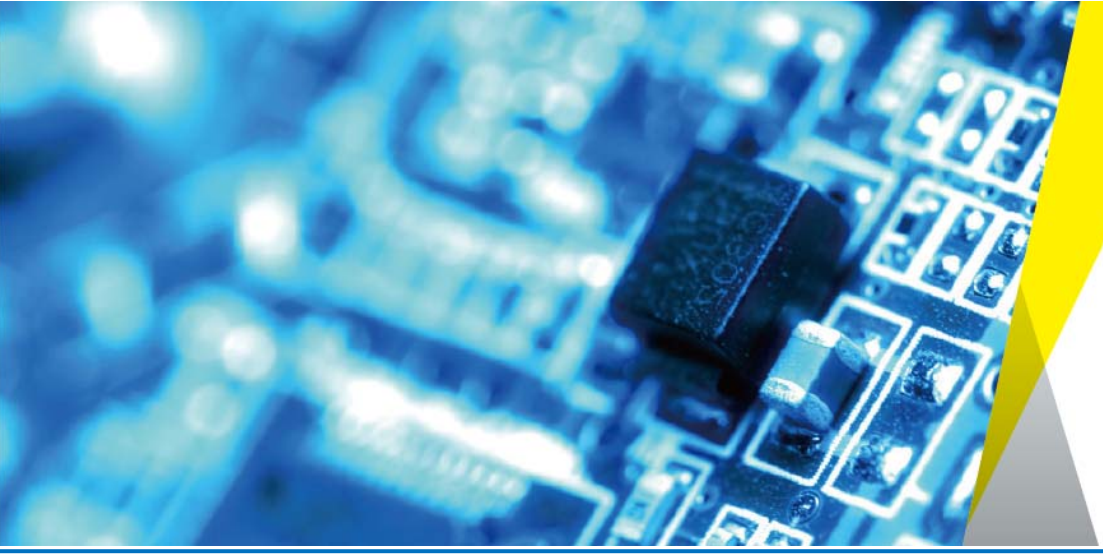

DATASHEET

Product Name	**Special Resistor Network-SIP Series**
Part Name	**SN0001、SN0002、 SN0003、 SN0004 Series**
File No.	**DIP-SP-072**

Uniroyal Electronics Global Co., Ltd.

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

1. Scope

1.1 This datasheet is the characteristics of Resistor Network-SIP Series manufactured by UNI-ROYAL.
1.2 Miniature，high density packaging
1.3 High reliability RuO_2
1.4 Compliant with RoHS directive.
1.5 Halogen free requirement.

2. Part No. System

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

2.1 For Network 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:
RNMA=Resistor Network

2.2 5th~6th digits:

2.2.1 For Resistor Network, since the power rating is fixed as 1/8W for a circuit, the 5th & 6th digit is to be used to denote the number of pins required.
Example: 10=10PINS

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.
G=±2% J=±5%

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

2.4.1 The following number s and the letter codes are to be used to indicate the number of zeros in the 11th digit:
$0=10^0$ $1=10^1$ $2=10^2$ $3=10^3$ $4=10^4$ $5=10^5$ $J=10^{-1}$

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

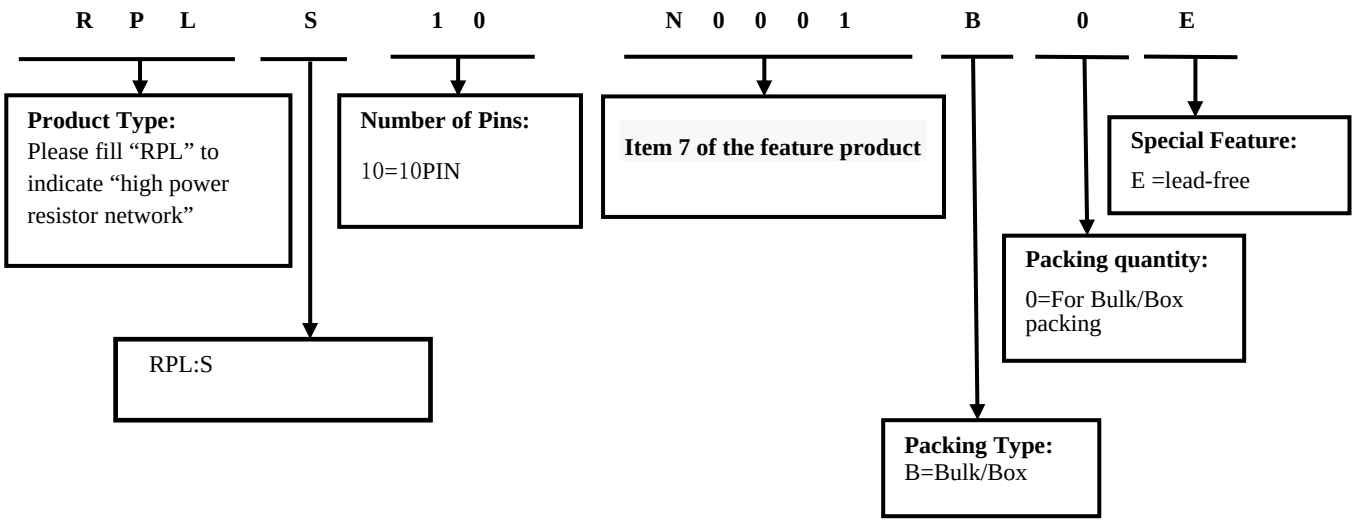
2.5.1 The 12th digit is to denote the Packaging Type with the following codes:
B=Bulk/Box

