REVISIONS

SYMBOL	DESCRIPTION	DATE	APPROVAL
—	Initial Release	8/2/95	[illegible]
A	Revised per RN079	10/10/95	[illegible]

SHEET REVISION STATUS

SH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
REV	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A					
SH	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
REV																				

ORIGINATOR: T. J. Perry/Unisys	**DATE** 7-17-95	**FSC: 5095**
APPROVED: S. E. Archer-Davies/Unisys	7-17-95	Resistor, Fixed, Foil, Precision, Power, Current Sensing, Hermetically Sealed
CODE 311 APPROVAL: P. J. Jones/GSFC	7-19-95	
CODE 311 SUPERVISORY APPROVAL: G. P. Kramer, Jr./GSFC	7-27-95	
ADDITIONAL APPROVAL: M. J. Sampson/GSFC	7-27-95	**S-311-P-795**

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GODDARD SPACE FLIGHT CENTER
GREENBELT, MARYLAND 20771

CAGE CODE: 25306

1. SCOPE

1.1 Scope. This specification covers the procurement requirements for a fixed, foil, precision, power, current sensing resistor in a hermetically sealed case. This 4-terminal resistor is intended for use in space flight hardware by the GSFC/XDS project.

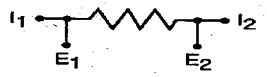
1.2 Goddard part number. Parts procured in complete compliance with the requirements of this specification shall be identified by a Goddard part number of the following form.

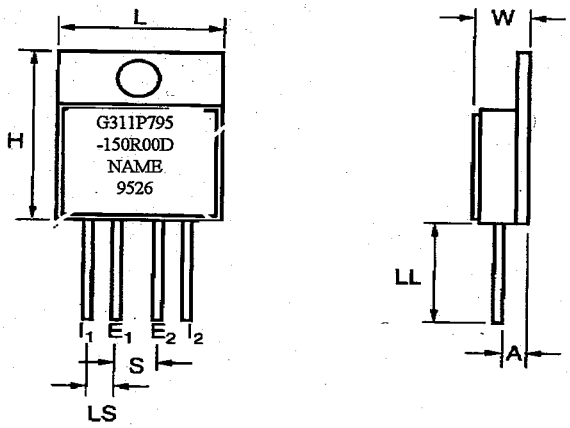
G311P795	-150R00	D
Goddard Designator (See 1.3)	Resistance Value (See 1.4)	Tolerance (See 1.5)

1.3 Goddard designator. The designator denotes resistors as specified in Figure 1, Table I and Table II.

Figure 1. - Resistor outline, dimensions, and schematic.

Dimension	Inches	mm
L	0.690 ±0.005	17.53 ±0.13
H	0.820 ±0.005	20.83 ±0.13
W	0.210 ±0.005	5.33 ±0.13
LL	0.500 Min	12.70 Min
LS	0.100 ±0.005	2.54 ±0.13
S	0.200 ±0.005	5.08 ±0.13
A	0.120 ±0.005	3.05 ±0.13





1.4 Resistance value. The nominal resistance value in ohms is specified by six characters in the dash number; five digits represent significant figures, and the letter R is used to signify the decimal point as in the following examples:

examples:
00R050 = 0.050 ohm
00R200 = 0.200 ohm
01R550 = 1.550 ohms
10R050 = 10.050 ohms
150R30 = 150.30 ohms
500R00 = 500.00 ohms

The resistance value may be any value within the resistance range listed in Table I. There are no standard resistance values for these resistors.

Table I. Specifications.

