Ka band MMIC Frequency Multiplier

Ka-x2M-3046 Previously named LE-Ka1340316

GaAs MMIC x2 Frequency Multplier 30-46GHz

Overview

Ka-x2M-3046 is a wideband passive Schottky diode frequency multiplier MMIC that transforms frequencies from the 15GHz to 23GHz band into the 30GHz to 46GHz frequency band. This MMIC provides 7dBm output power with <±1dB conversion loss variation at an input drive level of 18dBm.

With all bond pads and the backside of the MMIC gold plated, the MMIC is compatible with precision die attach methods, as well as thermo-compression and thermosonic wire bonding, making it ideal for MCM and hybrid microcircuit applications. All data shown is measured with the chip in a 50 Ohm environment and contacted using RF probes.

Ka-x2M-3046 is designed to be used in conjunction with the Arralis 'E-x2M-6085' passive multiplier to provide a simple frequency transformation of signals from K-Band to E-Band.

Features

- 15 –23GHz input.
- 30 – 46GHz output.
- 11dB conversion loss.
- 7dBm output power.

Applications

- High speed data communications.
- Space communications.
- IOT.
- Security.
- Frequency transformer.

Specification Overview

Parameter	Min.	Typ.	Max.	Units
Input Frequency	15		23	GHz
Output Frequency	30		46	GHz
Conversion Loss	9	11	14	dB
Gain Flatness		±1		dB
Input Power	10	16	18	dBm

Notes
All tests are carried out at 25°C.

Absolute Maximum Ratings

Parameter	Rating
RF Input Power	22dBm
Storage Temperature	−65°C to +150°C
Channel Temperature	+150°C
Operating Temperature	−40°C to +85°C

ESD (electrostatic discharge) sensitive device. Charged devices and circuit boards can discharge without detection. Although this product features proprietary protection circuitry, damage may occur on devices subjected to ESD. Proper ESD precautions should be taken to avoid performance degradation or loss of functionality.

