



**THE DATASHEET OF
EQY-3-63+**



Microwave Gain Equalizers

EQY-SERIES

50Ω DC to 6 GHz



CASE STYLE: MC1631-1

The Big Deal

- Excellent Return Loss, 20dB typ.
- Wide bandwidth, DC - 6 GHz
- Small Size, 2 mm x 2 mm

Product Overview

EQY series of absorptive Gain Equalizers are fabricated using highly repetitive GaAs IPD* MMIC process incorporating resistors, capacitors and inductors having negative insertion loss slope. EQYs are available with nominal attenuation slope of 1,2,3,4,5,6,8 & 10 dB. They are packaged in tiny 2 x 2 mm 8-Lead MCLP™ package.

Key Features

| Feature | Advantages |
|--|---|
| Negative Insertion Loss Slope vs. Frequency | Useful for compensating negative gain slope of amplifiers, receivers, transmitters to achieve flat gain versus frequency. |
| Wide range of values 1,2,3,4,5,6,8 & 10 dB | Enables circuit designer to change nominal insertion loss values without mother-board redesign making the EQY series ideal for select at test application. |
| Wideband operation, DC to 6 GHz | Supports a wide array of applications including wireless cellular, microwave communications, satellite, defense and aerospace, medical broadband and optic applications. |
| Excellent Power Handling Capability 31/32 dBm | Enables its use at the output of a variety of amplifiers |
| Small Size and simple to use (2 mm x 2 mm) | As a single chip solution, the EQY series occupies less board space than a lumped element approach, minimizes component count and ensures repeatable performance over wide frequency range. |

*GaAs IPD (Gallium Arsenide Integrated Passive Device)

Microwave Gain Equalizer

EQY-3-63+

50Ω 3dB DC to 6 GHz

Product Features

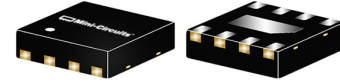
- 3.2 dB Slope
- Small Package 2 x 2 mm MCLP
- Wide Bandwidth, DC-6 GHz
- Excellent Return Loss, 20 dB typ.

Typical Applications

- Cellular
- PCS
- Communications
- Radar
- Defense

General Description

EQY-3-63+ is an absorptive Gain Equalizer fabricated using highly repetitive GaAs IPD MMIC process incorporating resistors, capacitors and inductors having negative insertion loss slope. EQY-3-63+ has a nominal attenuation slope of 3.2 dB and is packaged in tiny 2 x 2 mm, 8-Lead MCLP™ package.



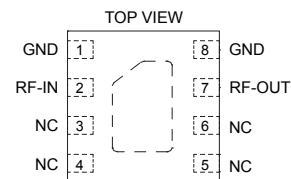
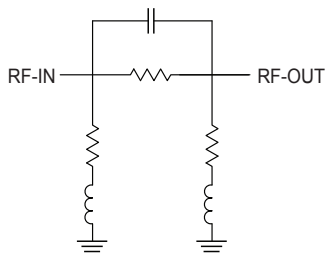
Generic photo used for illustration purposes only

CASE STYLE: MC1631-1

+RoHS Compliant

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

simplified schematic & pad description



| Function | Pad Number | Description |
|----------|--------------|----------------------------------|
| RF-IN | 2 | RF-Input pad |
| RF-OUT | 7 | RF-Output pad |
| GND | 1,8 & Paddle | Ground |
| NC | 3-6 | No connection, ground externally |

Electrical Specifications¹ at 25°C, 50Ω, unless otherwise noted.

| Parameter | Condition (GHz) | Min. | Typ. | Max. | Units |
|-----------------|-----------------|------|------|------|-------|
| Frequency Range | | DC | | 6 | GHz |
| Insertion Loss | 0.01 | 3.4 | 3.8 | 4.1 | dB |
| | 1 | — | 3.6 | — | |
| | 2 | — | 3.1 | — | |
| | 3 | 2.1 | 2.4 | 2.8 | |
| | 4 | — | 1.7 | — | |
| | 5 | — | 1.0 | — | |
| VSWR | 0.01 - 1 | — | 1.04 | — | :1 |
| | 1 - 2 | — | 1.08 | — | |
| | 2 - 3 | — | 1.14 | — | |
| | 3 - 4 | — | 1.17 | — | |
| | 4 - 5 | — | 1.18 | — | |
| | 5 - 6 | — | 1.29 | — | |

1. Measured on Mini-Circuits Characterization Test Board TB-1041-3-63+. See Characterization Test Circuit (Fig. 1)

Absolute Maximum Ratings²

| | |
|----------------------------|----------------|
| Operating Case Temperature | -40°C to 85°C |
| Storage Temperature | -65°C to 150°C |
| RF Input Power | 31 dBm |

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

Characterization Test Circuit

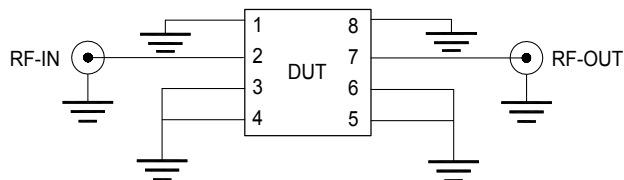


Fig 1. Block Diagram of Test Circuit used for characterization. Test Board TB-1041-3-63+
Conditions: Attenuation & Return Loss Pin=0 dBm