Power Rating @ +25°C (on heat sink) 1/	Power Rating @ +25°C (free air)	Maximum Working Voltage (volts)	Maximum Working Current 2/ (amperes)	Available Resistance Values 3/ (Ω)	Tightest Resistance Tolerance 4/ (%)	TCR (ref to +25°C) (ppm/°C)
10 watts	3 watts	600	3	10 to 500	± 0.01	± 5
				5 to < 10	± 0.02	± 6
				2 to <5	± 0.05	± 8
				1 to <2	± 0.10	± 10
				0.5 to <1	± 0.25	± 15
				0.25 to <0.5	± 0.50	± 20
				0.1 to <0.25	± 1.0	± 25
				0.05 to <0.1	± 2.0	± 30

1/ The TO-247 case can be screw mounted to a metal chassis for maximum heat transfer in accordance with the heat sink chassis dimensions and requirements in MIL-R-39009.

2/ Heat sinked or in free air.

3/ There are no standard resistance values.

4/ See Table II for a list of standard resistance tolerances.

1.5 Tolerance. The resistance tolerance is identified by a single letter in accordance with Table II.

Table II. Resistance tolerance.

Letter	Resistance Tolerance
T	± .01%
S	± .02%
A	± .05%
B	± .1%
C	± .25%
D	± .50%
F	± 1%
G	± 2%
J	± 5%

1.6 Performance characteristics. The performance of resistors procured to this specification shall be as specified in Table III. The measurement error allowed is 0.0005 ohms.

Table III. Performance characteristics.

Test	Requirement Paragraph	Limits
Thermal Shock	3.5	ΔR ± 0.05%
Conditioning	3.6	ΔR ± 0.03%
Seal	3.7	$<10^{-7}$ atmospheric cc/sec
Dielectric Withstanding Voltage	3.9	ΔR ± 0.005%
Insulation Resistance	3.10	$> 10^4$ MΩ
Low Temperature Operation	3.11	ΔR ± 0.01%
Momentary Overload	3.12	ΔR ± 0.03%
High Temperature	3.14	ΔR ± 0.01%
Low Temperature Storage	3.15	ΔR ± 0.005%
Moisture Resistance	3.16	ΔR ± 0.02%
Terminal Strength	3.17	ΔR ± 0.005%
Shock	3.18	ΔR ± 0.005%
Vibration	3.19	ΔR ± 0.005%
Life Test	3.20	ΔR ± 0.01%

2. APPLICABLE DOCUMENTS

2.1 Documents. The following documents, of the issue in effect on the date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein.

SPECIFICATIONS

MIL-I-45208	Inspection Systems Requirements
MIL-R-39009	Resistors, Fixed, Wire-Wound (Power Type, Chassis Mounted), Established Reliability, General Specification for

MIL-R-39032	Resistors, Packaging of

STANDARDS

MIL-STD-202	Test Methods for Electronic and Electrical Component Parts
MIL-STD-1285	Marking of Electrical and Electronic Parts

2.2 Order of precedence. In the event of any conflict between the text of this specification and the references cited herein, the text of this specification shall take precedence. However, nothing in this text shall supersede applicable laws and regulations unless a specific exemption has been obtained.

2.3 Copies of documents. Copies of federal and military documents can be obtained from the Standardization Document Order Desk, 700 Robbins Avenue, Building #4-Section D, Philadelphia, PA 19111-5094.

3. REQUIREMENTS

3.1 Qualification. Resistors furnished to this specification shall be product which has been granted qualification approval by NASA/GSFC. Qualification approval shall be based on the following criteria.

3.1.1 Design and source approval. Prior to qualification, the manufacturer's facility shall be subjected to survey at the option of GSFC, by the Office of Flight Assurance, GSFC. Compliance with MIL-I-45208 is required. In addition, the history and detailed engineering of the specific resistor design will be reviewed, as will the documented manufacturing and quality control procedures. Aspects of the manufacturing flow and associated documentation deemed proprietary by the manufacturer will not be reviewed. Design and source approval shall be repeated following any change in design, manufacture, materials or quality control procedures. Only those sources approved in the design and source approval phase shall be eligible for qualification or award of contract under this specification. Source approval and design approval do not constitute part qualification or an equivalent thereof.

