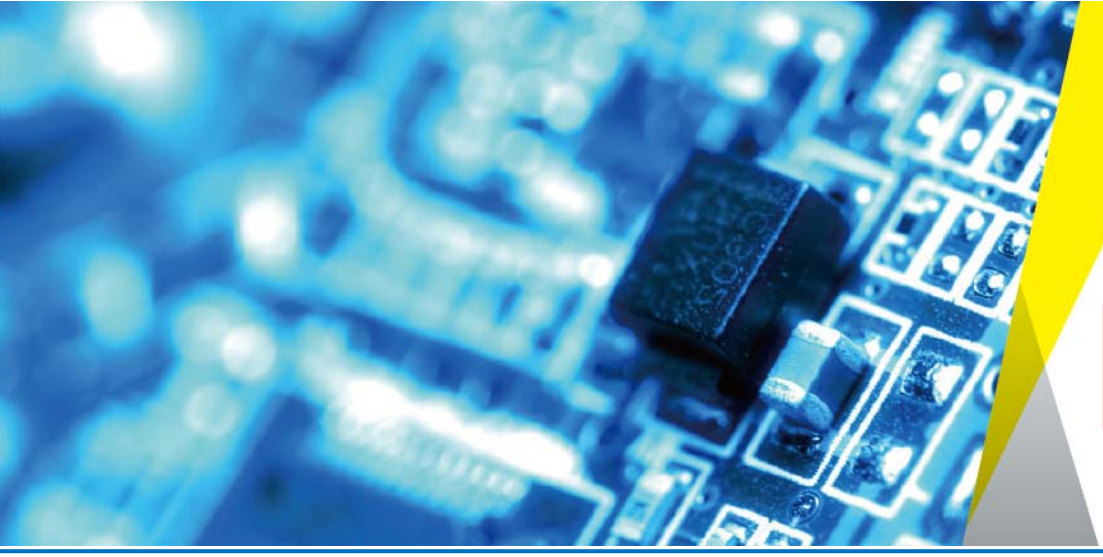

DATA SHEET

Product Name	**Power Alloy Wire-wound Resistors**
Part Name	**QH、QL、QW、QR、QRZG Series**
File No.	**DIP-SP-050**

Uniroyal Electronics Global Co., Ltd.

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	Aeon Technology Corporation
	Royal Electronic Factory (Thailand) Co., Ltd.
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1. Scope:

1.1 This datasheet is the characteristics of power alloy wire-wound Resistors manufactured by UNI-ROYAL.
1.2 Multi-terminal type & variable types available
1.3 Small in size but capable of carrying high power load
1.4 Resistance value unchanged after long use， good resistivity to short time overload
1.5 High resistivity to heat，small resistance temperature coefficient and the change in resistance with temperature being linear
1.6 Too low or high ohmic value can be supplied case to case basis
1.7 Adjustable &Multi-Resistor type is available
1.8 Non-inductive type is available
1.9 Compliant with RoHS directive.
1.10 Halogen free requirement.

2. Part No. System

The standard Part No. includes 14 digits with the following explanation:

2.1 For Cement Fixed Resistors, these 4 digits are to indicate the product type but if the product type has only 3digits, the 4th digit will be "0"
Example: QH00=QH type; QL00=QL type ; QR00=QR Type; QRZG=QRZG Type

2.2 5th~6th digits:

2.2.1 For power rating between20 watt to 99watt, the 5th and the 6th digit will show the whole numbers of the power rating itself
Example:
20=20W; 75=75W

2.2.2 For power rating of 100W and over, the 5th & the 6th digits will be indicated with "00"and the actual wattage being indicated at the last 3 digits (12th~14th) of the part No.

2.3 The 7th digit is to denote the Resistance Tolerance. The following letter code is to be used for indicating the standard Resistance Tolerance.
F=±1% G=±2% J=±5% K= ±10%

2.4 The 8th to 11th digits is to denote the Resistance Value.

2.4.1For the standard resistance values of E-24 series, the 8th digit is "0",the 9th & 10th digit are to denote the significant figures of the resistance and the 11th digit is the numbers of zeros following.
Example:
0120=12Ω 0273=27KΩ

