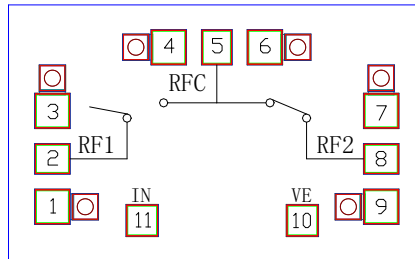


**Features**

- Freq: DC-40.0 GHz
- Insertion Loss: 1.7 dB
- Isolation: 35 dB
- Input Return Loss: -16 dB
- On-state output return loss: -16 dB
- 50Ω Input/ Output
- Die Size: 1.3×0.8×0.1mm<sup>3</sup>

**Functional Diagram**



**General Description**

The MC15002 is a reflective SPDT switch which operates during DC-40.0 GHz. The typical insertion loss is 1.7dB and the isolation is 35dB. With 0V/+3.3V logic control, an external -5V power bias is required, the typical bias current is 2mA, and the switching speed is less than 50ns.

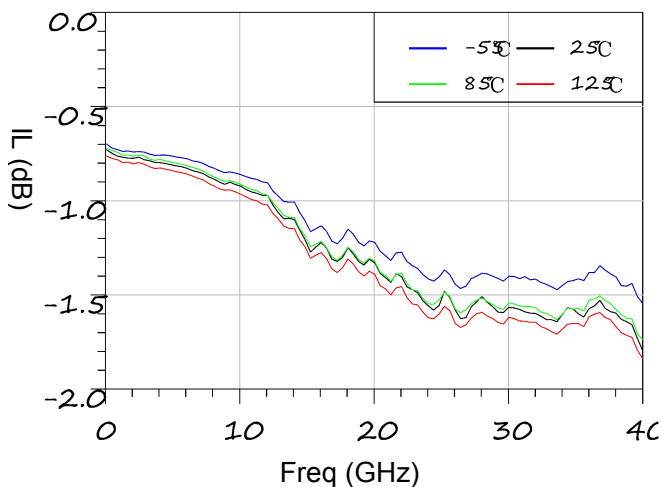
The Chip applies the on-chip metallization through-hole technology thus no need for additional grounding measures which makes it easy and convenient to use. The backside of the chip is metallized, suitable for conductive adhesive bonding or eutectic mounting process.

**Electrical Specifications (TA=+25°C, 50Ω system, 0V/+3.3V Control (0/+5V Control Compatible))**

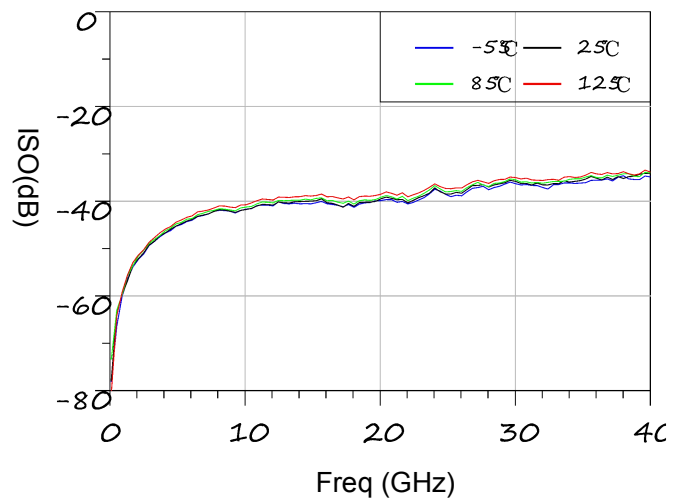
Parameter		Min.	Typ.	Max.	Unit
Frequency Range	Freq	DC	-	40.0	GHz
Insertion Loss	IL	-	1.7	-	dB
Isolation	ISO	-	35	-	dB
Input Return Loss	IRL	-	-16	-	dB
On-state output return loss	ORL	-	-16	-	dB
Switching time	T	-	-	50	ns
Bias current	I	-	2	-	mA

[1] The chips are 100% DC and RF tested.