3.2 Materials.

3.2.1 Materials. Materials shall be as specified herein. However, when a definite material is not specified, a material shall be used which will enable the resistors to meet the performance requirement of this specification. Acceptance or approval of any constituent material shall not be construed as a guaranty of the acceptance of finished product.

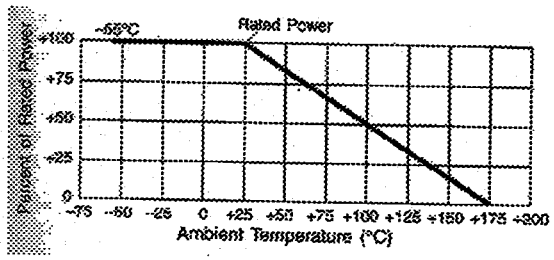
3.3 Design and construction. Resistors shall be of the design, construction and dimensions depicted in Figure 1.

3.3.2 Hermetic Seal. The resistor element shall be contained within an hermetically sealed enclosure to protect it from exposure to humidity.

3.3.3 Terminal leads. Terminal leads shall be made of solid OFHC copper leads covered with gold plating to meet the solderability requirement (see 3.13).

3.3.4 Power rating. Power rating is based on continuous full load operation, not exceeding the maximum working current, in free air or mounted on a heat sink, at a rated ambient temperature of +25°C (see Table I). For higher temperatures, derating shall be in accordance with Figure 2.

Figure 2. Derating.



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

$$E = \sqrt{PR}$$

Where:

E = rated dc or rms continuous working voltage
P = power rating (see 3.3.4)
R = nominal resistance

In no case shall the rated dc or rms continuous working voltage exceed the value specified in Table I.

3.4 DC resistance. When resistors are tested as specified in 4.6.2, the dc resistance shall be within the specified tolerance of the nominal resistance.

3.5 Thermal shock. When resistors are tested as specified in 4.6.3, there shall be no evidence of mechanical damage, and the change in resistance shall not exceed the performance requirement in Table III.

3.6 Conditioning. When resistors are tested as specified in 4.6.4, there shall be no evidence of mechanical damage, and the change in resistance shall not exceed the performance requirement in Table III.

3.7 Seal. When resistors are tested as specified in 4.6.5, the leak rate shall not exceed the performance requirement in Table III.

3.8 Resistance temperature characteristic. When resistors are tested as specified in 4.6.6, the resistance temperature characteristic shall meet the requirement in Table I.

3.9 Dielectric withstanding voltage. When resistors are tested as specified in 4.6.7, there shall be no evidence of flashover, arcing, insulation breakdown, or any type of mechanical damage. The change in resistance shall not exceed the performance requirement in Table III.

3.10 Insulation resistance. When resistors are tested as specified in 4.6.8, the insulation resistance shall meet the performance requirement in Table III.

3.11 Low temperature operation. When resistors are tested as specified in 4.6.9, there shall be no evidence of mechanical damage, and the change in resistance shall not exceed the performance requirement in Table III.

3.12 Momentary overload. When resistors are tested as specified in 4.6.10, there shall be no evidence of mechanical damage, and the change in resistance shall not exceed the performance requirement in Table III.

3.13 Solderability. When resistors are tested as specified in 4.6.11, the criteria for wire-lead terminal evaluation that is contained in the referenced test method shall be met.

3.14 High Temperature. When resistors are tested as specified in 4.6.12, there shall be no evidence of mechanical damage, and the change in resistance shall not exceed the performance requirement in Table III.

3.15 Low temperature storage. When resistors are tested as specified in 4.6.13, there shall be no evidence of mechanical damage, and the change in resistance shall not exceed the performance requirement in Table III.

3.16 Moisture resistance. When resistors are tested as specified in 4.6.14, there shall be no evidence of mechanical damage, and the change in resistance shall not exceed the performance requirement in Table III. In addition, the dielectric withstanding voltage shall be as specified in 3.9, and the insulation resistance shall be 100 MΩ, minimum.

