

Programmable Attenuator PAH-9G/95-TTL

MTS-No.: 30580

Page 1 from 3

Description

The PAH-9G/95-TTL is a general purpose, single channel digital programmable attenuator which provides 0 to 95 dB attenuation in 0.5 dB steps.

The coverage from 10 MHz to 9 GHz supports a wide range of applications including digital broadcast, TETRA, GSM, Bluetooth, UWB, Wi-Fi 7 and all LTE+ as well as 5G frequency bands.

Its unique design maintains linear attenuation change per dB, even at the highest attenuation and frequency settings.



Technical data:

1 RF-specifications:

1.1 Impedance	50 Ω		
1.2 Input power (see plot)			
- Operating: Pulsed ¹	31 dBm max. (≥ 20 MHz ≤ 85 °C Ta)		
- Operating: CW ²	28 dBm max. (≥ 140 MHz ≤ 25 °C Ta)		
1.3 Voltage rating	50 WVDC		
1.4 Frequency range	10 - 9000 MHz (1 MHz on request)		
1.5 Attenuation	0 - 95 dB in 0.5 dB steps (glitch-safe state transitions)		
	min.	typ.	max.
1.6 VSWR in / out			
@ 10 - 8000 MHz			
@ 0 - 5.0 dB		1.6	2.1
@ 5.5 - 95.0 dB		1.3	1.8
@ 8000 - 9000 MHz		1.6	2.3
1.7 Insertion loss (IL)			
@ 10 MHz		3.4 dB	3.7 dB
@ 4000 MHz		5.5 dB	6.1 dB
@ 9000 MHz		7.6 dB	8.5 dB
1.8 IL derating / 20 MHz		0.01 dB	
1.9 Relative phase		25°	
1.10 Input IP3	48 dBm	55 dBm	
1.11 Attenuation transition time (see plot) ³		0.3 μ s	
1.12 Attenuation accuracy	(negative means more attenuation)		
@ 2000 - 6000 MHz			
@ 0.5 - 30.0 dB		± 0.4 dB	+0.5/-1.0 dB
@ 30.5 - 60.0 dB		-0.5/-1.0 dB	+0.5/-1.5 dB
@ 60.5 - 85.0 dB		-0.5/-1.5 dB	+0.5/-2.0 dB
@ 85.5 - 95.0 dB		-0.5/-1.5 dB	+0.5/-3.0 dB
@ 10 - 9000 MHz			
@ 0.5 - 30.0 dB		0.0/-1.0 dB	+0.5/-1.5 dB
@ 30.5 - 60.0 dB		-0.5/-1.5 dB	+0.5/-2.5 dB
@ 60.5 - 85.0 dB		-0.5/-2.0 dB	+0.5/-3.0 dB
@ 85.5 - 95.0 dB		-0.5/-3.5 dB	+0.5/-6.0 dB

2 Connections:

2.1 RF connectors	SMA female
2.2 Control connector	12pole male, type SMC Erni

3 General specifications:

3.1 Internal voltage (TTL)	5 VDC ± 5 %
3.2 Power consumption	5 mW max.
3.3 Control	8 bit parallel (TTL)
3.4 Operating temperature	-40 °C - +85 °C
3.5 Storage temperature	-55 °C - +150 °C
3.6 Reference temperature of specifications (typ.)	+25 °C
3.7 Dimensions (without connections)	56.4 mm x 48.7 mm x 11.0 mm (LxWxH)
3.8 Case style	Milled aluminium enclosure
3.9 Colour	SurTec650 (Chrome alloy)
3.10 Weight	70 grams

4 Delivered parts:

PAH-9G/95-TTL
Datasheet
Drawing and connector pin assignment

5 Comments:

Warranty	12 months
RoHS-compliant	Yes

6 Recommended accessories:

RF-cables
Processor card

Notes: 1. 100 % duty cycle, all bands, 50 Ω .

2. The maximum average power of any complex waveform should not exceed the operating maximum RF input power, CW.

3. Attenuation transition time is the time it takes an attenuator to achieve a new attenuation state.

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Technical subject to change

Programmable Attenuator PAH-9G/95-TTL

MTS-No.: 30580

Page 2 from 3

Typical measurements:

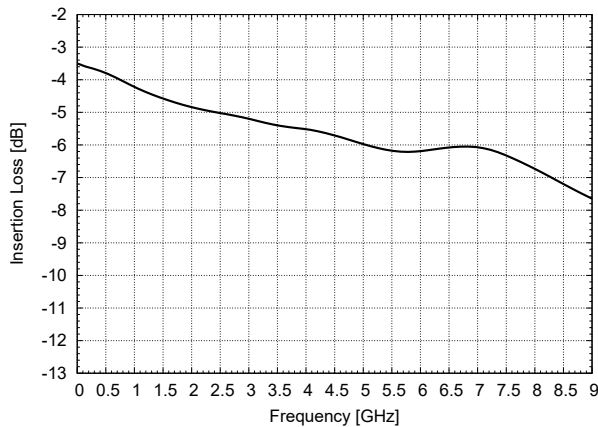


Fig. 1: Input port to output port insertion loss

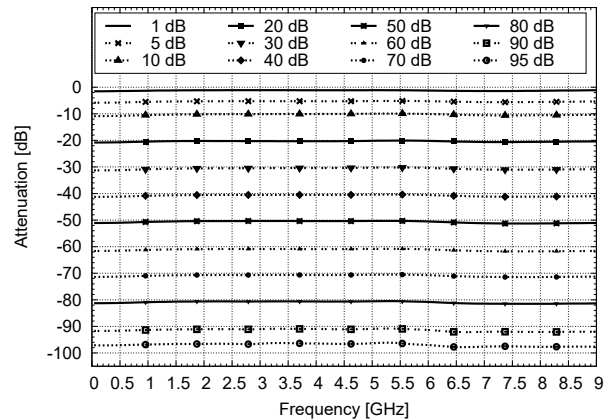


Fig. 2: Attenuation relative to insertion loss

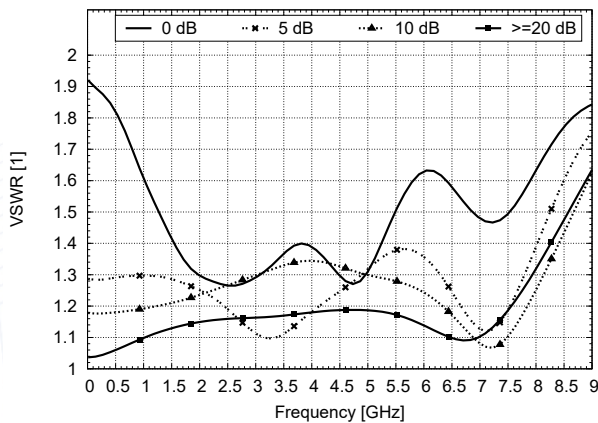


Fig. 3: VSWR for input and output ports

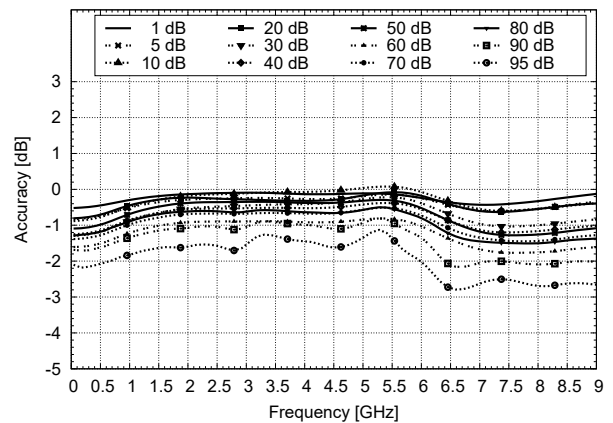


Fig. 4: Attenuation accuracy

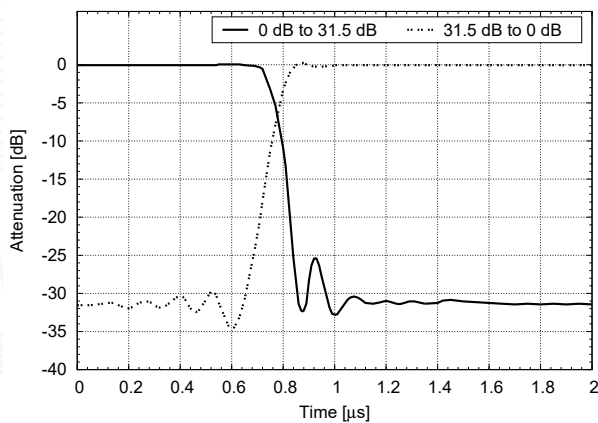


Fig. 5: Attenuation transition time

