



## MICROWAVE

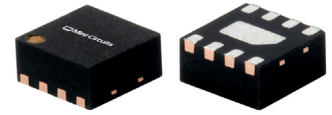
# Gain Equalizer

## EQY-6-24+

50Ω 6dB DC to 20 GHz

### THE BIG DEAL

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



Generic photo used for illustration purposes only

CASE STYLE: MC1631-1

### APPLICATIONS

- Fixed Satellite
- Mobile
- Radio location
- Space research

### +RoHS Compliant

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

### PRODUCT OVERVIEW

EQY-6-24+ is an absorptive Gain Equalizer fabricated using highly repetitive GaAs IPD MMIC process incorporating resistors, capacitors and inductors having negative insertion loss slope. EQY-6-24+ has a nominal attenuation slope of 6.3 dB and is 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<br>0,2,3,5,6,8,10,12 dB  | Enables circuit designer to change nominal insertion loss values without motherboard redesign making the EQY-XX-24+ Series ideal for select at test application.                                   |
| Wideband operation, DC to 20 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           | Enables its use at the output of a variety of amplifiers   |
| Small Size and simple to use<br>(2 mm x 2 mm) | As a single chip solution, the EQY-XX-24+ 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)

REV. A  
ECO-014561  
EQY-6-24+  
MCL NY  
220817





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### ELECTRICAL SPECIFICATIONS<sup>1</sup> AT 25°C, 50Ω, UNLESS OTHERWISE NOTED.

| Parameter       | Condition (GHz) | Min. | Typ. | Max. | Units |
|-----------------|-----------------|------|------|------|-------|
| Frequency Range |                 | DC   |      | 20   | GHz   |
| Insertion Loss  | 0.01            | 6.5  | 6.8  | 7.1  | dB    |
|                 | 5               | —    | 6.0  | —    |       |
|                 | 10              | —    | 3.8  | —    |       |
|                 | 18              | 0.6  | 0.9  | 1.2  |       |
|                 | 20              | —    | 0.5  | —    |       |
| VSWR            | 0.01 - 5        | —    | 1.11 | —    | :1    |
|                 | 5 - 10          | —    | 1.22 | —    |       |
|                 | 10 - 18         | —    | 1.31 | —    |       |
|                 | 18 - 20         | —    | 1.16 | —    |       |

1. Measured on Mini-Circuits Characterization Test Board TB-EQY-6-24+. See Characterization Test Circuit (Fig. 1)

### MAXIMUM RATINGS<sup>2</sup>

| Parameter                   | Ratings        |
|-----------------------------|----------------|
| Operating Case Temperature  | -55°C to 105°C |
| Storage Temperature         | -65°C to 150°C |
| RF Input Power <sup>3</sup> | +31 dBm        |

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

3. Derates linearly to +29 dBm at 105°C



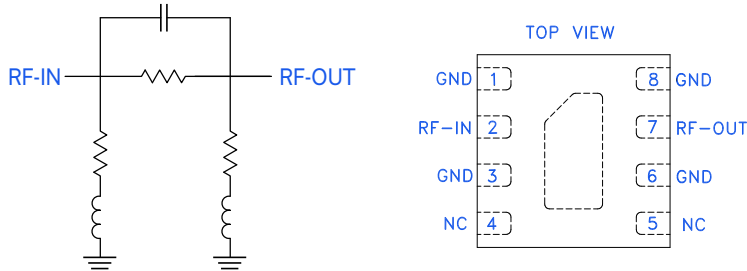
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### SIMPLIFIED SCHEMATIC & PAD DESCRIPTION



| Function | Pad Number       | Description                                   |
|----------|------------------|---|
| RF-IN    | 2                | RF-Input pad                                  |
| RF-OUT   | 7                | RF-Output pad                                 |
| GND      | 1,3,6,8 & Paddle | Ground  |
| NC       | 4,5              | No connection, connected to ground externally |

### CHARACTERIZATION TEST CIRCUIT

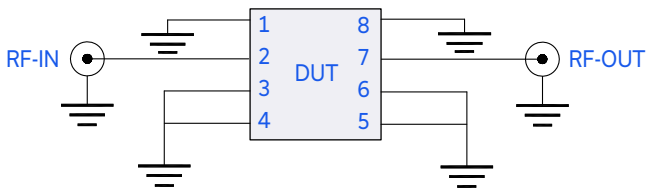
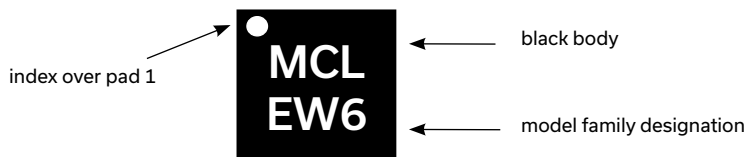


Fig 1. Block Diagram of Test Circuit used for characterization. Test Board TB-EQY-6-24+  
Conditions: Attenuation & Return Loss Pin=0 dBm

