

INCH-POUND

MIL-DTL-3933/25B
7 November 2002
SUPERSEDING
MIL-A-3933/25A
24 April 1985

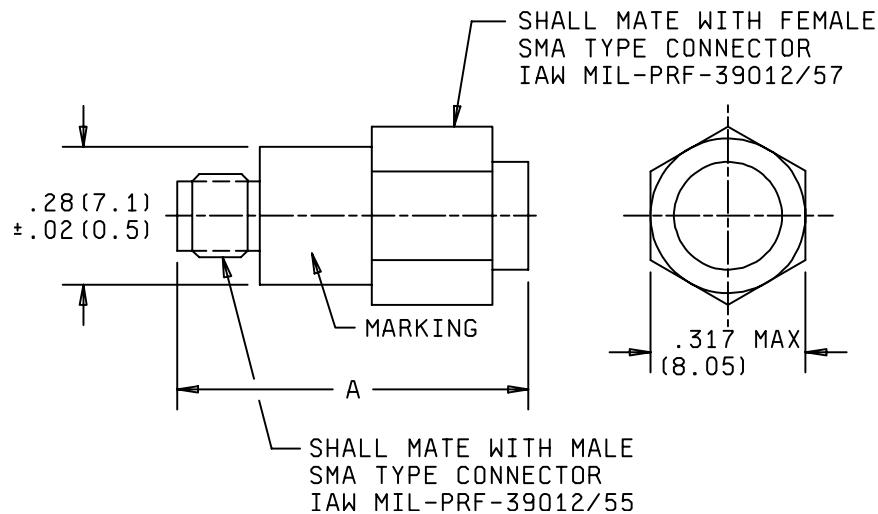
DETAIL SPECIFICATION SHEET

ATTENUATORS, FIXED, MINIATURE, COAXIAL LINE (SMA CONNECTORS),

FREQUENCY RANGE: DC TO 18 GHz, LOW POWER

This specification is approved for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the product described herein shall consist of this specification and the latest issue of MIL-DTL-3933.



NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Metric equivalents are in parentheses.

FIGURE 1. Dimensions and configuration.

ENGINEERING DATA:

Attenuators for use in equipment in which precision and stability are secondary considerations

Operating frequency range: DC to 18 GHz (see table I).

Test frequency ranges for SWR and attenuation measurements, measured or recorded, when using an Automatic Network Analyzer (ANA) or equivalent test equipment:

100 MHz (or lower) to 2.0 GHz for dash numbers 01 through 26

100 MHz (or lower) to 12.4 GHz for dash numbers 27 through 57

100 MHz (or lower) to 18 GHz for dash numbers 58 through 95.

Basic test frequencies for sensitive measurements like connector repeatability, temperature sensitivity, power sensitivity and any other measurements where a 'delta' spec is imposed:

1.0 GHz for dash numbers 01 through 26

6.0 GHz for dash numbers 27 through 57

8.0 GHz for dash numbers 58 through 95.

Operating temperature range: -55°C to +125°C. Power input is derated linearly to 0.5 watt at +125°C.

Maximum weight: 0.45 ounce.

REQUIREMENTS:

Dimensions and configuration: See figure 1 and table I.

Nominal impedance: 50 ohms.

Attenuation: See table I. Stability and sensitivity:

Maximum change in attenuation after:	up to 10 dB, inclusive (dB)	over 10 dB (dB/dB)
temperature change or thermal shock	0.5	0.05
vibration or shock	0.5	0.05
moisture resistance or salt spray	0.5	0.05
peak power	0.5	0.05

Frequency sensitivity, maximum: 0.4 dB/dB/GHz.

Temperature sensitivity of attenuation, maximum: 0.0006 dB/dB/°C.

Input power: See table I.

Power sensitivity for full input power, maximum: 0.005 dB/dB/Watt.

VSWR: See table I.

Connector repeatability, maximum variation in attenuation: 0.04 dB.

Part or Identifying Number (PIN): M3933/25- (and dash number from table I).

TABLE I. Electrical characteristics.

