Yantel®

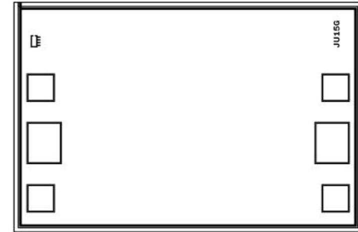
EQYT-15-24-D

Gain Equalizer Die

50Ω 6 to 20 GHz

THE BIG DEAL

- 15.7dB Slope
- Wide Bandwidth, 6-20GHz
- Excellent Return Loss, 20dB Typ.



APPLICATIONS

- Fixed Satellite
- Mobile
- Military Systems
- ELINT
- EW
- ECM

PRODUCT OVERVIEW

EQYT-15-24-D is a MMIC gain equalizer die fabricated using highly repeatable GaAs IPD MMIC process incorporating resistors, capacitors and inductors to accomplish a positive attenuation slope vs. Frequency. EQYT-15-24-D has a nominal attenuation slope of 15.7dB and can be applied to compensate for the negative gain slope of amplifiers to achieve relative gain flatness for the overall system.

KEY FEATURES

Feature	Advantages
Positive Attenuation Slope vs. Frequency	Useful in compensating for negate slope of an amplifier to achieve good gain flatness for the overall system.
Wideband Operation, 6 to 20 GHz	Supports a wide variety of applications including wireless cellular, microwave communications, satellite, defense and aerospace, medical and optic applications.
Excellent Power Handling Capability	Enables the product to be used at the output of an amplifier.
Unpackaged die	Enables user to integrates it directly into hybrids.

ELECTRICAL SPECIFICATIONS[1] AT 25°C, 50Ω, UNLESS OTHERWISE NOTED.

Parameter	Condition (GHz)	Min.	Typ.	Max.	Units
Frequency Range		6		20	GHz
Insertion Loss	6 10 14 18 20	— — — — —	17.0 10.9 5.6 2.2 1.3	— — — — —	dB
VSWR	6 - 10 10 - 14 14 - 18 18 - 20	— — — —	1.22 1.19 1.25 1.22	— — — —	:1

1. Measured on Yantel Characterization Test Board. Die was packaged in a 2.5 x 2.5mm 8L MCLP and soldered on test board TB-EQYT-15-24 See Characterization Test Circuits (Figure 1).

MAXIMUM RATINGS[2]

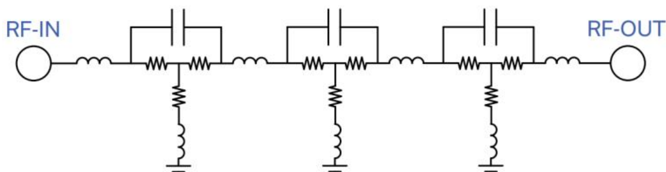
Parameter	Ratings
Operating Temperature	-40º C to 85º C
Input RF Power	31dBm

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

PAD DESCRIPTION

Pad Number	Description
1	RF IN
4	RF OUT
2,3,5,6	GROUND

SIMPLIFIED SCHEMATIC



CHARACTERIZATION TEST CIRCUIT

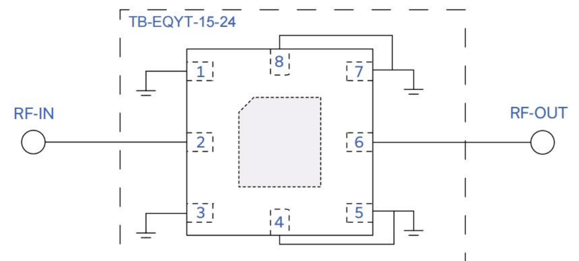
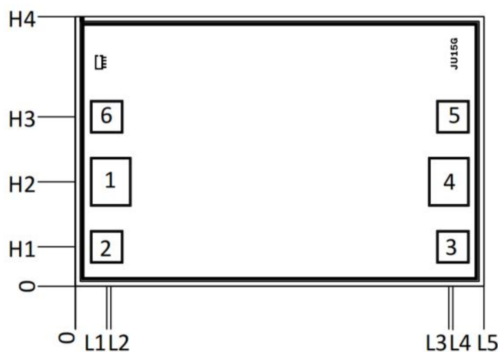


Fig 1. Block Diagram of test circuit used for characterization. Die is packaged in 2.5 x 2.5mm 8L MCLP and soldered on test board TB-EQYT-15-24

Conditions: Attenuation & Return Loss, Pin = 0dBm.

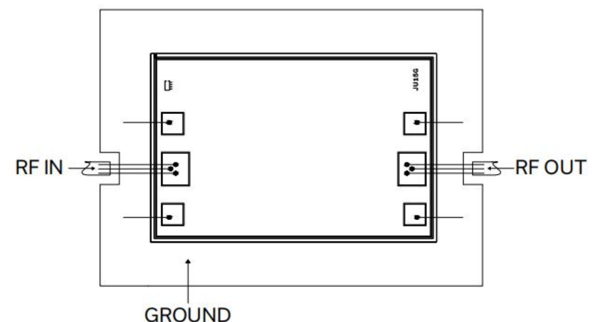
BONDING PAD POSITION



Dimensions in µm, Typical

L1	L2	L3	L4	L5	H1	H2	H3	H4	Thickness	Die Size	Pad Size 1 & 4	Pad Size 2,3,5,6
97	109	1152	1165	1260	122	322	522	830	100	1260x830	117x142	92x92

ASSEMBLY DIAGRAM



ASSEMBLY PROCEDURE

1. Storage
Dice should be stored in a dry nitrogen purged desiccators or equivalent.
2. ESD
MMIC GaAs Gain equalizer dice are susceptible to electrostatic and mechanical damage. Die are supplied in antistatic protected material, which should be open in clean room conditions at an appropriately grounded anti-static workstation.
3. Die Handling and Attachment
Devices need careful handling using correctly designed collets, it is recommended to handle the chip along the edges with a custom design collet. The die mounting surface must be clean and flat. Using conductive silver filled epoxy, recommended epoxies are Ablestik 84-1 LMISR4 or equivalents. Apply sufficent epoxy to meet required epoxy bond line thickness, epoxy fillet height and epoxy coverage around total periphery. Parts shall be cured in a nitrogen filled atmosphere per manufacturer's cure condition. It is recommended to use anti-static die pick up tools only.
4. Wire Bonding
Bond pad openings in the surface passivation above the bond pads are provided to allow wire bonding to the dice gold bond pads. Thermo-sonic bonding is used with minimized ultrasonic content. Bond force, time, ultrasonic power and temperature are all critical parameters. Suggested wire is pure gold, 1mil diameter. Bonds must be made from the bond pads on the die to the packaged or substrate. All bond wires should be kept as short as low as reasonable to minimize performance degradation due to undesirable series inductance.