REVISIONS			
SYMBOL	**DESCRIPTION**	**DATE**	**APPROVAL**
-	Original Release	9/1/95	J.R. Bollman
A.	Revised	11/22/95	

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															
SH	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
REV																				

ORIGINATOR: C. R. Cluff/Unisys	**DATE** 8/30/95	**FSC: 5905**
APPROVED: Sam Archer-Davies	8/30/95	Resistor, Network - Precision
CODE 311 APPROVAL: Michael J. Sampson	8/31/95	
CODE 311 SUPERVISORY APPROVAL: Ron Chinnapongse	8/31/95	
ADDITIONAL APPROVAL: Jim Lohr	8/31/95	**S-311-P-799/01**

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GODDARD SPACE FLIGHT CENTER
GREENBELT, MARYLAND 20771
CAGE CODE: 25306

1. SCOPE

1.1 Scope This specification slash sheet covers the detail requirements for a precision resistor network packaged in a 16-lead flatpack. This slash sheet, in conjunction with GSFC procurement specification S-311-P-799, details the electrical, physical, and performance requirements for this component.

1.2 Part Number. The GSFC part number for this device is: S-311-P-799/01

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.

MILITARY
MIL-R-83401 Resistor Networks, Fixed, Film, General Specification for

GSFC SPECIFICATION
S-311-P-799 Procurement Specification for Electro-film Resistor Networks

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 procuring agency.

3. REQUIREMENTS
This network shall meet the requirements of MIL-R-83401 and GSFC procurement specification S-311-P-799 to the extent specified in this detail slash sheet.

3.1 Package outline. This device shall conform to the package outline shown Figure 1 and shall meet the package requirements specified in GSFC S-311-799.

3.2 Schematic. The schematic for the network is shown in Figure 2.

3.3 Pin-out configuration. The pin-out configuration for the device is as shown in Table 1.

3.4 Performance requirements. The performance requirements, when tested in accordance with MIL-R-83401 and GSFC S-311-P-799, shall be as follows:

3.4.1 Operating temperature range. The operating temperature range is -55°C to 125°C ambient.

3.4.2 Individual power ratings. The power rating for individual resistors shall be as shown in Table 1 at 125°C and linearly derated to 0W at 175°C

3.4.3 Package power ratings. The power rating for the package shall be 800 mW at 70°C

3.4.4 Voltage rating. Each resistor element shall have a continuous working voltage rating as calculated by the Voltage Rating formula specified in para. 3.5.2 of S-311-P-799 and the PD value specified in Table 1 herein.

3.4.5 Resistance value. The resistance of each resistor for the network is as defined in Table 1.

3.4.6 Resistance tolerance. The resistance tolerance for this network shall be ±1.0%.

3.4.7 Temperature coefficient of resistance (TC). The TC shall not exceed 50 ppm/°C when referenced to the resistance at 25°C ambient.

3.4.8 Matching ratio and tracking. The matching ratio, when referenced to R1, shall be 0.005%, when measured at 25°C and the TCR tracking shall not exceed 1 ppm/°C maximum over the operating temperature range.

3.4.9 Dielectric withstanding voltage. The dielectric withstanding voltage shall be 100V with the leakage limit of 1.0 mA.

3.4.10 Insulation resistance. The insulation resistance shall not be less than 10,000 megohms.

3.4.11 Short time overload. When tested as specified in MIL-R-83401 para. 4.6.10, there shall be no evidence of arcing, burning, or charring. The change in resistance shall not exceed ±0.25%.

3.5 Burn-in. For burn-in (power conditioning), apply bias to resistor(s) to maintain the rated power dissipation of the devices at 125°C. Part manufacturer shall provide burn-in test conditions and schematic to the procuring activity, if requested.

4. QUALITY ASSURANCE PROVISIONS
The quality assurance provisions for this device are as detailed in GSFC procurement specification S-311-P-799.

