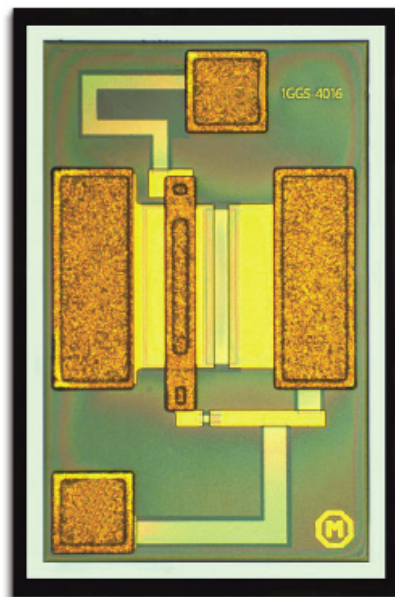# Keysight 1GG5-4023
0.2 - 20 GHz Integrated Directional Detector

Data Sheet

Features

– Frequency range: 0.2 to 20 GHz
– Coupling flatness: ±1 dB
– Directivity: >15 dB
– Return loss: >15 dB
– Insertion loss: <2.0 dB
– Sensitivity: 65 mV/mW
– Max Input power:
    25 dBm @ 70 °C
    2:1 source VSWR
    Output open circuit
    (see graph of max power vs source and load
– Detector polarity: negative

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Description

The 1GG5-4023 is a low–loss, directional detector with an integrated diode, capacitor, and resistors on chip. It is fabricated using Keysight Technologies, Inc.'s Modified Barrier Schottky Diode process. No external resistors are required for standard operation.
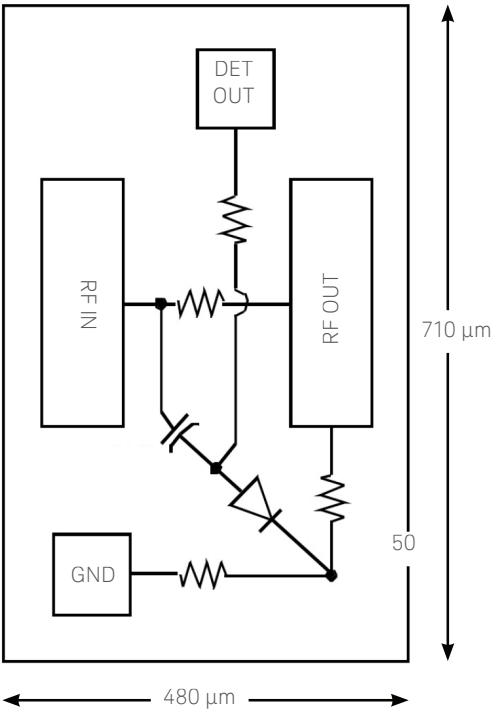

Figure 2. 1GG5-4023 schematic

Absolute maximum ratings[1,2]

Symbol	Parameters/conditions	Min	Max	Units
P_{max}	Max instantaneous input power (burn-out damage limit)		25	dBm
T_{stg}	Storage temperature		150	°C
T_{bs}	Package backside temperature	–40	+85	°C
T_{stg}	Storage temperature	–65	+150	°C
T_{assy}[3]	Maximum solder reflow temp. (max. 3 cycles @ 30 sec./cycle)		+260	°C

1. Parameters specified for continuous operation at Tbs ≤ 85 °C.
2. Operation in excess of any one of these conditions may result in permanent damage to this component.
3. Refer to JEDEC J-STD-020D for detailed reflow profile, 3 reflows max.

Application

The 1GC1-4213 is commonly used in ALC (Automatic Leveling Control) loops and power detection at device input and output ports while providing minimum insertion loss.

RoHS Compliance

This device is RoHS Compliant. This means the component meets the requirements of the European Parliament and the Council of the European Union Restriction of Hazardous Substances Directive 2011/65/EU, commonly known as RoHS. The six regulated substances are lead, mercury, cadmium, chromium VI (hexavalent), polybrominated biphenyls (PBB) and polybrominated biphenyl ethers (PBDE). RoHS compliance implies that any residual concentration of these substances is below the RoHS Directive's maximum concentration values (MVC); being less than 1000 ppm by weight for all substances except for cadmium which is less than 100 ppm by weight.

