Microwave Precision

Fixed Attenuator

YAT-9A+

50Ω 1.1W 9 dB DC to 18 GHz

Product Features

- Miniature package MCLP™ 2 x 2 mm
- Wide bandwidth, DC-18 GHz
- Excellent attenuation accuracy & flatness

Generic photo used for illustration purposes only

CASE STYLE: MC1630

+RoHS Compliant

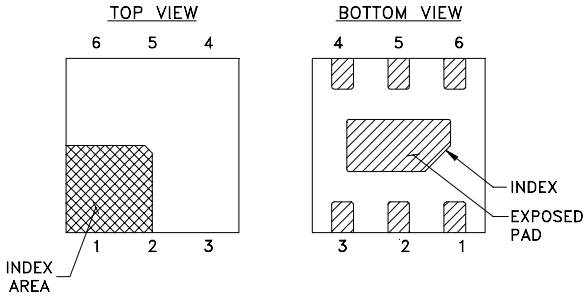
The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

Typical Applications

- Cellular
- PCS
- Communications
- Radar
- Defense

General Description

YAT-9A+ is a 9-dB absorptive attenuator fabricated using highly repetitive MMIC process including thin film resistors on GaAs substrate. YAT-9A+ attenuator contains through-wafer metallization vias to realize low thermal resistance and wideband operation. Packaged in tiny 2 mm x 2 mm MCLP™ package fits into tiny spaces.



Pad Description

Function	Pad Number	Description
RF IN	2	RF input pad
RF-OUT	5	RF output pad
GND	1,3,4,6 Bottom Exposed pad	Connected to ground externally

Notes

A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/MCLStore/terms.jsp

Electrical Specifications[1] at 25°C, 50Ω (CPW)

Parameter	Condition (GHz)	Min.	Typ.	Max.	Unit
Frequency Range		DC	—	18	GHz
Attenuation	0.01	—	9	—	dB
	DC - 5	8.5	8.92	9.3	
	5 - 15	8.5	8.90	9.5	
	15 - 18	8.6	8.93	9.5	
VSWR	DC - 5	—	1.08	1.32	:1
	5 - 15	—	1.09	1.90	
	15 - 18	—	1.21	1.96	
Input Power[2]	DC - 18	—	—	1.1	W

1. Tested on Mini-Circuits test board TB-YAT-9A+ using coplanar wave guide (CPW) input and output traces (see suggested PCB layout on page 4 of this data sheet)
2. RF Power at 25°C case temperature: 1.1 Watt. Derate linearly to 0.8 W at 85°C.

Absolute Maximum Ratings

Operating Case Temperature[3]	-40°C to 85°C
Storage Temperature	-65°C to 150°C
RF Input Power[2]	1.1W

3. Case is defined as ground lead.

Permanent damage may occur if any of these limits are exceeded.

Characterization Test Circuit

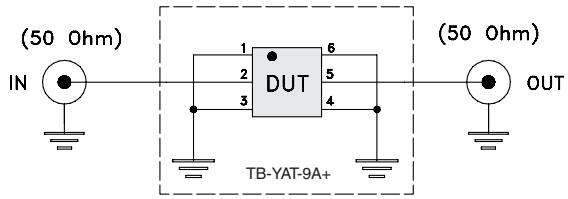
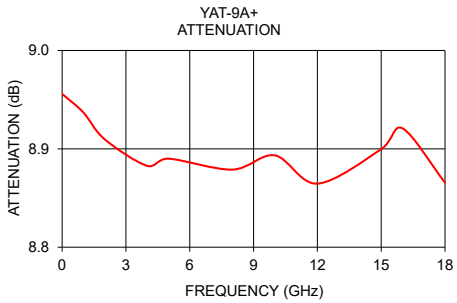
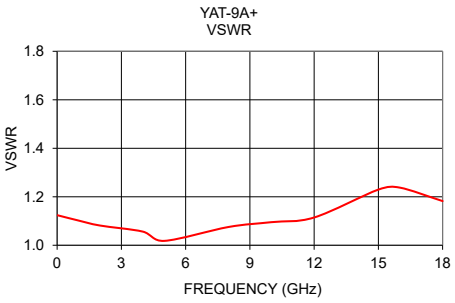


Fig 1. Block diagram of Test Circuit used for characterization, Test board TB-YAT-9A+
Conditions: Attenuation, VSWR: Pin=-10 dBm

Typical Performance Data at 25°C

Frequency (GHz)	Attenuation (dB)	VSWR (:1)
0.01	8.96	1.12
1.0	8.94	1.10
2.0	8.91	1.08
4.0	8.88	1.06
5.0	8.89	1.02
8.0	8.88	1.08
10.0	8.89	1.10
12.0	8.86	1.11
15.0	8.90	1.23
16.0	8.92	1.24
18.0	8.87	1.18





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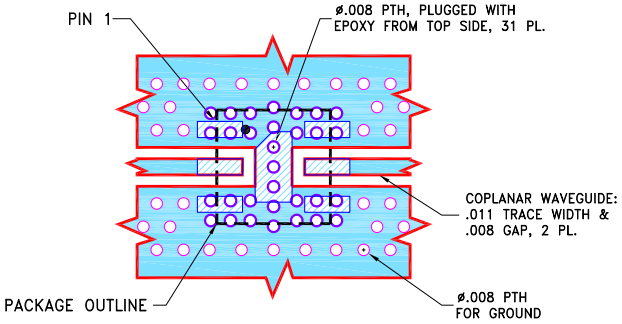
Suggested PCB Layout (PL-586)

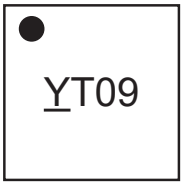


NOTES:
1. TRACE WIDTH & GAP PARAMETERS ARE SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .0066±.0007. COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH & GAP MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER).

DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK.

Product Marking



Additional Detailed Technical Information

additional information is available on our dash board. To access this information click here

Performance Data	Data Table
	Swept Graphs
Case Style	MC1630 *Plastic package, Terminal finish: Matte Tin Plate*
Tape & Reel **Standard quantities available on reel**	F108 *7" reels with 20, 50, 100, 200, 500, 1K, 2K devices.*
Suggested Layout for PCB Design	PL-586
Evaluation Board	TB-YAT-9A+
Environmental Ratings	ENV08T1

ESD Rating

Human Body Model (HBM): Class 2 (Pass 2000 V) per ANSI/ESD STM 5.1-2001

MSL Rating

Moisture Sensitivity: MSL1 in accordance with IPC/JEDEC J-STD-020D

Mouser Electronics

Authorized Distributor

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Mini-Circuits:

YAT-9A+