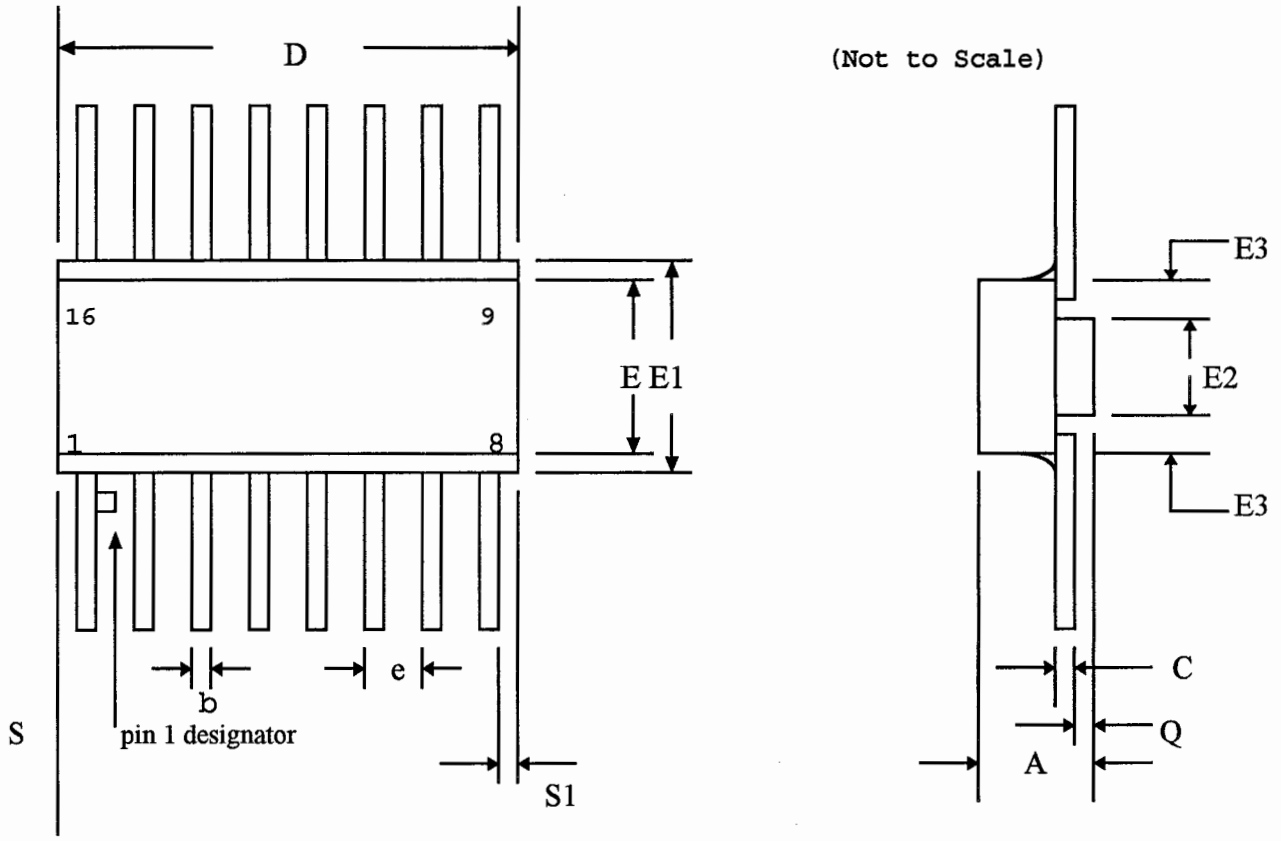
5. PACKAGING REQUIREMENTS
Packaging and packing shall be as detailed in GSFC procurement specification S-311-P-799.

6. NOTES

6.1 Intended use. Resistor networks described herein are intended for use in electronic circuits where high reliability and precision are required.

6.2 Data package. The data package is detailed in GSFC procurement specification S-311-P-799.

Figure 1 Package Outline



All dimensions are shown in inches.

	A	b	C	D	e	E	E1	E2	E3	Q	S	S1
Min	0.086	0.015	0.004	0.407	0.047	0.275	-------	0.184	0.030	0.026	--------	0.005
Max	0.106	0.019	0.007	0.423	0.053	0.285	0.315	0.196	-------	-------	0.045	--------