ESD and Handling Precautions

GaAs MMICs in either chip or SMT packages are ESD sensitive. ESD preventive measures must be employed in all aspects of storage, handling, and assembly.

MMIC ESD precautions, handling considerations, die attach and bonding methods are critical factors in successful GaAs MMIC performance and reliability.

The Keysight Technologies, Inc., *GaAs MMIC ESD, Die Attach and Bonding Guidelines - Application Note* (5991-3484EN) provides basic information on these subjects.

Assembly Techniques

Die attach should be done with conductive epoxy. Gold thermosonic bonding is recommended for all bonds. The top and bottom metallization is gold. GaAs MMICs are ESD sensitive. ESD preventive measures must be employed in all aspects of storage, handling, and assembly. MMIC ESD precautions, handling considerations, die attach and bonding methods are critical factors in successful GaAs MMIC performance and reliability.

Keysight Technologies *GaAs MMIC ESD, Die Attach and Bonding Guidelines - Application Note*, literature number 5991-3484EN provides basic information on these subjects.
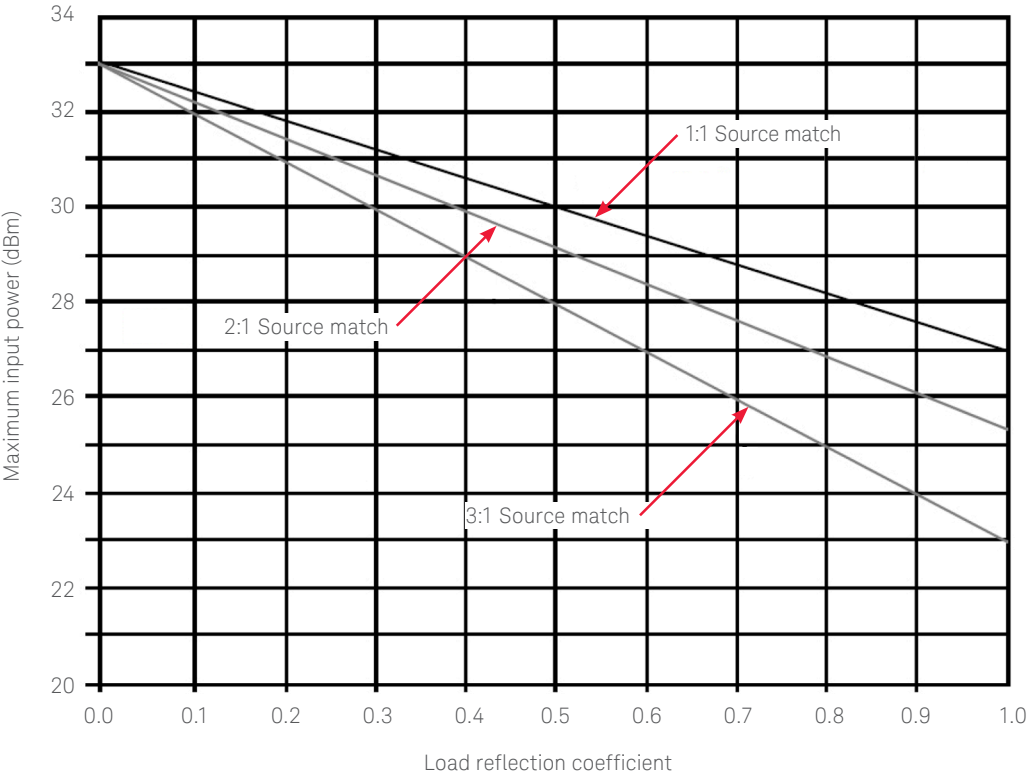
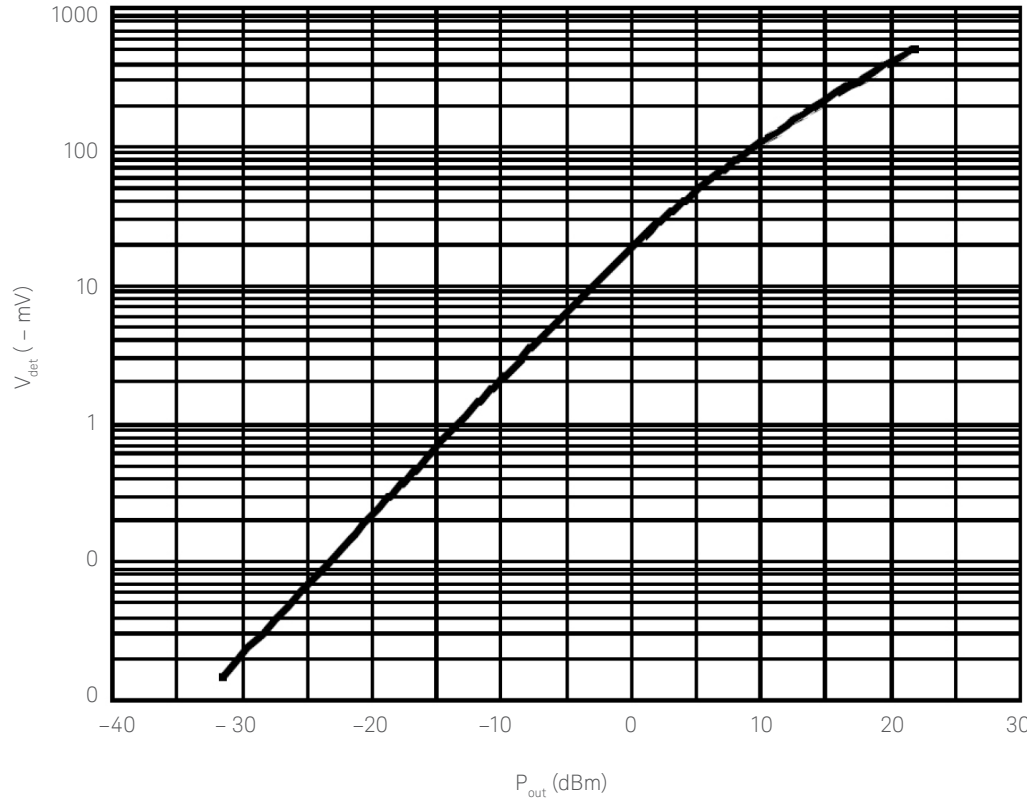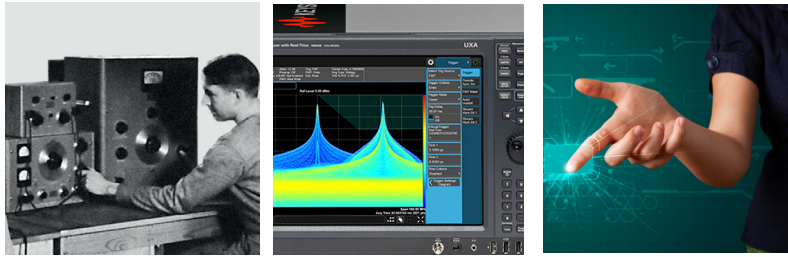Figure 5. 1GG5-4023 safe operating region T_{case}: +70 °C

Figure 6. 1GG5-4023 Typical transfer characteristic temp = +25 °C

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This data sheet contains a variety of typical and guaranteed performance data. The information supplied should not be interpreted as a complete list of circuit specifications. Customers considering the use of this, or other Keysight Technologies GaAs ICs, for their design should obtain the current production specifications from Keysight. In this data sheet the term typical refers to the 50th percentile performance. For additional information contact Keysight at MMIC_Helpline@keysight.com.

The product described in this data sheet is RoHS Compliant. See RoHS Compliance section for more details.

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