

Registration No. 1272

NASDA-QTS-39017C/201B

29 May 2023

Superseding

NASDA-QTS-39017C/201A

Cancelled

29 May 2023

RESISTORS, FIXED, FILM (INSULATED SMALL)
HIGH RELIABILITY, SPACE USE,
NASDA STYLE
RLS05T, RLS07T, RLS20T, RLS32T, RLS42T,
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
B	29 May 2023	<ul style="list-style-type: none">• Cover page and paragraph 1: Changed the corporate name from National Space Development Agency of Japan to the Japan Aerospace Exploration Agency.• Added a note (1) on Table 4, line number 6, Resistance to solvents.

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**RESISTORS, FIXED, FILM (INSULATED SMALL)
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1. SCOPE

This specification covers the high reliability, fixed, film (insulated small) resistors of NASDA RLS05T, RLS07T, RLS20T, RLS32T and RLS42T style used for space development by the Japan Aerospace Exploration Agency.

2. PART NUMBER

Part number shall be in accordance with Table 1.

Table 1. Part Number

Item	Applicable paragraph of NASDA-QTS-39017	Remarks
Part number	1.3	Example : NASDA RLS20T 1002F
Style	1.3.1	RLS05, RLS07, RLS20, RLS32, RLS42
Construction and terminal	1.3.2	T
Nominal resistance	1.3.3	Example: 1503···150kΩ, 154···150kΩ (resistance shall be identified by a three or four digit number.)
Resistance tolerance	1.3.4	F(±1.0%), G(±2.0%)

3. RATING

Ratings shall be in accordance with Table 2.

Table 2. Rating

Item	Requirement paragraph of NASDA-QTS-39017	Remarks				
Operating temperature range (°C)	3.5.2	-55 to +150				
Rated ambient temperature (°C)	3.5.3	70				
Derating curve	3.5.4	Figure 1				
Style	—	RLS05	RLS07	RLS20	RLS32	RLS42
Nominal resistance range (Ω)	3.5.1	4.7 to 301k	10 to 2.49M	4.3 to 1.0M	10 to 2.7M	10 to 2.7M
Critical resistance (kΩ)		—	240	240	240	120
Rated power (W)	3.5.3	0.125	0.25	0.5	1	2
Maximum operating voltage (V)	3.5.5	200	250	350	500	500
Maximum overload voltage (V)	—	400	500	700	1000	1000

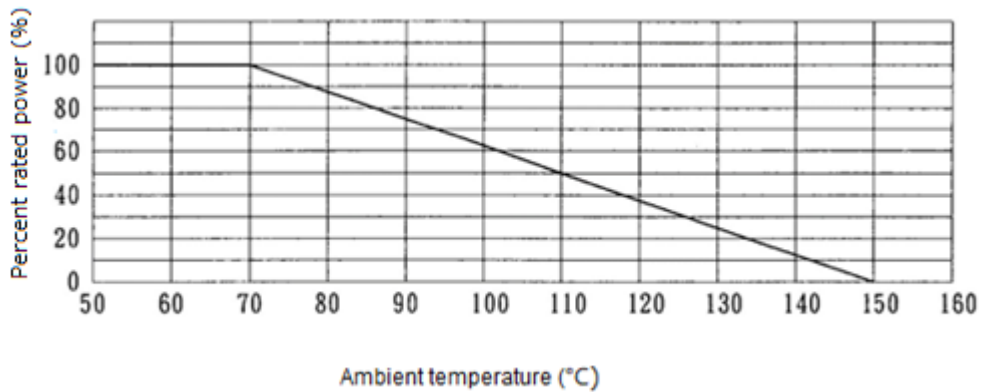
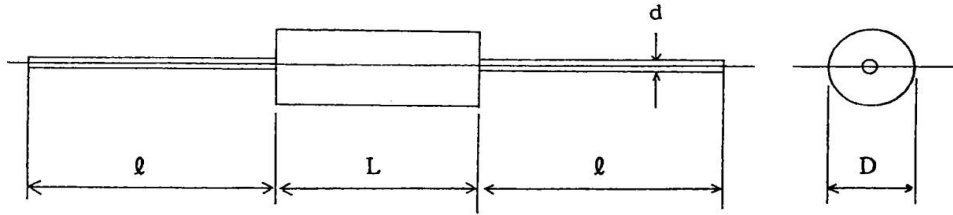


Figure 1. Load Derating Curve

4. PRODUCT INSPECTIONS

Appearance, construction, physical dimensions and mass shall be in accordance with paragraph 3.4 of NASDA-QTS-39017, and Figure 2 and Table 3.



Note: If dimensions are satisfied, construction need not be as in the drawing.