2.5 The 12th, 13th & 14th digits.

2.5.1 The 12th digit is to denote the Packaging Type with the following codes:
B=Bulk/Box

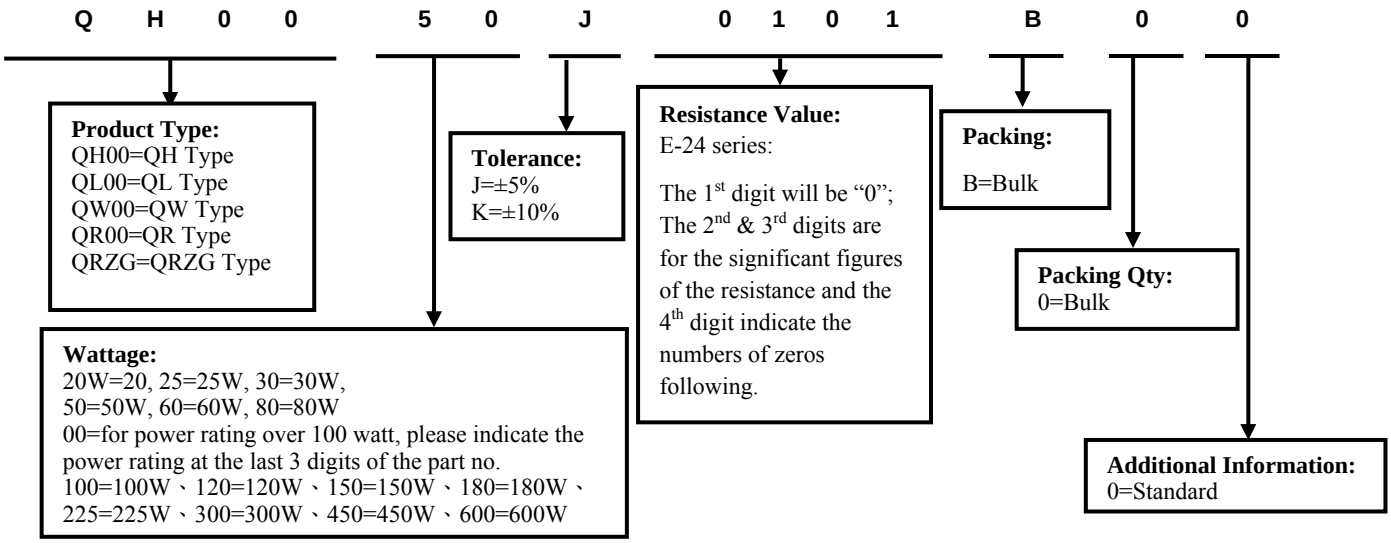
2.5.2 The 13th digit is normally to indicate the Packing Quantity, This digit should be filled with "0"for the Cement products with "Bulk/Box"packing requirements.

2.5.3 For some items, the 14th digit alone can use to denote special features of additional information with the following codes or standard product
Example: 0= standard product

2.5.4 for power rating over 100 watt, please indicate the power rating at the last 3 digits of the part no.
Example: 100=100W； 120=120W

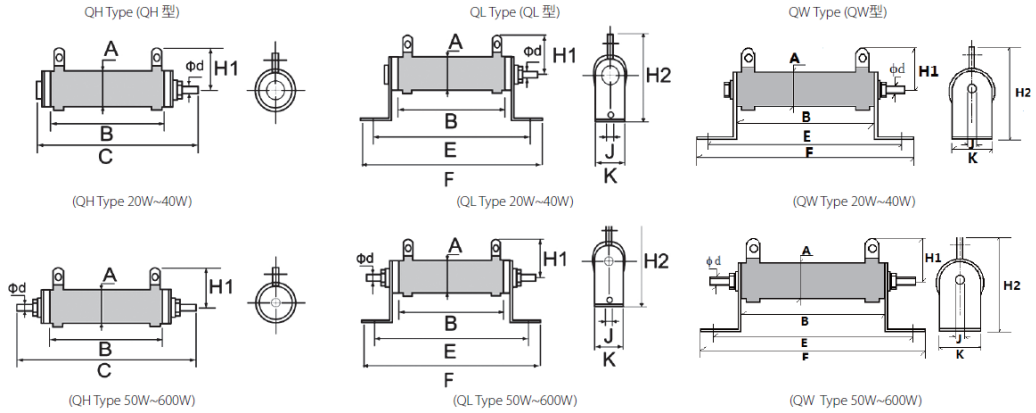
3. Ordering Procedure

(Example: QH 50W ±5% 100Ω B/B)



4. Ratings & Dimension

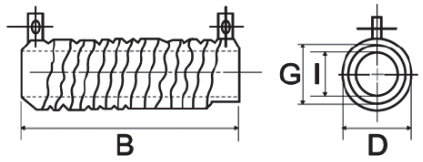
QH&QL Type:



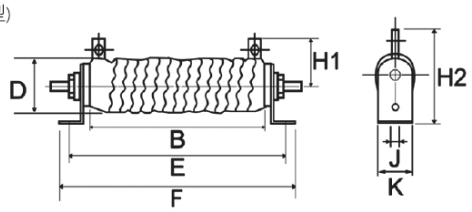
Type	Dimension（mm）										Resistance Range
	A±2	B	C±2	E	F	H1±2	H2±2	J±1	K±1	Φd±0.05	
QH/QL20W	22	50±2	70	75±2	102±2	25	50	5	19	4	1Ω~10KΩ
QW20W				66±2	93±2						
QH/QL25W	22	60±2	91	84±2	110±2	25	50	5	19	4	2Ω~12KΩ
QW25W				75±2	101±2						
QH/QL30W	22	75±2	95	99±2	126±2	25	50	5	19	4	2Ω~15KΩ
QW30W				90±2	117±2						
QH/QL40W	22	90±2	112	114±2	141±2	25	50	5	19	4	2Ω~20KΩ
QW40W				105±2	132±2						
QH/QL50W	30	75±2	110	103±2	133±2	34	64	6.3	27	5	3Ω~25KΩ
QW50W				91±2	121±2						
QH/QL60W	30	90±2	126	117±2	147±2	34	64	6.3	27	5	3Ω~30KΩ
QW60W				105±2	135±2						
QH/QL80W	30	115±2	150	143±2	173±2	34	64	6.3	27	5	3Ω~40KΩ
QW80W				131±2	161±2						
QH/QL100W	30	140±2	173	166±2	197±2	34	64	6.3	27	5	3Ω~50KΩ
QW100W				154±2	185±2						
QH/QL120W	30	165±2	200	193±2	223±2	34	64	6.3	27	5	4Ω~60KΩ
QW120W				181±2	211±2						
QH/QL150W	30	195±2	230	224±2	254±2	34	64	6.3	27	5	4Ω~70KΩ
QW150W				212±2	242±2						
QH/QL200W	30	254±2	289	282±2	312±2	34	64	6.5	27	5	5Ω~100KΩ
QW200W				270±2	300±2						
QH/QL300W	42	254±2	292	285±2	332±2	45	87	6.5	39	5	8Ω~150KΩ
QW300W				273±2	320±2						
QH/QL400W	42	330±3	364	364±3	410±3	45	87	6.5	39	5	10Ω~200KΩ
QW400W				352±3	398±3						
QH/QL600W	42	420±3	458	451±3	498±3	45	87	6.5	39	5	10Ω~200KΩ
QW600W				439±3	486±3						

QR&QRZG Type:

QR Type (QR 型)



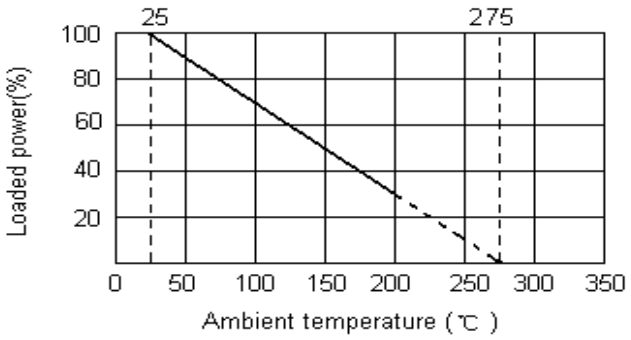
QRZG Type (QRZG 型)



Type	Dimension(mm)										Resistance Range
	B	D±4	E	F	G±2	H1±2	H2±2	I±2	J±1	K±1	
QR/QRZG120W	115±2	36	143±2	173±2	28	34	64	16	6.3	27	0.2Ω~4Ω
QR/QRZG150W	140±2	36	166±2	197±2	28	34	64	16	6.3	27	0.3Ω~5Ω
QR/QRZG180W	165±2	36	193±2	223±2	28	34	64	16	6.3	27	0.3Ω~6Ω
QR/QRZG225W	195±2	36	224±2	254±2	28	34	64	16	6.3	27	0.4Ω~8Ω
QR/QRZG300W	254±2	36	282±2	312±2	28	34	64	16	6.3	27	0.5Ω~10Ω
QR/QRZG450W	254±2	48	285±2	332±2	40	45	87	25	6.5	39	0.8Ω~15Ω
QR/QRZG600W	330±3	48	364±3	410±3	40	45	87	25	6.5	39	1Ω~20Ω
QR/QRZG750W	300±3	58	332±3	384±3	50	57	102	34	8	48	1Ω~75Ω
QR/QRZG1000W	390±3	58	423±3	475±3	50	57	102	34	8	48	1Ω~100Ω

5. Derating Curve

Derating curve:



5.1 Voltage rating:

Resistors shall have a rated direct-current (AC) continuous working voltage or an approximate sine-wave root-mean-square (RMS) alternating-current (AC) continuous working voltage at commercial-line frequency and waveform corresponding to the power rating, as determined from the following formula:

$$RCWV = \sqrt{P \times R}$$

Where: RCWV = rated dc or RMS ac continuous working voltage at commercial-line frequency and waveform (VOLT.)

