

INCH-POUND

MIL-DTL-3933/25B
W/AMENDMENT 1
11 July 2007
SUPERSEDING
MIL-DTL-3933/25B
7 November 2002

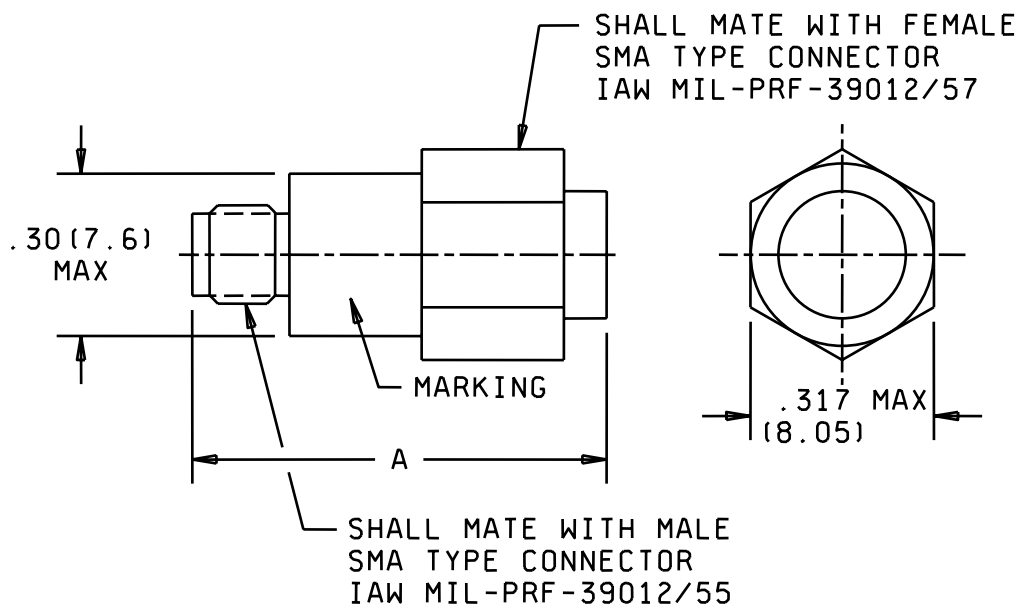
DETAIL SPECIFICATION SHEET

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 (in millimeters) are given for general information only.
3. Metric equivalents (in millimeters) are in parentheses.

FIGURE 1. Dimensions and configuration.

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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 (±)					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)

See footnotes at end of table.

TABLE I. Electrical characteristics - Continued.

Dash number	Attenuation dB						Maximum power input		VSWR maximum <u>3/</u>					Dimension A (inches) maximum
	Nominal	Deviation (\pm)					AV (W) <u>1/</u> (continuously) at 25°C	Peak (W) <u>2/</u>	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 <u>3/</u>					Dimension A (inches) maximum
		Deviation (\pm)					AV (W) <u>1/</u> (continuously) at 25°C	Peak (W) <u>2/</u>	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	Attenuation dB						Maximum power input		VSWR maximum <u>3/</u>					Dimension A (inches) maximum
	Nominal	Deviation (\pm)					AV (W) <u>1/</u> (continuously) at 25°C	Peak (W) <u>2/</u>	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	Attenuation dB						Maximum power input		VSWR maximum <u>3/</u>					Dimension A (inches) maximum
	Nominal	Deviation (\pm)					AV (W) <u>1/</u> (continuously) at 25°C	Peak (W) <u>2/</u>	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.

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TABLE I. Electrical characteristics - Continued.

Dash number	Attenuation dB						Maximum power input		VSWR maximum <u>3/</u>					Dimension A (inches) maximum
	Nominal	Deviation (\pm)					AV (W) <u>1/</u> (continuously) at 25°C	Peak (W) <u>2/</u>	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.

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Referenced documents: In addition to MIL-DTL-3933, this document references MIL-PRF-39012/55 and MIL-PRF-39012/57.

Changes from previous issue. The margins of this specification are marked with vertical lines to indicate where changes from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous issue.

Custodians:

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

Preparing activity.
DLA - CC

(Project 5985-2007-014)

Review activities:

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

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <http://assist.daps.dla.mil>.