Registration No. 1273

NASDA-QTS-55182G/101J
29 May 2023

Superseding
NASDA-QTS-55182G/101H
Cancelled
29 May 2023

RESISTORS, FIXED, FILM,
HIGH RELIABILITY, SPACE USE,
NASDA STYLE RNS55, RNS60, RNS65, RNS70

DETAIL SPECIFICATION FOR

Issued by Japan Aerospace Exploration Agency

This document is the English version of JAXA QTS/ADS which was originally written and authorized in Japanese and carefully translated into English for international users. If any question arises as to the context or detailed description, it is strongly recommended to verify against the latest official Japanese version.

The release date of the English version of this specification: 26 July 2024.

Revision history

Rev.	Date	Description
G	31 Mar. 1993	Revised entire document in association with standardization of the requirements for high reliability parts. (Changed the style from NASDA RNR to NASDA RNS)
H	28 May 2020	Deleted NASDA RNS50 style from the product range due to cancellation of the qualification as of 22 February 2020.
J	29 May 2023	Added a note (2) on Table 4, Resistance to solvents.

Contents

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NASDA STYLE RNS55, RNS60, RNS65, RNS70
DETAIL SPECIFICATION FOR

1. SCOPE

This specification establishes the detail requirements for NASDA RNS55, RNS60, RNS65, and RNS70 (non-hermetically sealed style), of high reliability, fixed, film resistors.

2. PART NUMBER

The part number shall be in accordance with Table 1.

Table 1. Part Number

Item	Applicable Paragraph of NASDA-QTS-55182	Specification
Part number	1.3	e.g.: NASDA RNS60J 1002B
Style and terminal type	1.3.1	RNS55, RNS60, RNS65, RNS70
Characteristic	1.3.2	H, J, K
Resistance	1.3.3	e.g.: 1503 …150kΩ (Identified by a four-digit number.)
Resistance tolerance	1.3.4	B (±0.1%), C (±0.25%), D (±0.5%), F (±1.0%), G (±2.0%)

3. RATINGS

The ratings shall be as specified in Table 2.

Table 2. Rating

Item	Requirement paragraph of NASDA-QTS-55182	Specification			
Operating temperature range (°C)	3.5.2	-55 to +175			
Rated ambient temperature (°C)	3.5.3	125			
Derating curve	3.5.4	As specified in Figure 1.			
Style and terminal type	--	RNS55	RNS60	RNS65	RNS70
Nominal resistance range (Ω)	3.5.1	10 to 397k	10 to 898k	10 to 1.0M	10 to 1.0M
Critical resistance (kΩ)	--	392	499	348	237
Rated power (W)	3.5.3	0.1	0.125	0.25	0.5
Maximum operating voltage (V)	3.5.5	200	250	300	350
Rated power at 70°C (W)	--	0.125	0.25	0.5	0.75
Maximum operating voltage at 70°C (V)	--	200	300	350	500

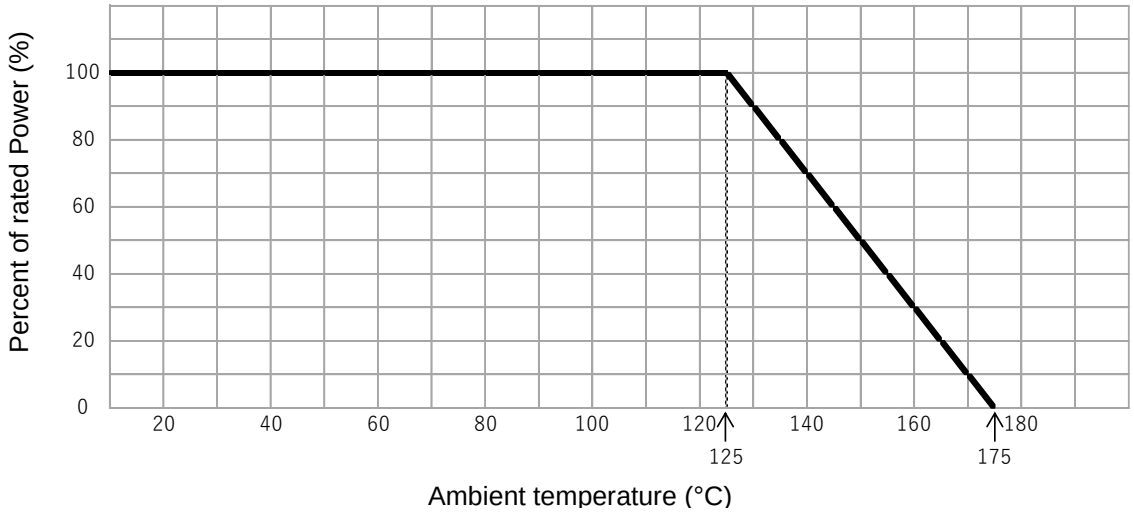
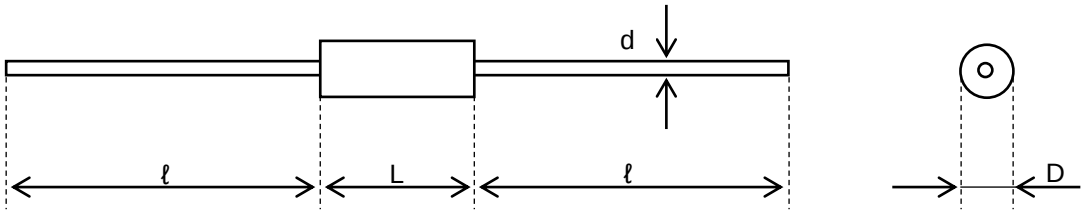


Figure 1 Derating Curve

4. PRODUCT INSPECTION

The visual, construction, physical dimensions and mass shall be in accordance with paragraph 3.4 of NASDA-QTS-55182, and Figure 2 and Table 3 of this specification.