Measured Performance Data

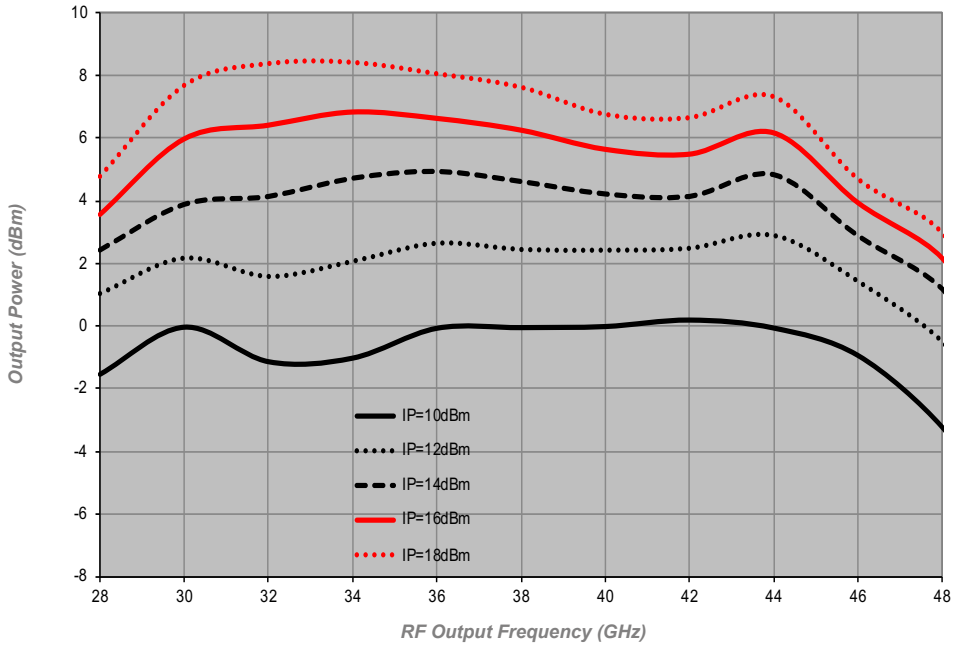


Figure 1
Output Power

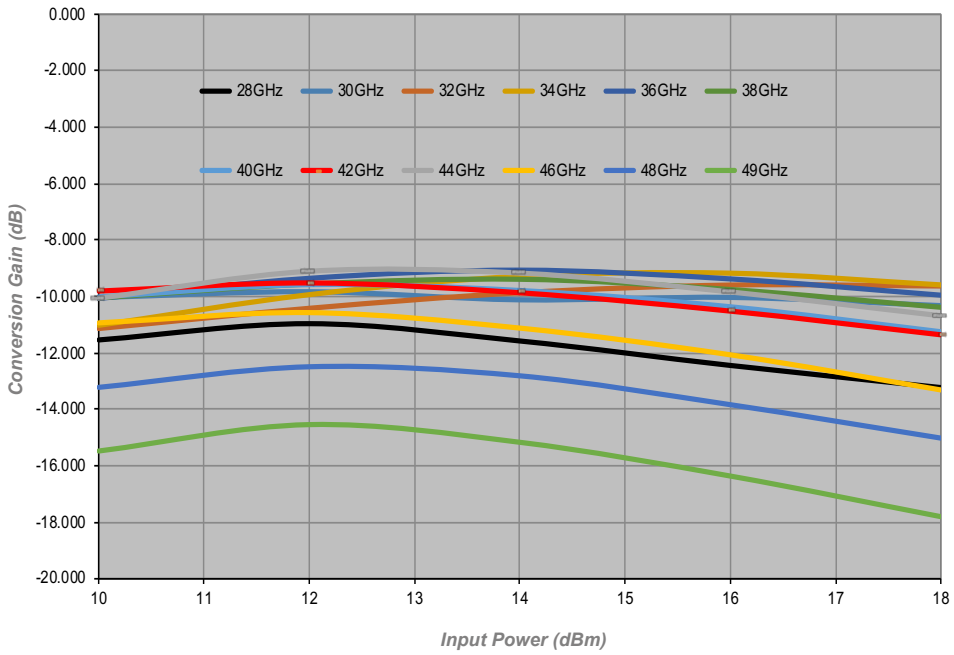
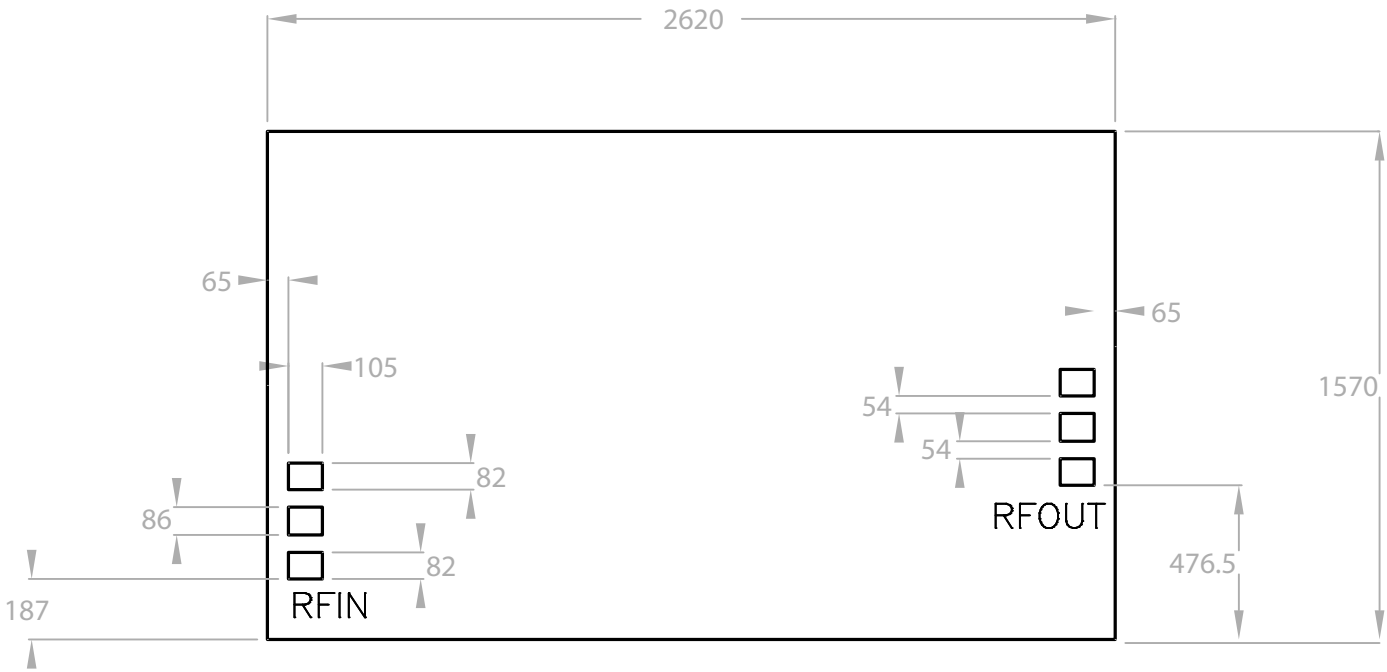