Figure 2 Device Schematic

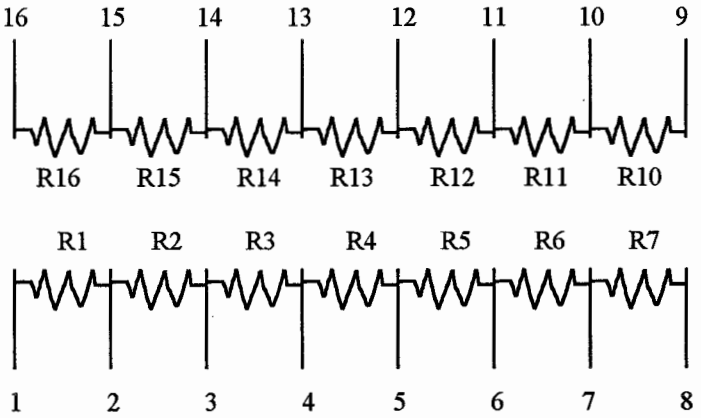


Table 1

Resistor Number	Resistance Value (Ohms)	Power Dissipation (mW)	Resistor Connections
R1	2.5 K	40	1-2
R2	2.5 K	40	2-3
R3	2.5 K	40	3-4
R4	2.5 K	40	4-5
R5	5 K	80	5-6
R6	2.5 K	40	6-7
R7	10 K	160	7-8
R10	10 K	160	9-10
R11	2.5 K	40	10-11
R12	5 K	80	11-12
R13	2.5 K	40	12-13
R14	2.5 K	40	13-14
R15	2.5 K	40	14-15
R16	2.5 K	40	15-16

REVISIONS			
SYMBOL	DESCRIPTION	DATE	APPROVAL
—	Original release	9/1/95	

SHEET REVISION STATUS

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REV																				

ORIGINATOR: G. R. Cluff /Unisys	**DATE** 8-30-95	FSC: 5905
APPROVED:	8/30/95	Resistor, Network - Precision
CODE 311 APPROVAL:	8/31/95	
CODE 311 SUPERVISORY APPROVAL:	8/31/95	
ADDITIONAL APPROVAL:	8-31-95	S-311-P-799/01

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

CAGE CODE: 25306

1. SCOPE

1.1 Scope This specification slash sheet covers the detail requirements for a precision resistor network packaged in a 22-lead flatpack. This slash sheet, in conjunction with GSFC procurement specification S-311-P-799, details the electrical, physical, and performance requirements for this component.

1.2 Part number. The GSFC part number for this device is: S-311-P-799/01

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.

MILITARY
MIL-R-83401 Resistor Networks, Fixed, Film, General Specification for

GSFC SPECIFICATION
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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 procuring activity.

3. REQUIREMENTS
This network shall meet the requirements of MIL-R-83401 and GSFC procurement specification S-311-P-799 to the extent specified in this detail slash sheet.

3.1 Package outline. The device shall conform to the package outline shown in Figure 1 and shall meet the package requirements specified in GSFC S-311-P-799.

3.2 Schematic. The schematic for the network is shown in Figure 2.

3.3 Pin-out configuration. The pin-out configuration for the device is as shown in Table 1.

3.4 Performance requirements. The performance requirements, when tested in accordance with MIL-R-83401 and GSFC S-311-P-799, shall be as follows:

3.4.1 Operating temperature range. The operating temperature range is -55°C to 125°C ambient.

3.4.2 Individual power ratings. The power rating for individual resistors shall be as shown in Table I at 125°C and linearly derated to 0W at 175°C.

3.4.3 Package power ratings. The power rating for the package shall be 800 mW at 70°C.

3.4.4 Voltage rating. Each resistor element shall have a continuous working voltage rating as calculated by the Voltage Rating formula specified in para. 3.5.2 of S-311-P-799 and the PD value specified in Table I herein.

3.4.5 Resistance value. The resistance of each resistor for the network is as defined in Table I.

3.4.6 Resistance tolerance. The resistance tolerance for this network shall be ±1.0%.

3.4.7 Temperature coefficient of resistance (TC). The TC shall not exceed 50ppm/°C when referenced to the resistance at 25°C ambient.

3.4.8 Matching ratio and tracking. The matching ratio, when referenced to R1, shall be 0.005%, when measured at 25°C and the TCR tracking shall not exceed 1 ppm/°C maximum over the operating temperature range

3.4.9 Dielectric withstanding voltage. The dielectric withstanding voltage shall be 100V with the leakage limit of 1.0 mA.