3.17 Terminal strength. When resistors are tested as specified in 4.6.15, there shall be no evidence of mechanical damage, and the change in resistance shall not exceed the performance requirement in Table III.

3.18 Shock. When resistors are tested as specified in 4.6.16, there shall be no evidence of mechanical damage, and the change in resistance shall not exceed the performance requirement in Table III.

3.19 Vibration. When resistors are tested as specified in 4.6.17, there shall be no evidence of mechanical damage, and the change in resistance shall not exceed the performance requirement in Table III.

3.20 Life test. When resistors are tested as specified in 4.6.18, there shall be no evidence of mechanical damage, and the change in resistance shall not exceed the performance requirement in Table III.

3.21 Marking. Each resistor shall be marked with the Goddard part number, manufacturer's name, symbol or source code, and date code. Date and source code shall be in

accordance with MIL-STD-1285. The location and number of lines shall be at the discretion of the manufacturer. The following is an example of the complete marking:

G311P795	- Goddard designator
-150R00	- Style, characteristic, resistance value and tolerance
Name	- Manufacturer's name (or symbol or source code)
9526	- Date code

3.21.1 Date code. The date code shall be the date of the final assembly operation for the production lot, which for purposes of this specification, is the same as the inspection lot (4.5.2). The common manufacturing record shall include the same date code as that placed on parts covered by the record. When the physical size of the resistor precludes the marking of all of the above information, the Goddard designator may be abbreviated to P795. However, the complete part number must be marked on the shipping container

3.22 Workmanship. Resistors shall be processed in such a manner to be uniform in quality when inspected in accordance with 4.6.1. Resistors shall also be free of any defects affecting life, serviceability or performance.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. The manufacturer is responsible for the performance of all inspection requirements, as specified herein, using his own or any other suitable facility acceptable to Goddard Space Flight Center. Upon receipt of product, Goddard reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to verify conformance to prescribed requirements.

4.2 Classification of inspection. Inspection requirements specified herein are classified as follows:

a. First Article Inspection (see 4.4)
b. Quality Conformance Inspection (see 4.5).

4.3 Inspection conditions. Unless otherwise specified herein, all inspections shall be performed in accordance with the test conditions specified in the "GENERAL REQUIREMENTS" of MIL-STD-202.

4.4 First Article Inspection (see 4.2). Qualification shall be by First Article Inspection and shall be performed for each order placed using this specification. Testing shall be performed by the manufacturer, on sample units produced with equipment, processes and procedures normally used in production. At the option of the qualifying activity, data from an established reliability program subjecting same or similar parts to equivalent or more stringent testing may be submitted for part or all of the Group 3 through Group 5 (Table IV) testing requirements.

4.4.1 Sample. The minimum number of sample units comprising a sample of resistors submitted for qualification inspection shall be 27.

4.4.2 Test routine. Sample units shall be subjected to the qualification inspection specified in Table IV in the order shown. All sample units will be subjected to the inspections of Group 1. The samples shall then be subdivided as specified in Table IV and subjected to the inspections of Groups 2 through 6.

Table IV. First Article Inspection

Inspection	Requirement Paragraph	Method Paragraph	Number of Sample Units	Number of Defects Allowed
Group 1				
Group A	See Table V	See Table V	All samples	PDA=5%
Group 2				
Group B	See Table VI	See Table VI	6	0
Group 3				
High Temperature	3.14	4.6.12		
Low Temperature Storage	3.15	4.6.13		
Dielectric Withstanding Voltage	3.9	4.6.7	6	0
Insulation Resistance				
Moisture Resistance	3.10	4.6.8		
Terminal Strength	3.16	4.6.14		
	3.17	4.6.15		
Group 4				
Shock	3.18	4.6.16	5	0
Vibration	3.19	4.6.17		
Group 5				
Life Test	3.20	4.6.18	10	1

4.4.3 Failures. Failures in excess of those allowed in Table IV shall be cause for refusal to grant qualification.

4.4.4 Inspection report. First Article Inspection test samples and data shall be delivered with the part order.

4.4.5 Extension of qualification. Qualification of resistors to a given tolerance qualifies all higher tolerances. Qualification of resistors to a given TCR qualifies all higher TCR's.