Dash number	Attenuation dB						Maximum power input		VSWR maximum 3/					Dimension A (inches) maximum	
	Nominal	Deviation (\pm)					AV (W) 1/ (continuously) at 25°C	Peak (W) 2/	DC to 2.0 GHz	2.0 to 4.0 GHz	4.0 to 8.0 GHz	8.0 to 12.4 GHz	12.4 to 18.0 GHz		
		DC to 2.0 GHz	DC to 4.0 GHz	DC to 8.0 GHz	DC to 12.4 GHz	DC to 18.0 GHz									
01 N S	1	0.3	---	---	---	---	2	500	1.15:1	---	---	---	---	0.87 (22.10)	
02 N S	2	0.3	---	---	---	---	2	500	1.15:1	---	---	---	---	0.87 (22.10)	
03 N S	3	0.3	---	---	---	---	2	500	1.15:1	---	---	---	---	0.87 (22.10)	
04 N S	4	0.3	---	---	---	---	2	500	1.15:1	---	---	---	---	0.87 (22.10)	
05 N S	5	0.3	---	---	---	---	2	500	1.15:1	---	---	---	---	0.87 (22.10)	
06 N S	6	0.3	---	---	---	---	2	500	1.15:1	---	---	---	---	0.87 (22.10)	
07 N S	7	0.3	---	---	---	---	2	500	1.15:1	---	---	---	---	0.87 (22.10)	
08 N S	8	0.3	---	---	---	---	2	500	1.15:1	---	---	---	---	0.87 (22.10)	
09 N S	9	0.3	---	---	---	---	2	500	1.15:1	---	---	---	---	0.87 (22.10)	
10 N S	10	0.3	---	---	---	---	2	500	1.15:1	---	---	---	---	0.87 (22.10)	
11 N S	11	0.3	---	---	---	---	2	500	1.15:1	---	---	---	---	0.87 (22.10)	
12 N S	12	0.3	---	---	---	---	2	500	1.15:1	---	---	---	---	0.87 (22.10)	
13 N S	13	0.3	---	---	---	---	2	500	1.15:1	---	---	---	---	1.03 (26.16)	
14 N S	14	0.3	---	---	---	---	2	500	1.15:1	---	---	---	---	1.03 (26.16)	
15 N S	15	0.3	---	---	---	---	2	500	1.15:1	---	---	---	---	1.03 (26.16)	
16 N S	16	0.3	---	---	---	---	2	500	1.15:1	---	---	---	---	1.03 (26.16)	
17 N S	17	0.3	---	---	---	---	2	500	1.15:1	---	---	---	---	1.03 (26.16)	
18 N S	18	0.3	---	---	---	---	2	500	1.15:1	---	---	---	---	1.03 (26.16)	

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See footnotes at end of table.

TABLE I. Electrical characteristics - Continued.

Dash number	Nominal	Attenuation dB					Maximum power input		VSWR maximum 3/					Dimension A (inches) maximum	
		Deviation (\pm)					AV (W) 1/ (continuously) at 25°C	Peak (W) 2/	DC to 2.0 GHz	2.0 to 4.0 GHz	4.0 to 8.0 GHz	8.0 to 12.4 GHz	12.4 to 18.0 GHz		
		DC to 2.0 GHz	DC to 4.0 GHz	DC to 8.0 GHz	DC to 12.4 GHz	DC to 18.0 GHz									
19 N S	19	0.3	---	---	---	---	2	500	1.15:1	---	---	---	---	1.03 (26.16)	
20 N S	20	0.3	---	---	---	---	2	500	1.15:1	---	---	---	---	1.03 (26.16)	
21 N S	21	0.5	---	---	---	---	2	500	1.15:1	---	---	---	---	1.03 (26.16)	
22 N S	22	0.5	---	---	---	---	2	500	1.15:1	---	---	---	---	1.03 (26.16)	
23 N S	23	0.5	---	---	---	---	2	500	1.15:1	---	---	---	---	1.03 (26.16)	
24 N S	24	0.5	---	---	---	---	2	500	1.15:1	---	---	---	---	1.03 (26.16)	
25 N S	25	0.5	---	---	---	---	2	500	1.15:1	---	---	---	---	1.03 (26.16)	
26 N S	30	0.5	---	---	---	---	2	500	1.15:1	---	---	---	---	1.03 (26.16)	
27 N S	1	---	---	---	0.3	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	0.87 (22.10)	
28 N S	2	---	---	---	0.3	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	0.87 (22.10)	
29 N S	3	---	---	---	0.3	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	0.87 (22.10)	
30 N S	4	---	---	---	0.3	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	0.87 (22.10)	
31 N S	5	---	---	---	0.3	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	0.87 (22.10)	
32 N S	6	---	---	---	0.3	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	0.87 (22.10)	
33 N S	7	---	---	---	0.4	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	0.87 (22.10)	
34 N S	8	---	---	---	0.4	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	0.87 (22.10)	
35 N S	9	---	---	---	0.4	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	0.87 (22.10)	
36 N S	10	---	---	---	0.4	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	0.87 (22.10)	