3.4.10 Insulation resistance. The insulation resistance shall not be less than 10,000 megohms.

3.4.11 Short time overload. When tested as specified in MIL-R-83401 para. 4.6.10, there shall be no evidence of arcing, burning, or charring. The change in resistance shall not exceed ±0.25%.

3.5 Burn-in. For burn-in (power conditioning), apply bias to resistor(s) to maintain the rated power dissipation of the devices at 125°C. Part manufacturer shall provide burn-in test conditions and schematic to the procuring activity, if requested.

4. QUALITY ASSURANCE PROVISIONS
The quality assurance provisions for this device are as detailed in GSFC procurement specification S-311-P-799.

5. PACKAGING REQUIREMENTS
Packaging and packing shall be as detailed in GSFC procurement specification S-311-P-799.

6. NOTES

6.1 Intended use. Resistor networks described herein are intended for use in electronic circuits where high reliability and precision are required.

6.2 Data package. The data package is detailed in GSFC procurement specification S-311-P-799.

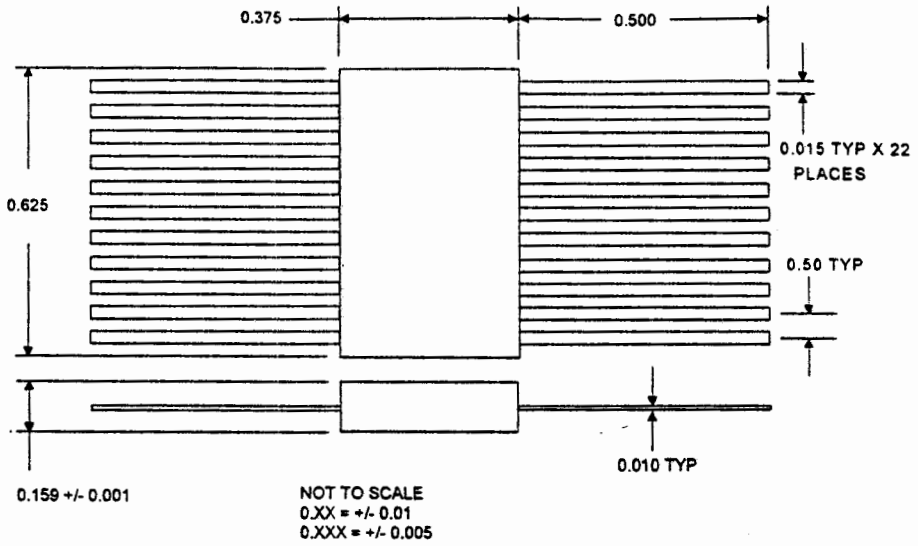

Figure 1. Package outline.

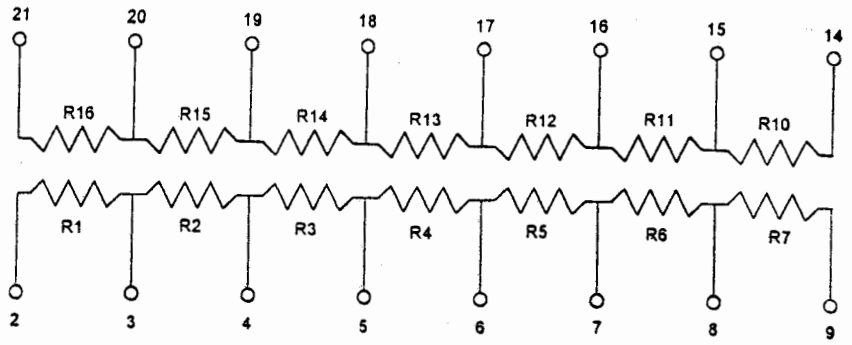

Figure 2. Device schematic.

Table I. Resistor values and pin-out assignment.

Resistor Number	Resistance Value (Ohms)	Power Dissipation (mW)	Resistor Connections
R1	2.5K	40	2-3
R2	2.5K	40	3-4
R3	2.5K	40	4-5
R4	2.5K	40	5-6
R5	5K	80	6-7
R6	2.5K	40	7-8
R7	10K	160	8-9
R10	10K	160	14-15
R11	2.5K	40	15-16
R12	5K	80	16-17
R13	2.5K	40	17-18
R14	2.5K	40	18-19
R15	2.5K	40	19-20
R16	2.5K	40	20-21

Pin numbers not referenced are not connected