### PRODUCT MARKING



Marking may contain other features or characters for internal lot control



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## EQY-6-24+

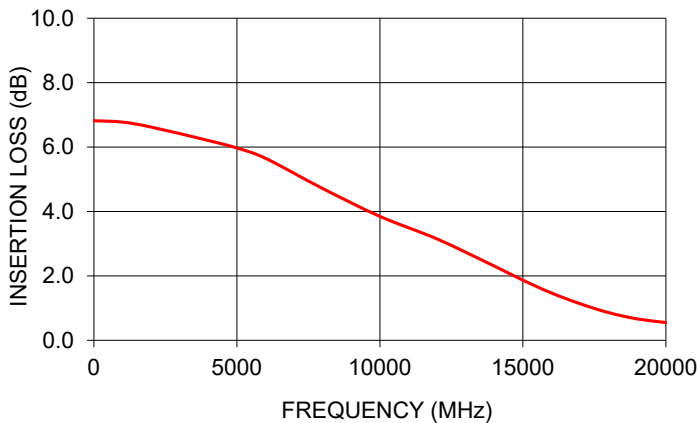
Mini-Circuits

50Ω 6dB DC to 20 GHz

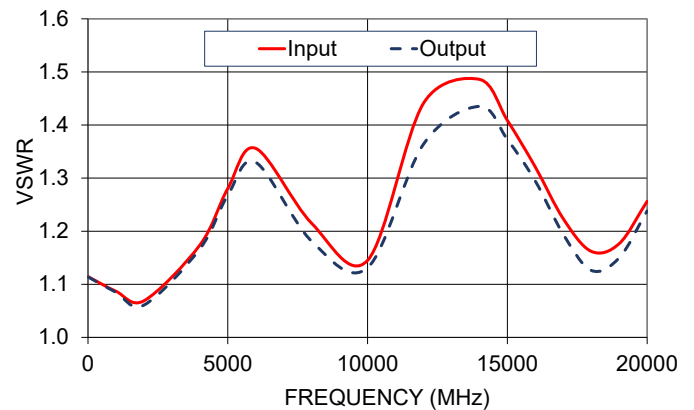
### TYPICAL PERFORMANCE DATA AT 25°C

| Frequency (MHz) | Insertion Loss (dB) | Input VSWR (:1) | Output VSWR (:1) |
|-----------------|---------------------|-----------------|------------------|
| 10              | 6.82                | 1.11            | 1.11             |
| 1000            | 6.77                | 1.09            | 1.08             |
| 2000            | 6.62                | 1.07            | 1.06             |
| 4000            | 6.20                | 1.17            | 1.17             |
| 5000            | 5.97                | 1.28            | 1.27             |
| 6000            | 5.65                | 1.36            | 1.33             |
| 8000            | 4.71                | 1.21            | 1.18             |
| 10000           | 3.85                | 1.15            | 1.13             |
| 12000           | 3.15                | 1.44            | 1.36             |
| 14000           | 2.31                | 1.49            | 1.44             |
| 15000           | 1.87                | 1.41            | 1.37             |
| 16000           | 1.47                | 1.32            | 1.29             |
| 17000           | 1.14                | 1.22            | 1.19             |
| 18000           | 0.86                | 1.16            | 1.13             |
| 19000           | 0.66                | 1.18            | 1.15             |
| 20000           | 0.55                | 1.26            | 1.24             |

EQY-6-24+  
INSERTION LOSS



EQY-6-24+  
VSWR





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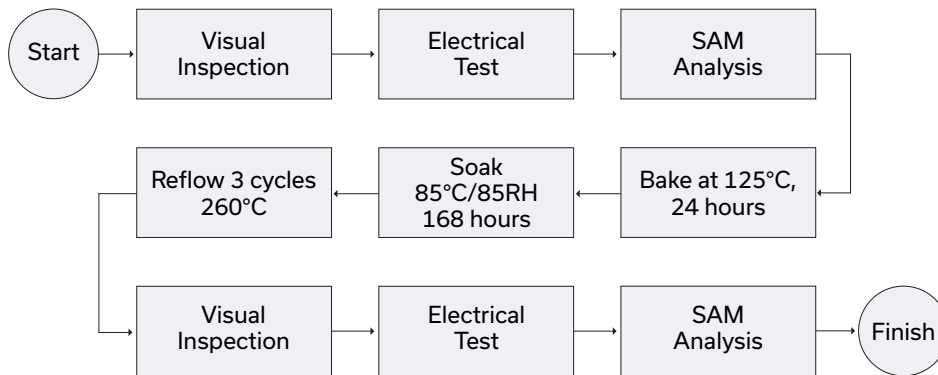
ADDITIONAL DETAILED TECHNICAL INFORMATION IS AVAILABLE ON OUR DASH BOARD. TO ACCESS [CLICK HERE](#)

|  |   |
|--|---|
| Performance Data                                     | Data Table  |
|  | Swept Graphs  |
| Case Style   | MC1631-1 Plastic package, Lead finish: Matte-tin            |
| Tape & Reel<br>Standard quantities available on reel | F66<br>7" reels with 20, 50, 100, 200, 500,1K or 2K devices |
| Suggested Layout for PCB Design                      | PL-618  |
| Evaluation Board                                     | TB-EQY-6-24+  |
| 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



#### 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/terms/viewterm.html](http://www.minicircuits.com/terms/viewterm.html)