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.

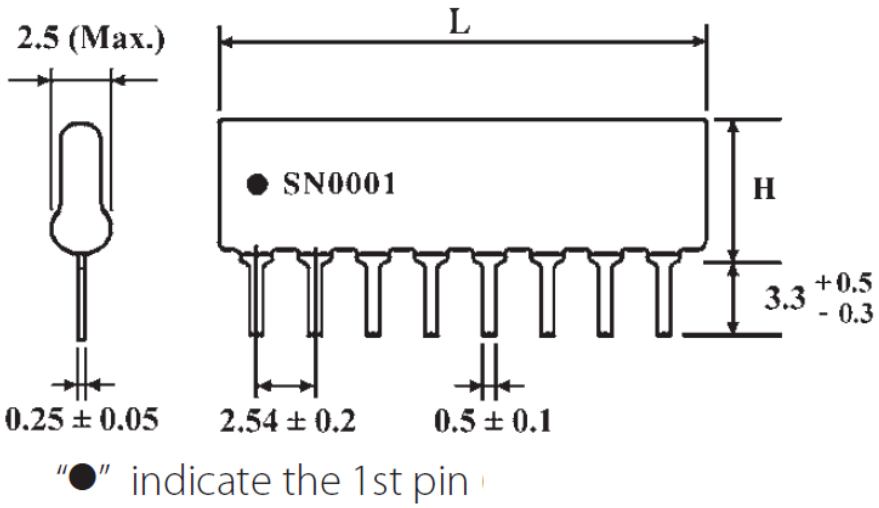
2.5.3 For Network, the 14th digit alone can use to denote special features of additional information with the following codes or standard product
Example: E= Lead Free (Standard)

3. Ordering Procedure

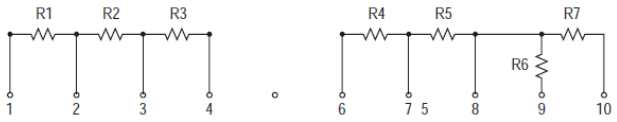
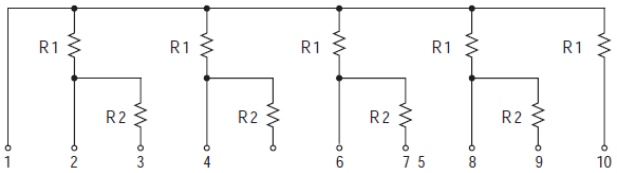
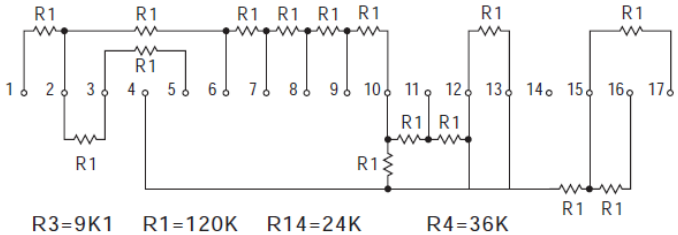
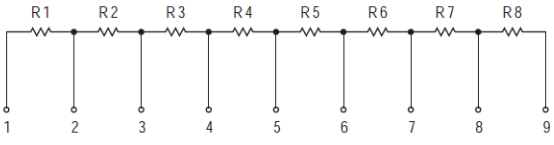
(Example: RPL-S 10Pin SN0001 B/B)