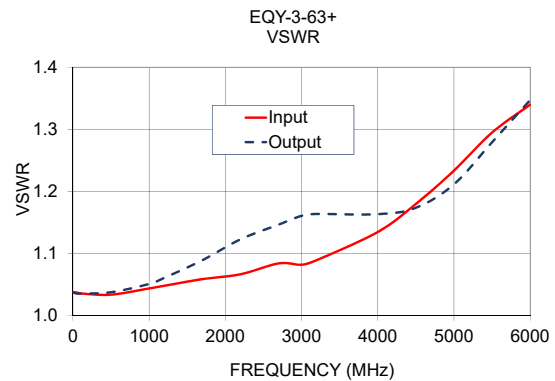
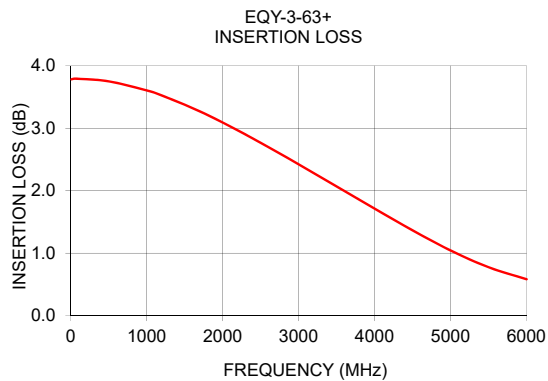
Product Marking



Marking may contain other features or characters for internal lot control

Typical Performance Data at 25°C

| Frequency (MHz) | Insertion Loss (dB) | Input VSWR (:1) | Output VSWR (:1) |
|-----------------|---------------------|-----------------|------------------|
| 10 | 3.78 | 1.04 | 1.04 |
| 50 | 3.79 | 1.04 | 1.04 |
| 100 | 3.79 | 1.04 | 1.04 |
| 500 | 3.75 | 1.03 | 1.04 |
| 1000 | 3.61 | 1.04 | 1.05 |
| 1200 | 3.52 | 1.05 | 1.06 |
| 1700 | 3.27 | 1.06 | 1.09 |
| 2200 | 2.96 | 1.07 | 1.12 |
| 2700 | 2.63 | 1.08 | 1.15 |
| 3000 | 2.42 | 1.08 | 1.16 |
| 3200 | 2.28 | 1.09 | 1.16 |
| 4000 | 1.71 | 1.13 | 1.16 |
| 4500 | 1.36 | 1.18 | 1.17 |
| 5000 | 1.04 | 1.23 | 1.21 |
| 5500 | 0.77 | 1.29 | 1.28 |
| 6000 | 0.58 | 1.34 | 1.35 |

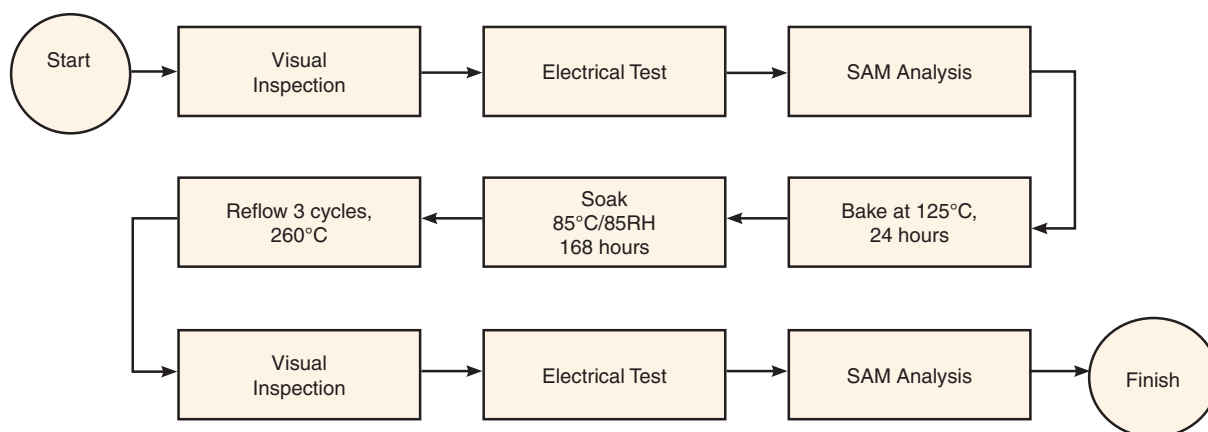


| Additional Detailed Technical Information | |
|---|---|
| <i>additional information is available on our dash board. To access this information click here</i> | |
| Performance Data | Data Table |
| | Swept Graphs |
| Case Style | MC1631-1 <i>Plastic package, Lead finish: Matte-tin</i> |
| Tape & Reel Standard quantities available on reel | F66 <i>7" reels with 20, 50, 100, 200, 500, 1K or 2K devices</i> |
| Suggested Layout for PCB Design | PL-576 |
| Evaluation Board | TB-1041-3-63+ |
| Environmental Ratings | ENV08T1 |

ESD Rating

Human Body Model (HBM): Class 2 (Pass 2000V) in accordance with ANSI/ESD STM 5.1 - 2001 Machine.

MSL Test Flow Chart



Additional Notes

- 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.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- 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

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