P = power rating (WATT.)

R= nominal resistance (OHM)

6. Performance Specification

Characteristic	Limits	Test Methods (GB/T5729&JIS-C-5201&IEC60115-1)
Temperature Coefficient	≧20Ω: ±300PPM/℃ ＜20Ω: ±400PPM/℃	4.8 Natural resistance changes per temp. Degree centigrade $\frac{R_2-R_1}{R_1(t_2-t_1)} \times 10^6$ (PPM/℃) R_1: Resistance Value at room temperature （t_1）; R_2: Resistance at test temperature （t_2） t_1: +25°C or specified room temperature t_2: Test temperature（-55℃or 125℃）
Short-time overload	Resistance change rate is: ±(5%+0.05Ω)Max. With no evidence of mechanical damage.	4.13 Permanent resistance change after the application of a potential of 2.5 times RCWV or Max.Overload Votage whichever less for 5 seconds.
Insulation resistance	Insulation resistance is: 20 MΩ Min.	4.6 The measuring voltage shall be equal to the dielectric withstanding voltage for resistor with an isolation voltage ＜500V or (500±50)V DC, for resistors with an isolation voltage≥500V.
Dielectric withstanding voltage	No evidence of flashover mechanical damage, arcing or insulation break down.	4.7 Resistors shall be clamped in the trough of a 90°metallic V-block and shall be tested at AC potential respectively specified in the above list for 60-70 seconds.for cement fixed resistors the testing voltage is 1000V.
Terminal strength	No evidence of mechanical damage	4.16 Direct load: Resistance to a 2.5Kg direct load for 10 seconds in the direction of the longitudinal axis of the terminal leads. Twist test: Terminal leads shall be bent through 90°at a point of about 6mm from the body of the resistor and shall be rotated through 360° about the original axis of the bent terminal in alternating direction for a total of 3 rotations.
Resistance to soldering heat	Resistance change rate is: ± (1%+0.05Ω) Max. With no evidence of mechanical damage	4.18 Permanent resistance change when leads immersed to a point 2.0-2.5mm from the body in 260℃±5°℃ solder for 10±1 seconds.
Solderability	95% coverage Min.	4.17 The area covered with a new, smooth, clean, shiny and continuous surface free from concentrated pinholes. Test temp. Of solder:245℃±3℃ Dwell time in solder: 2~3seconds.
Humidity (Steady state)	Resistance change rate is: ±(5%+0.05Ω)Max. With no evidence of mechanical damage.	4.24 Temporary resistance change after 240 hours exposure in a humidity test chamber controlled at 40±2℃ and 90~95%RH relative humidity
Load life	Resistance change rate is: ±(5%+0.05Ω)Max. With no evidence of mechanical damage.	4.25.1 Permanent Resistance change after 1000 hours operating at RCWV or Max.Working Voltage whichever less with duty cycle of 1.5 hours “ON”， 0.5 hour “OFF” at 25±2℃ ambient.
Low Temperature Storage	Resistance change rate is: ±(5%+0.05Ω)Max. With no evidence of mechanical damage.	IEC 60068-2-1 (Aa) Lower limit temperature，for 2H.
High Temperature Exposure	Resistance change rate is: ±(5%+0.05Ω)Max. With no evidence of mechanical damage.	MIL-STD-202 108A Upper limit temperature ，for 16H.

7. Note

7.1. UNI-ROYAL recommend products store in warehouse with temperature between 15 to 35℃ under humidity between 25 to 75%RH. Even under storage conditions recommended above, solder ability of products will be degraded stored over 1 year old.

7.2. Cartons must be placed in correct direction which indicated on carton, otherwise the reel or wire will be deformed.

7.3. Storage conditions as below are inappropriate:

a. Stored in high electrostatic environment

b. Stored in direct sunshine, rain, snow or condensation.

c. Exposed to sea wind or corrosive gases, such as Cl_2, H_2S, NH_3, SO_2, NO_2, Br etc.

8. Record

Version	Description	Page	Date	Amended by	Checked by
1	First version	1~6	Mar.20, 2018	Haiyan Chen	Nana Chen
2	Modify characteristic	4~5	Feb.26, 2019	Haiyan Chen	Yuhua Xu
3	Modify characteristic	5	Nov.20,2020	Song Nie	Yuhua Xu
4	Modify the temperature coefficient test conditions	4	Nov.07, 2022	Haiyan Chen	Yuhua Xu
5	Add the QW type	1~6	May.15, 2023	Haiyan Chen	Yuhua Xu
6	Cancel load life in humidity test Modify the load life test conditions	5	Sep.28, 2024	Haiyan Chen	Yuhua Xu