

Microwave

# Gain Equalizers

## EQY-XX-283+ Series

50Ω DC to 28 GHz

### The Big Deal

- Good Return Loss, 17 dB typ.
- Wide bandwidth, DC - 28 GHz,  
Work up to 30 GHz
- Small Size, 2 mm x 2 mm



CASE STYLE: MC1630-1

### Product Overview

EQY-XX-283+ 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 3,4,5,6,dB. They are packaged in tiny 2 x 2 mm 6-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 3,4,5,6 dB	Enables circuit designer to change nominal insertion loss values without board redesign making the EQY series ideal for select at test application.
Wideband operation, DC to 28 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 up to 30 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 or distributed element approach, minimizes component count and ensures repeatable performance over wide frequency range.

\*GaAs IPD (Gallium Arsenide Integrated Passive Device)



Microwave

# Gain Equalizer

**EQY-4-283+**

50Ω 4dB DC to 28 GHz

## Product Features

- 4.3 dB Slope from DC to 28 GHz  
Can work up to 30 GHz
- Small Package 2 x 2 mm MCLP
- Excellent Return Loss, 20 dB typ.
- Patent pending

## Typical Applications

- Cellular Infrastructure
- 5G
- Wideband Communications
- Test Instrumentation
- Defense



Generic photo used for illustration purposes only

CASE STYLE: MC1630-1

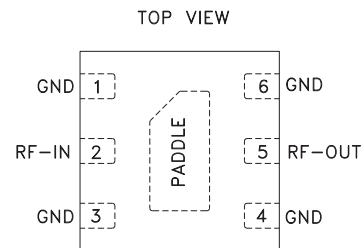
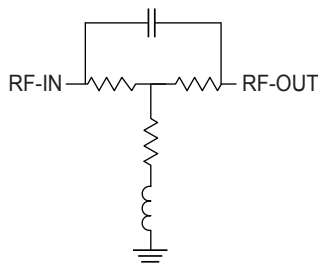
### +RoHS Compliant

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

## General Description

EQY-4-283+ is an absorptive Gain Equalizer fabricated using highly repetitive GaAs IPD MMIC process incorporating resistors, capacitors and inductors having negative insertion loss slope. EQY-4-283+ has a nominal attenuation slope of 4.3 dB and is packaged in tiny 2 x 2 mm, 6-Lead MCLP™ package.

## Simplified Schematic & Pad Description



Function	Pad Number	Description
RF-IN	2	RF-Input pad
RF-OUT	5	RF-Output pad
GND	1,3,4,6 & Paddle	Ground



**Electrical Specifications<sup>1</sup> at 25°C, 50Ω, unless otherwise noted.**

Parameter	Condition (GHz)	Min.	Typ.	Max.	Units
Frequency Range		DC		28	GHz
Insertion Loss	0.01	4.6	4.9	5.2	dB
	10	3.7	4.0	4.3	
	20	1.3	1.8	2.3	
	28	0.3	0.6	1.2	
	30	—	0.5	—	
VSWR	0.01 -10	—	1.14	—	:1
	10 - 20	—	1.11	—	
	20 -28	—	1.18	—	
	28 - 30	—	1.21	—	

1. Measured on Mini-Circuits Characterization Test Board TB-EQY-4-283+. See Characterization Test Circuit (Fig. 1)

**Absolute Maximum Ratings<sup>2</sup>**

Operating Case Temperature	-55°C to 105°C
Storage Temperature	-65°C to 150°C
RF Input Power <sup>3</sup>	30dBm

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

3. Derates linearly to 26 dBm at 105°C

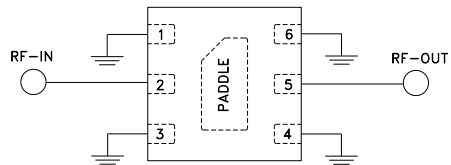
**Characterization Test Circuit**

Fig 1. Block Diagram of Test Circuit used for characterization. Test Board TB-EQY-4-283+  
Conditions: Attenuation & Return Loss Pin=0 dBm

**Product Marking**

Marking may contain other features or characters for internal lot control

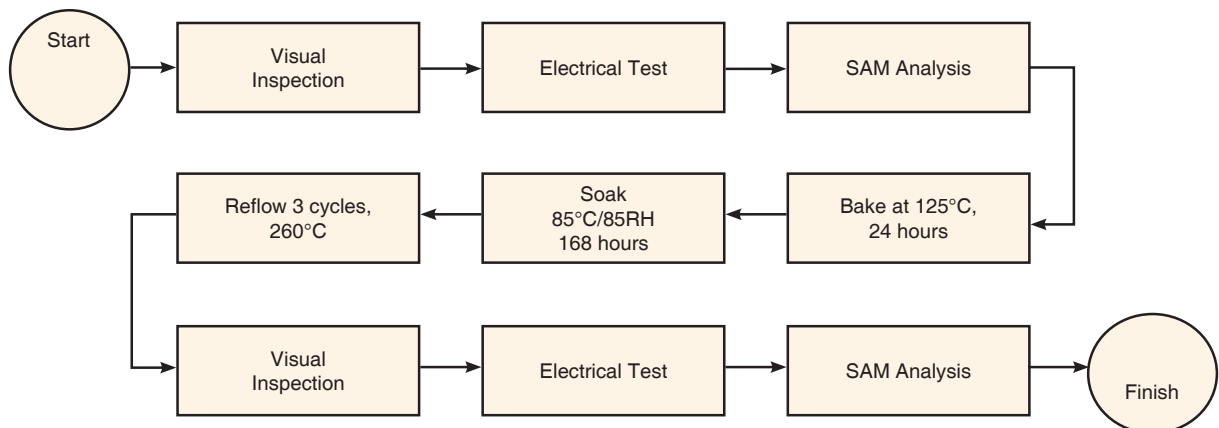
Additional Detailed Technical Information	
<i>additional information is available on our dash board. To access this information <a href="#">click here</a></i>	
<b>Performance Data</b>	Data Table
	Swept Graphs
<b>Case Style</b>	MC1630-1 <i>Plastic package, Lead finish: Matte-tin</i>
<b>Tape &amp; Reel</b> Standard quantities available on reel	F66 <i>7" reels with 20, 50, 100, 200, 500, 1K or 2K devices</i>
<b>Suggested Layout for PCB Design</b>	PL-663
<b>Evaluation Board</b>	TB-EQY-4-283+ & TB-EQY-4-283C+
<b>Environmental Ratings</b>	ENV08T1

**ESD Rating**

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

**MSL Rating**

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

**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](http://www.minicircuits.com/MCLStore/terms.jsp)