4.5 Quality conformance inspection (see 4.2). Quality Conformance Inspection (QCI) shall be performed on all product furnished to this specification.

4.5.1 Inspection of product for delivery. Inspection of product for delivery shall consist of the Group A inspection per Table V and the Group B inspection in Table VI.

Table V. - Group A inspection.

Inspection	Requirement Paragraph	Method Paragraph	Sample Size
Subgroup 1			
DC Resistance	3.4	4.6.2	
Thermal Shock	3.5	4.6.3	100% inspection
Conditioning	3.6	4.6.4	
Seal	3.7	4.6.5	
Subgroup 2			
Visual and mechanical	3.2.1, 3.3, 3.3.1, 3.3.3, 3.21, 3.22	4.6.1	100% visual 3 mechanical

4.5.2 Inspection lot. An inspection lot shall consist of all resistor product of the same style and temperature characteristic, manufactured at essentially the same time under the same manufacturing process conditions and identified by a common date code (see 3.21.1).

4.5.3 Group A inspection. Group A inspection shall consist of the examinations and tests specified in Table V and shall be performed in the order shown.

4.5.3.1 Subgroup 1 tests. Subgroup 1 tests shall be performed on 100 percent of the product supplied under this specification. Resistors that are out of resistance tolerance, or which experience a change in resistance greater than that permitted for the tests of this subgroup, shall be removed from the inspection lot. Only lots having not more than 5 percent rejects or one resistor, whichever is greater, that are rejected due to exceeding the specified resistance change limit as a result of subgroup 1 tests, shall be supplied to this specification.

Table VI. - Group B inspection.

Inspection	Requirement Paragraph	Method Paragraph	Sample Size
Resistance Temperature Characteristic	3.8	4.6.6	
Dielectric Withstanding Voltage	3.9	4.6.7	
Insulation Resistance	3.10	4.6.8	6
Low Temperature Operation	3.11	4.6.9	
Momentary Overload	3.12	4.6.10	
Solderability	3.13	4.6.11	

4.5.3.2 Subgroup 2 tests. Subgroup 2 inspections shall be performed on resistors passing subgroup 1 inspections. The number of samples inspected shall be as specified in Table V. In the event of one or more failures, the lot shall be rejected.

4.5.3.2.1 Subgroup 2 lot rejections. Rejected lots shall be segregated from new lots and those lots passing the subgroup 2 inspection. The rejected lot shall be 100 percent reinspected for those quality characteristics or dimensions found defective in the sample, and any defects found shall be removed from the lot.

4.5.4 Group B inspection. Group B inspection shall consist of the examinations and tests specified in Table VI and shall be performed in the order shown.

4.5.4.1 Sample size. A random sample, of the size specified in Table VI, shall be selected. If one or more defects are found, the lot shall be rescreened and defects removed. Another sample of the same size shall be selected. If one or more defects are found in the second sample, the lot shall be rejected and shall not be supplied to this specification.

4.5.5 Inspection record. The manufacturer shall be required to maintain a record of all QCI inspection results (see 4.5.6).

4.6 Methods of inspection.

4.6.1 Visual and mechanical inspection (see 3.2.1, 3.3, 3.3.1, 3.3.3, 3.21 and 3.22.). Resistors shall be examined to verify that materials, design, construction, physical dimensions, marking and workmanship are in accordance with the applicable requirements.

4.6.2 DC resistance (see 3.4). Resistors shall be tested in accordance with Method 303 of MIL-STD-202. The following details and exceptions shall apply:

a. Measuring apparatus: The same measuring apparatus shall be used for any one test, but not necessarily for all tests. The measuring instrument shall be of a four-terminal Kelvin type.

b. Test voltage: The test voltage shall not exceed 1% of the rated working voltage (see 3.3.5).

c. Points of measurement: Resistance measurements shall be obtained using the voltage and current leads identified in Figure 1.