Figure 2. Construction and Dimensions

Table 3 Dimension, Marking and Mass

Style		RLS05	RLS07	RLS20	RLS32	RLS42
Dimensions (mm)	D	1.7±0.3	2.8±0.8	3.3±0.8	5.0±1.0	7.5±1.0
	L	4.0±0.5	6.4±0.8	9.5±1.5	15.0±1.5	19.0±1.5
	d	0.41±0.05	0.64±0.05	0.64±0.05	0.64±0.05	0.81±0.05
	l	32.0±6.0	38.0±3.0	38.0±3.0	38.0±3.0	38.0±3.0
Mass (g)		0.3 max.	0.5 max.	0.75 max.	1.5 max.	4.0 max.
Marking (Example of minimum required marking.)		1 0 0 3 F T	R L S 7 T 1 0 0 3 F	9 2 3 4 R L S 2 0 T 1 0 0 3 F XXX (1)		

Notes(1) XXX... Abbreviation or trademark of manufacturer.

(2) The end of the resistor body shall be that point at which the body diameter equals 2.5 times of the nominal lead diameter.

5. PERFORMANCE

Performance shall be in accordance with Table 4.

Table 4 Performance

No.	Item	Test method paragraph of NASDA-QTS-39017	Performance					
1	Products inspection	4.7.2	In accordance with Figure 2 and Table 3					
2	Voltage aging	4.7.3	Allowable resistance change: $\pm (0.5\%+0.05\Omega)$					
			Style	RLS05	RLS07	RLS20	RLS32	RLS 42
			Max. test voltage (V)	250	250	350	500	500
3	Resistance	4.7.4	Within stipulated resistance tolerance.					
4	DPA	4.7.5	Shall meet the conditions stipulated in the reliability assurance program.					
5	Solderability	4.7.6	Not less than 95%					
6	Resistance to solvents	4.7.7 ⁽¹⁾	There shall be no evidence of damage on the case and marking.					
7	Thermal shock [I]	4.7.8.1	Allowable resistance change: $\pm (0.25\%+0.05\Omega)$					
8	Thermal shock [II]	4.7.8.2	Allowable resistance change: $\pm (0.5\%+0.05\Omega)$					
9	Resistance-temperature characteristics	4.7.9	$\pm 100\text{ppm}/^\circ\text{C}$					
10	Low-temperature storage	4.7.10	Allowable resistance change: $\pm (0.25\%+0.05\Omega)$					
11	Low-temperature operation	4.7.11	Allowable resistance change: $\pm (0.25\%+0.05\Omega)$					
12	Short-time overload	4.7.12	Allowable resistance change: $\pm (0.5\%+0.05\Omega)$					
13	Terminal strength	4.7.13	Allowable resistance change: $\pm (0.20\%+0.05\Omega)$					
14	Dielectric withstanding voltage	4.7.14	Allowable resistance change: $\pm (0.15\%+0.05\Omega)$					
			Style	RLS05	RLS07	RLS20	RLS32	RLS42
			Test voltage (V)	Atmo-spheric pressure	300	500	500	1000
Reduced pressure	200	250		250	350	350		

Table. 4 Performance (continued)

No.	Item	Test method paragraph of NASDA-QTS-39017	Performance
15	Insulation resistance	4.7.15	Not less than 10,000MΩ.
16	Resistance to soldering heat	4.7.16	Allowable resistance change: $\pm (0.10\%+0.05\Omega)$
17	Moisture resistance (temperature-humidity cycling)	4.7.17	Moisture resistance: Allowable resistance change $\pm (1.0\%+0.05\Omega)$
			Dielectric withstanding voltage: Allowable resistance change: $\pm (0.15\%+0.05\Omega)$
			Insulation resistance: Not less than 100MΩ.
18	Shock	4.7.18	Allowable resistance change. See the stipulation of vibration (high frequency ⁽²⁾)
19	Vibration (high frequency)	4.7.19.1	Allowable resistance change $\pm (0.20\%+0.05\Omega)$
20	Vibration (random)	4.7.19.2	Allowable resistance change $\pm (0.20\%+0.05\Omega)$
21	Loaded life	4.7.20	Allowable resistance change 2000 hours $\pm (1.0\%+0.05\Omega)$
			Allowable resistance change 4000 hours $\pm 2.0\%$
22	Stability	4.7.21	Allowable resistance change $\pm 2.0\%$

Notes ⁽¹⁾ 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.

⁽²⁾ The allowable resistance change of this test shall be included in the specified allowable resistance change combined with the subsequent vibration (high frequency) test.

6. QUALITY ASSURANCE PROVISIONS

Quality assurance provisions shall be in accordance with paragraph 4 of NASDA-QTS-39017.

7. NOTES

7.1 Application Data Sheets

Notes for this resistors shall be referred to paragraph 6 of NASDA-QTS-39017 and the application data sheet.

7.2 Note

Due to the establishment of NASDA-QTS-39017C/201B, resistors procured and stored in accordance with the specification of superseded revision (NASDA-QTS-39017C/201A) will not lose the qualification in accordance with the said specification.