Note: Any construction other than the one specified above may be accepted, provided that the dimension requirements are satisfied.

Figure 2. Construction and Dimensions

Table 3. Dimensions, Maximum Mass and Marking

Style and terminal type		RNS55	RNS60	RNS65	RNS70
Dimension (mm)	D	2.8±0.8	3.3±0.8	5.0±1.0	7.0±1.0
	L	6.4±0.8	9.5±1.5	15.0±1.5	20.0±1.5
	d	0.64±0.05	0.64±0.05	0.64±0.05	0.81±0.05
	ℓ	38.0±3.0	38.0±3.0	38.0±3.0	38.0±3.0
Mass (g)		0.45 max.	0.6 max.	1.2 max.	2.1 max.
Marking (Example of the minimum required marking)		9213J 1000 B	9233J RNS60 1000B		

5. PERFORMANCE

The performance shall be in accordance with Table 4.

Table 4. Performance

No.	Item	Test Method Paragraph of NASDA-QTS-55182	Performance
1	Product inspection	4.7.2	As specified in Figure 2 and Table 3.
2			
3	Thermal shock (I)	4.7.3	Allowable resistance change: ±(0.20% + 0.01Ω)(1)
4	Thermal shock (II)	4.7.4	Allowable resistance change: ±(0.50% + 0.01Ω)
5	Overload	4.7.5	Allowable resistance change: ±(0.20% + 0.01Ω)([1])
6	Resistance	4.7.6	Within the specified resistance tolerance
7	Radiography	4.7.7	There shall be no abnormality inside resistors.
8	DPA	4.7.8	The conditions specified in the reliability assurance program shall be satisfied.
9	Solderability	4.7.9	At least 95% of the surface shall be covered with fresh solder.
10	Resistance to solvents	4.7.10([2])	There shall be no abnormality of external coating and marking.
11	Resistance-temperature characteristic	4.7.11	H (±50ppm/°C), J (±25ppm/°C), K (±100ppm/°C)
12	Low temperature storage	4.7.12	Allowable resistance change: ±(0.15% + 0.01Ω)
13	Low temperature operation	4.7.13	Allowable resistance change: ±(0.15% + 0.01Ω)
14	Terminal strength	4.7.14	Allowable resistance change: ±(0.20% + 0.01Ω)
15	Dielectric withstanding voltage	4.7.15	Allowable resistance change: ±(0.15% + 0.01Ω)
16	Insulation resistance	4.7.16	10,000M Ω or more
17	Resistance to soldering heat	4.7.17	Allowable resistance change: ±(0.10% + 0.01Ω)
18	Moisture resistance	4.7.18	Moisture resistance Allowable resistance change: ±(0.40% + 0.01Ω)
			Dielectric withstanding voltage Allowable resistance change: ±(0.15% + 0.01Ω)
			Insulation resistance: 100M Ω or more
19	Shock	4.7.19	Allowable resistance change: ±(0.20% + 0.01Ω)
20	High frequency vibration	4.7.20.1	Allowable resistance change: ±(0.20% + 0.01Ω)
21	Random vibration	4.7.20.2	Allowable resistance change: ±(0.20% + 0.01Ω)
22	Life (125°C)	4.7.21	Allowable resistance change after 2000 hours: ±(0.50% + 0.01Ω)
			Allowable resistance change after 4000 hours: ±(1.00% + 0.01Ω)
23	Life (70°C)	4.7.22	Allowable resistance change after 2000 hours: ±(0.50% + 0.01Ω)
24	Stability	4.7.23	Allowable resistance change: ±(0.50% + 0.01Ω)
			Allowable dielectric withstanding voltage change: ±(0.15% + 0.01Ω)
			Insulation resistance: 1000M Ω or more
25	Voltage coefficient	4.7.24	Within ±0.005%/ V
26	Mechanical shear	4.7.25	Allowable resistance change: ±(0.20% + 0.01Ω)

Notes ([1]): The overload test shall be performed subsequently to the thermal shock (I) test. The change in resistance at the completion of overload test shall be within the initial resistance measured at the beginning of thermal shock (I).

(2) The solvent solutions used in this test shall exclude the following.
A mixture consisting of the following:
1. Forty-two parts by volume water, 1 megohm-cm minimum resistivity.
2. One part by volume of propylene glycol monomethyl ether (glycol ether PM, 1-methoxy-2-propanol).
3. One part by volume of monoethanolamine.

6. QUALITY ASSURANCE PROVISIONS

The quality assurance provisions shall be in accordance with paragraph 4 of NASDA-QTS-55182.

7. NOTES

7.1 Application Data Sheet

Refer to the paragraph 6 of NASDA-QTS-55182 or application data sheet for notes on the resistors.

7.2 Cancellation of Applicable Specification

This specification shall supersede NASDA-QTS-55182G/101H, which was cancelled on 29 May 2023. Resistors which were procured or stored per the cancelled specification before the cancellation date, shall be considered qualified.