4.6.3 Thermal shock (see 3.5). Resistors shall be tested in accordance with Method 107 of MIL-STD-202 at Test Condition B except the minimum temperature extreme shall be -55°C.

4.6.4 Conditioning (see 3.6). Resistors shall be conditioned in accordance with Method 108 of MIL-STD-202. The following details and exceptions shall apply:

a. Mounting method: Resistors shall be supported by their terminal leads and arranged so that the temperature of any one resistor does not appreciably influence the temperature of any other resistor. There shall be no undue draft on any resistor.

b. Test temperature: +25°C, +5°C, -0°C

c. Operating conditions: Rated dc continuous working voltage or rated continuous working voltage from an ac supply at commercial line frequency and waveform, shall be applied intermittently, 1.5 hours on and 0.5 hours off, for 100 hours minimum. Each resistor shall dissipate a wattage equal to the power rating (free air) specified in Table 1.

4.6.5 Seal (see 3.7). Resistors shall be tested in accordance with Method 112 of MIL-STD-202. The following detail shall apply:

a. Fine leak test: Test Condition C, procedure IIIa or IIIb.

b. Gross leak test: Test Condition D

4.6.6 Resistance temperature characteristic (see 3.8). Resistors shall be tested in accordance with Method 304 of MIL-STD-202 except as modified herein.

a. Qualification testing: The first series of standard test temperatures shall be 25°C, 0°C, -15°C, and -55°C; the second series shall be 25°C, 50°C, 75°C, 105°C and 125°C.

b. QCI: The series of standard test temperatures shall be limited to +25°C, -55°C, +25°C, and +125°C.

4.6.7 Dielectric withstanding voltage (see 3.9). Resistors shall be tested in accordance with Method 301 of MIL-STD-202. The following details shall apply:

a. Test voltage: 300 volts @ atmospheric pressure

b. Points of application: The test voltage shall be applied between the heat sink at circuit ground and the lead wires (all electrically shorted together).

4.6.8 Insulation resistance (see 3.10). Resistors shall be tested in accordance with Method 302 of MIL-STD-202 at Test Condition A with the following applicable detail:

a. Points of application: Same as 4.6.7.b

4.6.9 Low temperature operation (see 3.11).

4.6.9.1 DC resistance. DC resistance shall be measured in accordance with 4.6.2.

4.6.9.2 Mounting. Resistors shall be mounted by their terminals with at least 1 inch of free air space around each resistor. The mounting fixture shall be constructed in such a fashion as to minimize the obstruction of air flow across and around resistors when placed in the cold chamber for test.

4.6.9.3 Procedure. Following the dc resistance measurement, the resistors, mounted as specified in 4.6.15.2, shall be placed in a cold chamber at room temperature. The temperature shall then be gradually decreased to -55°C, +0°, -5°C, within a period of not less than 1 and 1/2 hours. After 1 hour of stabilization at the specified temperature, the full rated continuous working voltage specified in 3.3.5 shall be applied for 45 minutes (resistors may be loaded individually or in parallel). Within 15-20 minutes after removal of the voltage, the temperature in the chamber shall gradually be increased to room temperature within a period of not more than 8 hours. The resistors shall then be removed from the chamber and maintained at a temperature of +25 ± 5°C for a period of approximately 24 hours.

4.6.9.4 Final examination. Resistors shall then be examined for evidence of mechanical damage, and the dc resistance shall be measured as specified in 4.6.2.

4.6.10 Momentary overload (see 3.12). Resistors shall be subjected to 5 times rated power (free air) with applied voltage not to exceed 750 volts maximum for 5 seconds.