Figure 2
Conversion Gain

Outline Drawing



Notes

1. All dimensions are in um.
2. RF bond pads are 86 x 105um.
3. All pads have gold metalisation.
4. Gold backside metalisation.
5. Backside metal is ground.
6. Die thickness is 100um

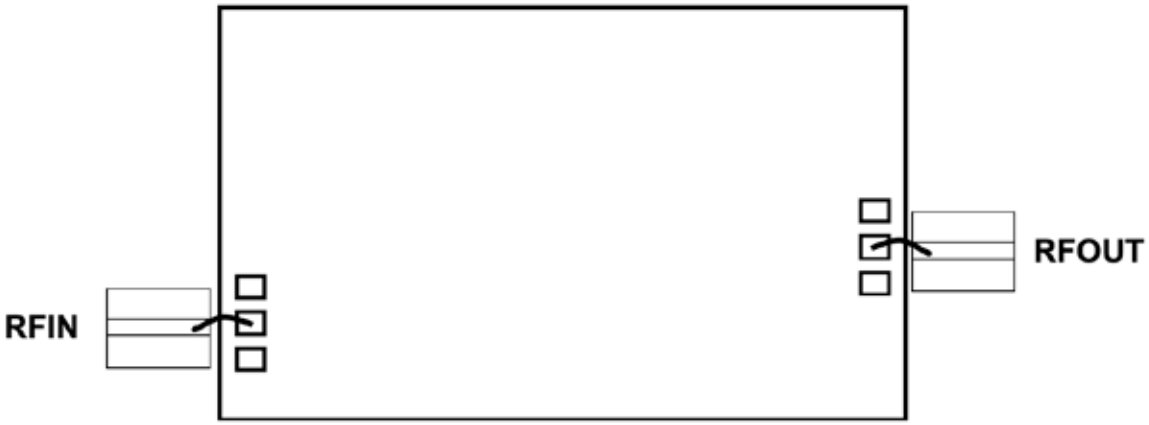
Die Packing Information

All die are delivered using gel-paks unless otherwise requested.

Pad Descriptions

Name	Description
RFIN	Input RF pad. This pad is AC coupled.
RFOUT	Output RF pad. This pad is AC coupled.
BOTTOM	The die backside must be connected to RF/DC ground.

Connection Configurations



General Notes on Assembly

Die should be mounted on conductive material such as gold-plated metal to provide a good ground and suitable heat sink, if necessary.

1. Attaching the die using Au/Sn preforms is preferable. The Eutectic melt for Au/Sn occurs at approximately 280°C so the die (plus mount and preform) is initially heated up to 180°C and then it is heated for approximately 10 seconds to 280°C using a nitrogen heat gun. The device will survive 10 seconds at this temperature. The static breakdown for GaAs devices is approximately 330°C.
2. Pure, dry nitrogen should be used as the heat source.
3. If the devices cannot be lifted/ placed by a vacuum device, then ESD die-lifting tweezers are preferable.
4. Aluminium wire must not be used.

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