See footnotes at end of table.

TABLE I. Electrical characteristics - Continued.

Dash number	Nominal	Attenuation dB					Maximum power input		VSWR maximum 3/					Dimension A (inches) maximum	
		Deviation (±)					AV (W) 1/ (continuously) at 25°C	Peak (W) 2/	DC to 2.0 GHz	2.0 to 4.0 GHz	4.0 to 8.0 GHz	8.0 to 12.4 GHz	12.4 to 18.0 GHz		
		DC to 2.0 GHz	DC to 4.0 GHz	DC to 8.0 GHz	DC to 12.4 GHz	DC to 18.0 GHz									
37 N S	11	---	---	---	0.4	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	0.87 (22.10)	
38 N S	12	---	---	---	0.4	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	0.87 (22.10)	
39 N S	13	---	---	---	0.4	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	0.94 (23.88)	
40 N S	14	---	---	---	0.4	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	0.94 (23.88)	
41 N S	15	---	---	---	0.4	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	0.94 (23.88)	
42 N S	16	---	---	---	0.4	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	0.94 (23.88)	
43 N S	17	---	---	---	0.4	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	0.94 (23.88)	
44 N S	18	---	---	---	0.4	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	0.94 (23.88)	
45 N S	19	---	---	---	0.4	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	0.94 (23.88)	
46 N S	20	---	---	---	0.7	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	1.04 (26.42)	
47 N S	21	---	---	---	0.7	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	1.04 (26.42)	
48 N S	22	---	---	---	0.7	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	1.04 (26.42)	
49 N S	23	---	---	---	0.7	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	1.04 (26.42)	
50 N S	24	---	---	---	0.7	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	1.04 (26.42)	
51 N S	25	---	---	---	0.7	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	1.04 (26.42)	
52 N S	30	---	---	---	1.0	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	1.04 (26.42)	
53 N S	35	---	---	---	1.0	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	1.35 (34.29)	
54 N S	40	---	---	---	1.0	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	1.35 (34.29)	

See footnotes at end of table.

TABLE I. Electrical characteristics - Continued.

Dash number	Nominal	Attenuation dB					Maximum power input		VSWR maximum 3/					Dimension A (inches) maximum	
		Deviation (±)					AV (W) 1/ (continuously) at 25°C	Peak (W) 2/	DC to 2.0 GHz	2.0 to 4.0 GHz	4.0 to 8.0 GHz	8.0 to 12.4 GHz	12.4 to 18.0 GHz		
		DC to 2.0 GHz	DC to 4.0 GHz	DC to 8.0 GHz	DC to 12.4 GHz	DC to 18.0 GHz									
55 N S	45	---	---	---	1.5	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	1.35 (34.29)	
56 N S	50	---	---	---	2.0	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	1.35 (34.29)	
57 N S	60	---	---	---	2.0	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	1.35 (34.29)	
58 N S	0	---	---	---	---	0.3	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.87 (22.10)	
59 N S	0.5	---	---	---	---	0.3	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.87 (22.10)	
60 N S	1.0	---	---	---	---	0.3	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.87 (22.10)	
61 N S	1.5	---	---	---	---	0.3	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.87 (22.10)	
62 N S	2.0	---	---	---	---	0.3	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.87 (22.10)	
63 N S	2.5	---	---	---	---	0.3	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.87 (22.10)	
64 N S	3.0	---	---	---	---	0.3	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.87 (22.10)	
65 N S	3.5	---	---	---	---	0.3	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.87 (22.10)	
66 N S	4.0	---	---	---	---	0.3	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.87 (22.10)	
67 N S	4.5	---	---	---	---	0.3	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.87 (22.10)	
68 N S	5.0	---	---	---	---	0.3	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.87 (22.10)	
69 N S	5.5	---	---	---	---	0.3	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.87 (22.10)	
70 N S	6.0	---	---	---	---	0.3	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.87 (22.10)	
71 N S	6.5	---	---	---	---	0.3	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.87 (22.10)	
72 N S	7.0	---	---	---	---	0.4	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.87 (22.10)	

See footnotes at end of table.