4.6.11 Solderability (see 3.13). Resistors shall be tested in accordance with Method 208 of MIL-STD-202.

4.6.12 High temperature (see 3.14). Resistors shall be conditioned in an oven at a temperature of +175°C for 2 hours.

4.6.13 Low temperature storage (see 3.15).

4.6.13.1 Mounting. Resistors shall be mounted as specified in 4.6.9.2.

4.6.13.2 Procedure. DC resistance shall be measured as specified in 4.6.2. Within 1 hour after this measurement, the resistors shall be placed in a cold chamber at a temperature of -55°C ± 2°C for a period of 24 hours ± 4 hours. The resistors shall then be removed from the chamber and maintained at an ambient of 25°C ± 5°C for

a time period of 2 to 8 hours. The dc resistance shall then be remeasured, and the resistors shall be examined for evidence of mechanical damage.

4.6.14 Moisture resistance (see 3.16). Resistors shall be tested in accordance with Method 106 of MIL-STD-202. The following details and exceptions shall apply:

a. Polarization and loading voltage are not applicable.

b. Final measurements shall consist of dc resistance per 4.6.2, dielectric withstanding voltage per 4.6.7, and insulation resistance per 4.6.8.

c. The dc resistance measurement shall be used as the initial measurement for the dielectric withstanding voltage test.

4.6.15 Terminal strength (see 3.17). Resistors shall be tested in accordance with Method 211 of MIL-STD-202 at Test Conditions A and D except as follows: the applicable applied force for Test Condition A shall be 2.5 pounds.

4.6.16 Shock (see 3.18). Resistors shall be tested in accordance with Method 213 of MIL-STD-202 at Test Condition I. The following details shall apply:

a. Mounting and direction of applied shocks: Resistors shall be mounted by their normal mounting means on a vibration test jig which has been designed to preclude any resonances within the test range. Resistors shall be shocked in both directions in each of three mutually perpendicular planes (total of 18 times).

b. Measurement before shock: Resistance per 4.6.2.

c. Measurement during shock: Each resistor shall be monitored to determine electrical discontinuity using a method that will register any discontinuity having a duration of 0.1 millisecond or greater.

d. Measurement, examination, and test after shock: Resistance per 4.6.2, examination for evidence of mechanical damage, and DWV per 4.6.7.

4.6.17 Vibration (see 3.19). Resistors shall be tested in accordance with Method 204 of MIL-STD-202 at Test Condition D.

a. Mounting: Resistors shall be mounted as specified in 4.6.16.a. Resistors shall be vibrated so that twelve cycles are performed in each of three mutually perpendicular directions (total of 12 cycles).

b. Measurement before vibration: Resistance per 4.6.2.

c. Measurement during vibration: Same as 4.6.16.c.

d. Measurement, examination, and test after vibration: Same as 4.6.16.d.

4.6.18 Life test (see 3.20). Resistors may be mounted in any position in a chamber at a controlled test ambient temperature of +25°C ±2°C. The load applied shall be the maximum rated power (free air) (see 3.3.4) not to exceed maximum working voltage (see 3.3.5) for a continuous duration of 2000 hours. DC resistance shall be

measured and recorded prior to the beginning of the life test and at 100, 250, 500, 1000 and 2000 hours. The change in resistance at any interval shall not exceed the requirement in Table III.

5. PACKAGING

5.1 Packaging requirements. The requirements for packaging shall be in accordance with MIL-R-39032.

6. NOTES

6.1 Ordering data. Acquisition documents should specify the following:
a. Number, title, and date of this specification.
b. Goddard Part Number
c. Quantity

6.2 Qualification Provisions. Orders shall be considered valid only for product which has successfully met the quality assurance provisions herein and has been approved by GSFC. Information pertaining to qualification, of product may be obtained from the activity whose address is listed in 6.3 below.

6.3 NOTICE. When GSFC drawings, specifications, or other data are sent for any purpose other than in connection with a definitely related GSFC procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever. The fact that GSFC might have formulated, furnished or in any way supplied the said drawings, specifications, or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any person or corporation, or conveying any right or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.
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