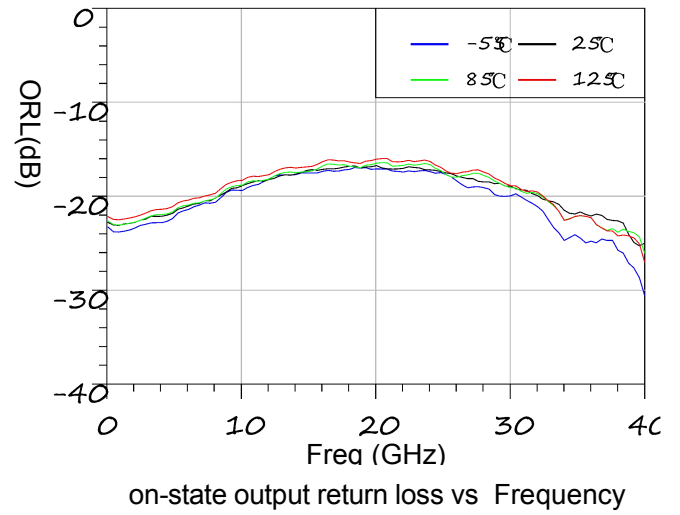
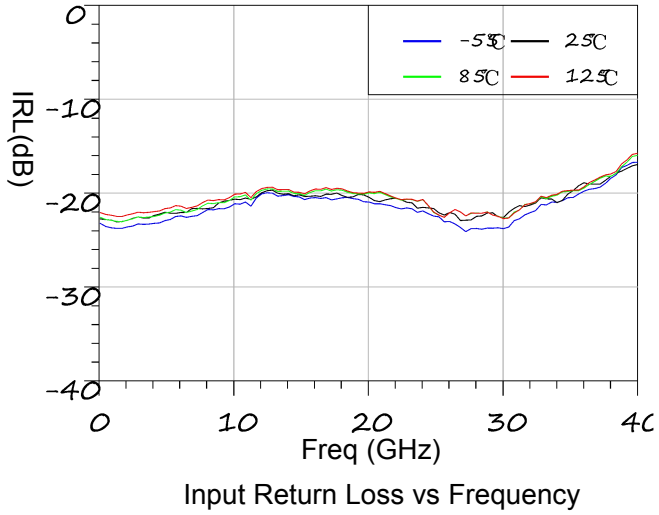
**Typical Testing Characteristics**



Insertion loss vs Frequency



Isolation vs Frequency



**Absolute Maximum Ratings**

Parameter Limits	Value
Input Power, 50Ω	23dBm
Control Voltage	0V~+5V
Storage Temperature	-65~+150℃
Operating Temperature	-55~+125℃
Mounting Temperature (30s, N <sub>2</sub> Protection)	300℃

Exceeding the above conditions may cause permanent damage to the chip



This product is ESD(Electrostatic discharge) sensitive. Therefore, proper ESD precautions should be taken to avoid performance degradation or loss of functionality.

- Assembling in a clean environment.
- Avoiding rapid temperature changes during the mounting process.
- Do not touch the surface or use dry/wet chemical methods to clean the surface
- 2 bonding wires for input and output (in figure 八), the bonding wires should be as short as possible.
- Storing in a dry, N<sub>2</sub> protection environment.

**Pad Descriptions**

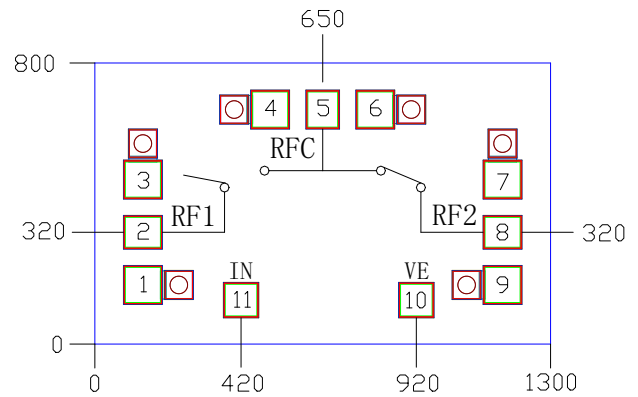
Pad No.	Function	Description	Interface Schematic
5	RFC	RF signal input, 50Ω matched, without blocking capacitor inside	
2, 8	RFOUT	RF Signal output, 50Ω matched, without blocking capacitor inside	
11	IN	DC control signal, 0V/+3.3V voltage matched	
10	VE	-5V Bias voltage	
1, 3, 4, 6, 7, 9	GND	Grounding pad for probe test	
Die Bottom	GND	Die bottom must be connected to RF/DC ground	

**Control Voltage Range**

Typ.	Control Voltage Range
0V	0V~+0.5V
+3.3V	+3V~+5V

**Control Logic**

Power Voltage	Control Input	On-off state	
		RF1	RF2
-5V	0V	ON	OFF
-5V	+3.3V	OFF	ON

**Outline Drawing**

**Notes:**

1. Unit: μm
2. Back Side Metallization: Gold
3. Back side metal is ground
4. Bonding pad size: 100 μm
5. Outline Dimensional Tolerance: ±50 μm

**Assembly Diagram**