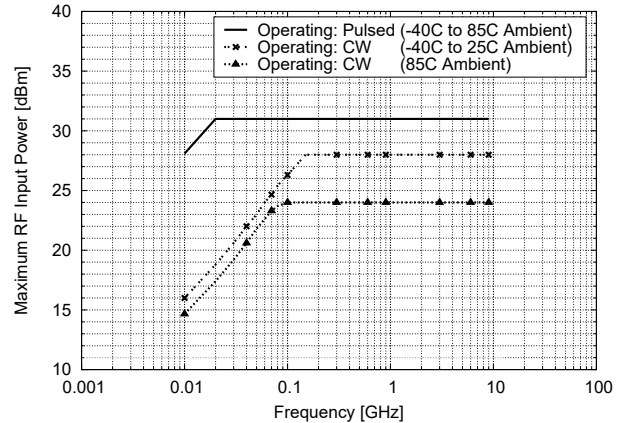


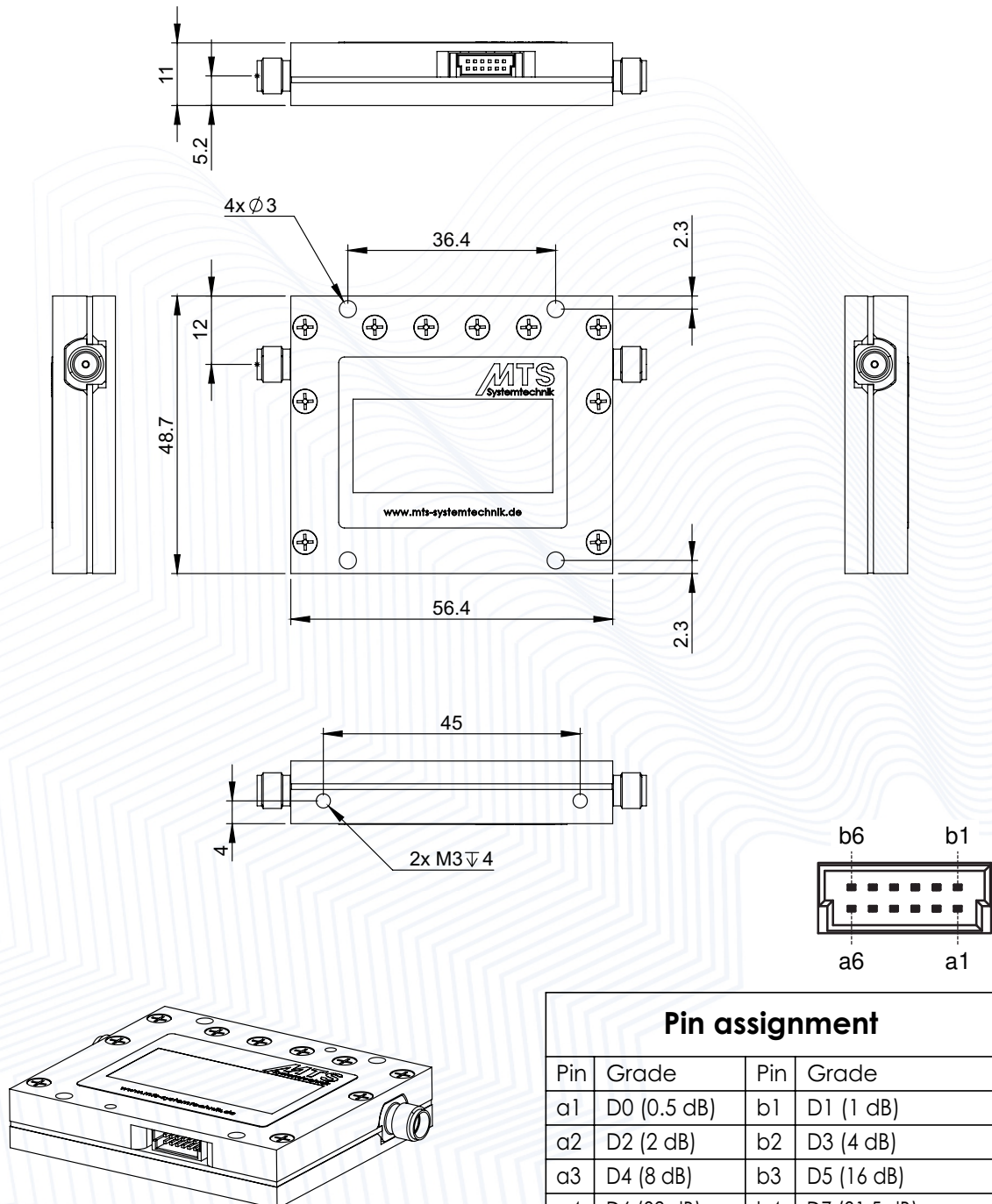
Fig. 6: Power derating curve (ATT-IC mfr. values)

Programmable Attenuator PAH-9G/95-TTL

MTS-No.: 30580

Page 3 from 3

Views:



Pin assignment			
Pin	Grade	Pin	Grade
a1	D0 (0.5 dB)	b1	D1 (1 dB)
a2	D2 (2 dB)	b2	D3 (4 dB)
a3	D4 (8 dB)	b3	D5 (16 dB)
a4	D6 (32 dB)	b4	D7 (31.5 dB)
a5	+5V	b5	+5V
a6	GND	b6	GND