



MICROWAVE PRECISION

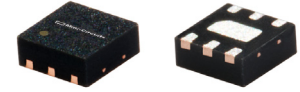
Fixed Attenuator

YAT-1A+

50Ω 2W 1dB DC to 18 GHz

THE BIG DEAL

- Exceptional Power Handling
- Wide bandwidth, DC - 18 GHz
- Small Size, 2 mm x 2 mm
- 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

APPLICATIONS

- Cellular
- PCS
- Communications
- Radar
- Defense

PRODUCT OVERVIEW

YAT-A attenuators (ROHS compliant) are fixed value, absorptive attenuators fabricated using highly repetitive MMIC processing including thin film resistors on GaAs substrates. YAT-A attenuators contain through-wafer metallization vias to realize low thermal resistance and wideband operation. YAT-As are available with nominal attenuation values of 0 to 10 dB (in 1 dB steps), and 12, 15, 20, and 30 dB. Packaged in tiny 2 mm x 2 mm MCLP™ package fits into tiny spaces.

KEY FEATURES

| Feature | Advantages |
|--|--|
| Wideband operation, DC to 18 GHz | Supports a wide array of applications including wireless cellular, microwave Communications, satellite, Defense and aerospace, medical broadband and optic applications. |
| Small Size and simple to use (2 mm x 2 mm) | As a single chip solution, the YAT-A series occupies less board space than a "T" or "Pi" pad configuration, and ensures repeatable performance over wide frequency ranges. |
| High Power, Up to 2W | High power handling in a small size package. |
| Wide range of nominal attenuation values 0 to 10 dB (in 1 dB steps), and 12, 15, 20, and 30 dB | Small increment offering enables circuit designer to change attenuation values without motherboard redesign making the YAT-A series ideal for select at test application. |
| MCLP™ Package | Low Inductance, repeatable transitions, excellent thermal path make the YAT-A series an ideal solution as an alternative to "do it yourself" resistor based attenuators. |

REV. A
ECO-011434
YAT-1A+
MCL NY
220113





ELECTRICAL SPECIFICATIONS¹ AT 25°C, 50Ω (CPW)

| Parameter | Condition (GHz) | Min. | Typ. | Max. | Unit |
|--------------------------|-----------------|------|------|------|------|
| Frequency Range | | DC | — | 18 | GHz |
| Attenuation | 0.01 | — | 1 | — | dB |
| | DC - 5 | 0.8 | 0.93 | 1.25 | |
| | 5 - 15 | 0.7 | 0.92 | 1.4 | |
| VSWR | 15 - 18 | 0.6 | 0.97 | 1.4 | :1 |
| | DC - 5 | — | 1.08 | 1.30 | |
| | 5 - 15 | — | 1.18 | 1.60 | |
| Input Power ² | 15 - 18 | — | 1.36 | 1.70 | :1 |
| | DC - 18 | — | — | 2.0 | |

1. Tested on Mini-Circuits test board TB-YAT-1A+ 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: 2.0 Watt. Derate linearly to 1.0 W at 85°C.

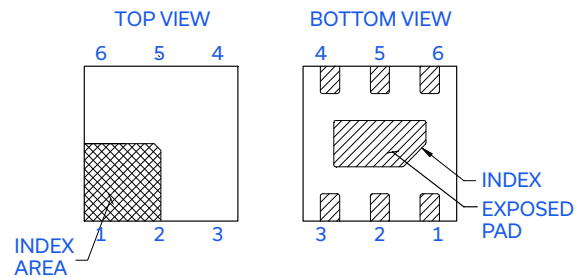
MAXIMUM RATINGS³

| Parameter | Ratings |
|---|----------------|
| Operating Case Temperature ³ | -40°C to 85°C |
| Storage Temperature | -65°C to 150°C |
| RF Input Power ² | 2W |

3. Case is defined as ground lead.
Permanent damage may occur if any of these limits are exceeded.

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 |



CHARACTERIZATION TEST CIRCUIT

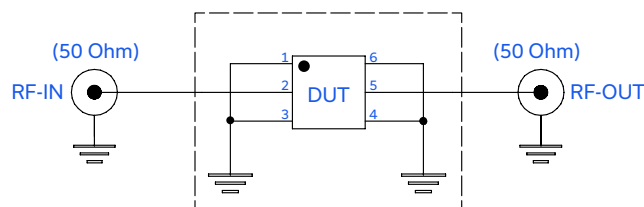
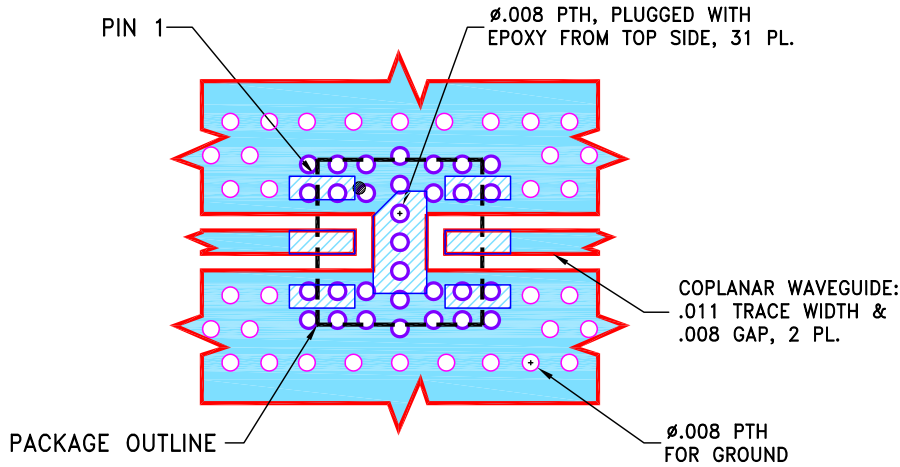


Fig 1. Block diagram of Test Circuit used for characterization, Test board TB-YAT-1A+
Conditions: Attenuation, VSWR: Pin=-10 dBm



SUGGESTED PCB LAYOUT (PL-586)

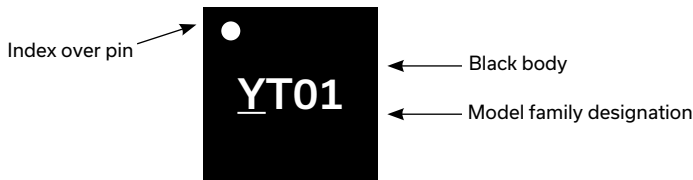


NOTES:

1. TRACE WIDTH & GAP PARAMETERS ARE SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS $.0066 \pm .0007$. 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



Marking may contain other features or characters for internal lot control



TYPICAL PERFORMANCE DATA AT 25°C

| Frequency (GHz) | Attenuation (dB) | VSWR (:1) |
|-----------------|------------------|-----------|
| 0.010 | 0.96 | 1.09 |
| 1.0 | 0.96 | 1.06 |
| 2.0 | 0.95 | 1.08 |
| 4.0 | 0.90 | 1.11 |
| 5.0 | 0.90 | 1.09 |
| 8.0 | 0.94 | 1.16 |
| 10.0 | 0.94 | 1.18 |
| 12.0 | 0.94 | 1.23 |
| 15.0 | 1.04 | 1.40 |
| 16.0 | 1.03 | 1.37 |
| 18.0 | 0.97 | 1.36 |

