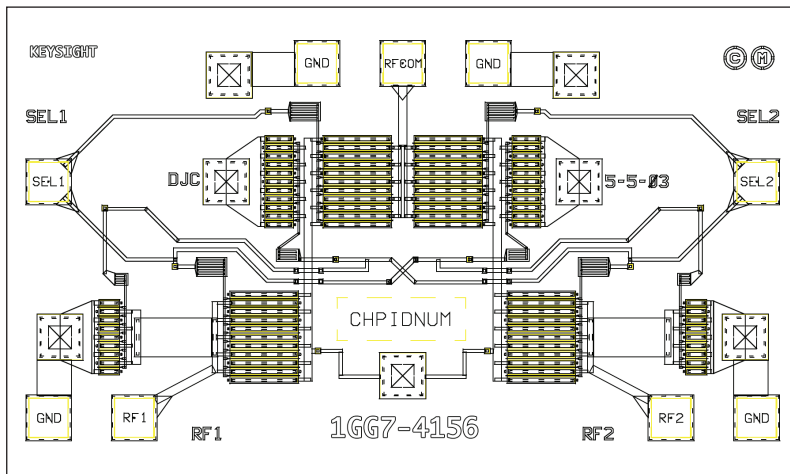


# Keysight 1GG7-4156

## DC - 5 GHz SPDT Terminated Switch



## Data Sheet

### Features

- Outputs terminated in 50  $\Omega$  when off
- Frequency range: DC to 3 GHz usable to 5 GHz
- Insertion loss: 0.8dB @ 3 GHz
- Isolation: > 45 dB @ 3 GHz
- Return loss: 20 dB
- Switching speed:
  - < 2 ns (10% to 90% RF)
- $P_{1dB}$  = > 30 dBm

## Description

The 1GG7-4156 is a GaAs monolithic microwave integrated circuit is fabricated using the Keysight Technologies, Inc. GaAs FET process and is designed for very low insertion loss and high isolation from DC to 3 GHz. It is intended for use as a high performance, singlepole, double-throw (SPDT), absorptive switch in applications requiring a very good match with the switch thrown ON or OFF. The 1GG7-4156 chip uses through-substrate vias to provide ground connections to the chip backside and minimize the number of wire bonds required.

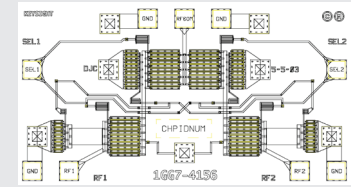
## Absolute maximum ratings<sup>1</sup>

Symbol	Parameters/conditions	Min	Max	Units
$V_{sel}$	Select voltages 1 & 2	-10.5	+10.5	Volts
$P_{in}$	RF input power, instantaneous		+35	dBm
$P_{in}$	RF input power, continuous		+27	dBm
$T_{op}^2$	Operating temperature	-55	+125	°C
$T_{st}$	Storage temperature	-65	+165	°C
$T_{max}^3$	Maximum assembly temperature		+300	°C

1. Operation in excess of any one of these may result in permanent damage to this device.  
 $T_A = 25\text{ °C}$  except for  $T_{op}$ ,  $T_{st}$ , and  $T_{max}$ .
2. Operation in excess of these @  $T_{op-max}$  may result in permanent damage.
3. Maximum of 1 minute at the  $T_{max}$  temperature.

## Applications

The 1GG7-4156 can be used in instrumentation, communications, radar, ECM, EW, and many other systems requiring SPDT switching. It can be used for pulse modulation, port isolation, transfer switching, high-speed switching, replacement of mechanical switches, and so on.



- Chip size:  
1,380 x 760  $\mu\text{m}$   
(54.3 x 29.9 mils)
- Chip size tolerance:  
 $\pm 10\ \mu\text{m}$  ( $\pm 0.4$  mils)
- Chip thickness:  
127  $\pm 15\ \mu\text{m}$   
(5.0  $\pm 0.6$  mils)

## 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.

Keysight *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.

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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](mailto:MMIC_Helpline@keysight.com).

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

[www.keysight.com/find/mmic](http://www.keysight.com/find/mmic)

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