4. Dimension



5. Circuits Construction

SN0001	SN0002
 R1=500Ω ±5% R2=40K ±5% (TO: R3: ±1%) R3=10K ±5% R4=R5=75K ±5% R6=R7=100K ±5% (R6 TO R7: ±1%)	 R1=33KΩ ±5% R2=22KΩ ±5%
SN0003	SN0004
 R3=9K1 R1=120K R14=24K R4=36K R9=14K R15=1K5 R5=R6=7K5 R10=R11=R12=20K R13=2K R7=52K5 R13=11K	 R1=52Ω3 R2=70Ω7 R3=121Ω R4=249Ω R5=1K33 R6=619K R7=174Ω R8=75Ω

6. Ratings

Type	L(max) mm	H(max) mm	Power Rating	Max Working Voltage	Max Overload Voltage	Tolerance	Operating temperature
SN0001 10PINS	25.4	5.08	0.2W	100V	150V	±2%、±5%	-55℃~155℃
SN0002 10PINS	25.4	5.08	0.2W	100V	150V	±2%、±5%	-55℃~155℃
SN0003 10PINS	43.2	6.35	0.125W	100V	200V	±2%、±5%	-55℃~155℃
SN0004 10PINS	22.9	5.08	0.125W	100V	150V	±2%、±5%	-55℃~155℃

*** Custom Design Circuit could be available on a case to case basis**

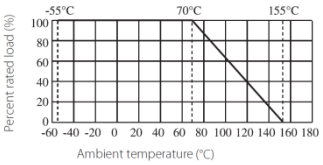
7. Derating Curve

Power rating will change based on continuous load at ambient temperature from -55 to 155℃.

It is constant between -55 to 70℃, and derate to zero when temperature rise from 70 to 155℃.

Voltage rating:

Resistors shall have a rated direct-current (DC) 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:



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

Remark: RCWV: Rating Continuous Working Voltage (Volt.) P: power rating (Watt) R: nominal resistance (Ω)

In no case shall the rated DC or RMS AC continuous working voltage be greater than the applicable maximum value.

The overload voltage is 2.5 times RCWV or Max. Overload voltage whichever is lower.

8. Performance Specification

Characteristic	Limits	Test Methods (GB/T5729&JIS-C-5201&IEC60115-1)
Temperature Coefficient	50Ω~1MΩ：±100PPM/℃ <50Ω&>1MΩ：±250PPM/℃	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	ΔR/R≤±(0.5%+0.1Ω)	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	≥10,000MΩ	4.6 The measuring voltage shall be either(100±15)V DC for resistors with an insulation 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 given list of each product type for 60-70 seconds.

Terminal strength	ΔR/R≤±(0.5%+0.1Ω)	4.16 Tensile: 1KG, 30 secend / Bending: 500g, 2 times.
Resistance to soldering heat	ΔR/R≤±(0.5%+0.1Ω)	4.18 Dip the resistor into a solder bath having a temperatuer of 260℃±5℃ and hold it for 10±1seconds.
Solderability	Coverage must be over 95%.	Wave Solder: Test temperature of solder: 245℃±3℃ Dipping time in solder: 2-3seconds
Rapid change of temperature	ΔR/R≤±(0.5%+0.1Ω)	4.19 30 min at -55 °C and 30 min at 155°C; 100 cycles.
Load life	ΔR/R≤±(3%+0.1Ω)	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 70±2° C ambient.
Load life in humidity	ΔR/R≤±(3%+0.1Ω)	7.9 Resistance change after 1000 hours (1.5hours “ON”，0.5hours “OFF”) at RCWV or Max.Working Voltage whichever less in a humidity test chamber controlled at 40±2° C and 93%±3% RH.
Low Temperature Storage	ΔR/R≤±(3%+0.1Ω)	IEC 60068-2-1 (Aa) Lower limit temperature，for 2H.
High Temperature Exposure	ΔR/R≤±(3%+0.1Ω)	MIL-STD-202 108A Upper limit temperature ，for 16H.

10. Note

10.1. 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.

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

10.3. 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.

11. Record

Version	Description	Page	Date	Amended by	Checked by
1	First version	1~5	Aug.23, 2023	Haiyan Chen	Nana Chen