TABLE I. Electrical characteristics - Continued.

Dash number	Nominal	Attenuation dB					Maximum power input		VSWR maximum 3/					Dimension A (inches) maximum	
		Deviation (±)					AV (W) 1/ (continuously) at 25°C	Peak (W) 2/	DC to 2.0 GHz	2.0 to 4.0 GHz	4.0 to 8.0 GHz	8.0 to 12.4 GHz	12.4 to 18.0 GHz		
		DC to 2.0 GHz	DC to 4.0 GHz	DC to 8.0 GHz	DC to 12.4 GHz	DC to 18.0 GHz									
73 N S	7.5	---	---	---	---	0.4	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.87 (22.10)	
74 N S	8.0	---	---	---	---	0.4	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.87 (22.10)	
75 N S	8.5	---	---	---	---	0.4	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.87 (22.10)	
76 N S	9.0	---	---	---	---	0.5	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.87 (22.10)	
77 N S	9.5	---	---	---	---	0.5	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.87 (22.10)	
78 N S	10.0	---	---	---	---	0.5	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.87 (22.10)	
79 N S	11.0	---	---	---	---	0.5	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.87 (22.10)	
80 N S	12.0	---	---	---	---	0.5	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.87 (22.10)	
81 N S	13.0	---	---	---	---	0.5	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.94 (23.88)	
82 N S	14.0	---	---	---	---	0.5	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.94 (23.88)	
83 N S	15.0	---	---	---	---	0.6	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	1.04 (26.42)	
84 N S	16.0	---	---	---	---	0.6	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	1.04 (26.42)	
85 N S	17.0	---	---	---	---	0.6	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	1.04 (26.42)	
86 N S	18.0	---	---	---	---	0.6	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	1.04 (26.42)	
87 N S	19.0	---	---	---	---	0.6	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	1.04 (26.42)	
88 N S	20.0	---	---	---	---	0.6	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	1.04 (26.42)	
89 N S	25.0	---	---	---	---	1.0	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	1.04 (26.42)	
90 N S	30.0	---	---	---	---	1.0	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	1.04 (26.42)	

See footnotes at end of table.

TABLE I. Electrical characteristics - Continued.

Dash number	Nominal	Attenuation dB					Maximum power input		VSWR maximum 3/					Dimension A (inches) maximum	
		Deviation (±)					AV (W) 1/ (continuously) at 25°C	Peak (W) 2/	DC to 2.0 GHz	2.0 to 4.0 GHz	4.0 to 8.0 GHz	8.0 to 12.4 GHz	12.4 to 18.0 GHz		
		DC to 2.0 GHz	DC to 4.0 GHz	DC to 8.0 GHz	DC to 12.4 GHz	DC to 18.0 GHz									
91 N S	35.0	---	---	---	---	1.0	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	1.35 (34.29)	
92 N S	40.0	---	---	---	---	1.0	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	1.35 (34.29)	
93 N S	45.0	---	---	---	---	1.0	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	1.35 (34.29)	
94 N S	50.0	---	---	---	---	2.0	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	1.35 (34.29)	
95 N S	60.0	---	---	---	---	2.0	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	1.35 (34.29)	

1/ Power input is derated linearly from +25°C to 0.5 watts at +125°C.

2/ Peak power for a duty cycle of 5×10^{-4} ; maximum pulse duration of 5 microseconds.

3/ VSWR value is both ends.

Custodians:

Army - CR
Navy - EC
Air Force - 11
DLA - CC

Preparing activity.

DLA - CC

(Project 5985-1229-06)

Review activities:

Army - MI
Navy - AS, MC, SH
Air Force - 99