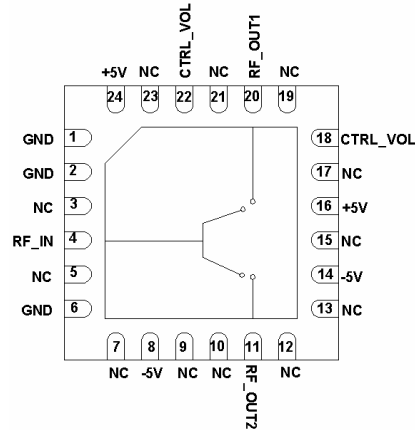


DC – 4.0 GHz SPDT Reflective Switch

Features

- ◆ Frequency Range: DC – 4.0 GHz
- ◆ Low Insertion Loss ~ 1.3dB(max)
- ◆ High Isolation ~ 40dB
- ◆ Input Return Loss > 10 dB
- ◆ Output Return Loss > 10 dB
- ◆ P1dB(in) ~ 21dBm
- ◆ On chip TTL Driver
- ◆ Package Size : 4.0 mm x 4.0 mm x 0.8 mm

Functional Diagram



Typical Applications

- ◆ Cellular system
- ◆ Base stations
- ◆ Broadband Telecom
- ◆ Test Equipments

Description

The AMT2542012P is a wideband Reflective single-pole; double throw (SPDT) MMIC chip covering DC to 4GHz. The Switch offers high Isolation and Low Insertion Loss. The Switch features greater than 40 dB Isolation and less than 1.3 dB Insertion Loss. The Switch offers a high speed switching due to the presence of an on-chip TTL Driver. The input power for 1dB compression is 21dBm at midband. The switch operates on +5V/-5V supplies with minimal DC power consumption and is controlled using TTL compatible voltage levels. The die is fabricated using a reliable 0.5um InGaAs pHEMT Process. To minimize board area the design is offered in a low profile (4mm x 4mm) QFN package.

Absolute Maximum Ratings ⁽¹⁾

Parameter	Absolute Maximum	Units
RF input Power (common Port)	25	dBm
RF input Power (Toggle ports)	25	dBm
Positive supply Voltage	+6	V
Negative supply voltage	-6	V
Control voltage	-0.5 to +5.5	V
Operating Temperature	-55 to +85	°C
Storage Temperature	-65 to +150	°C

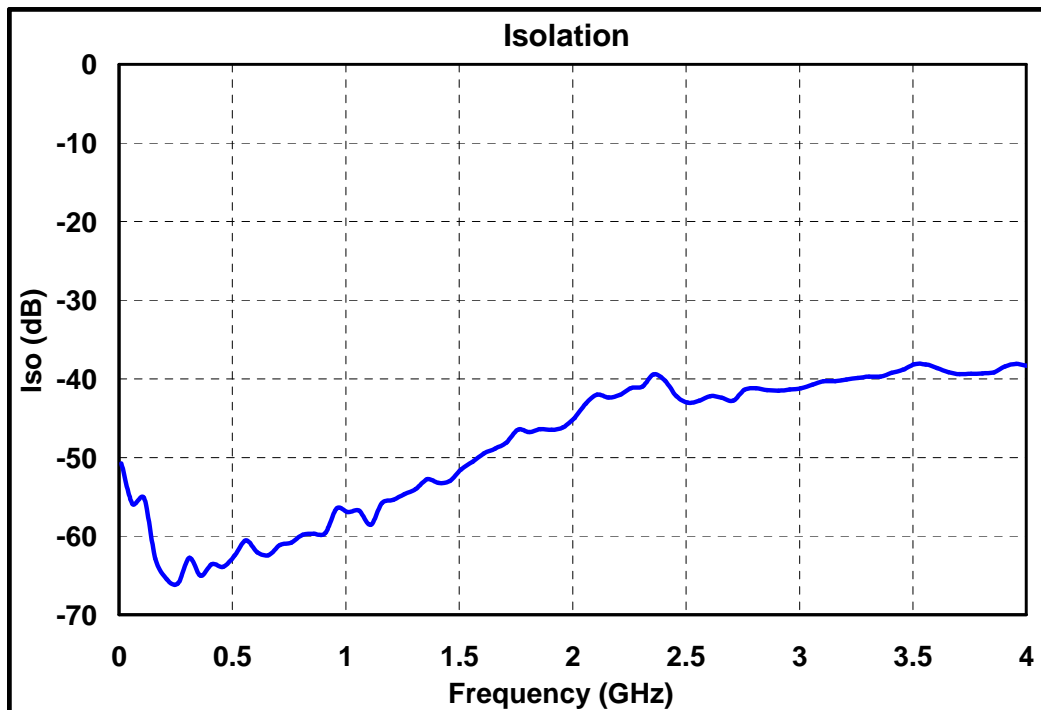
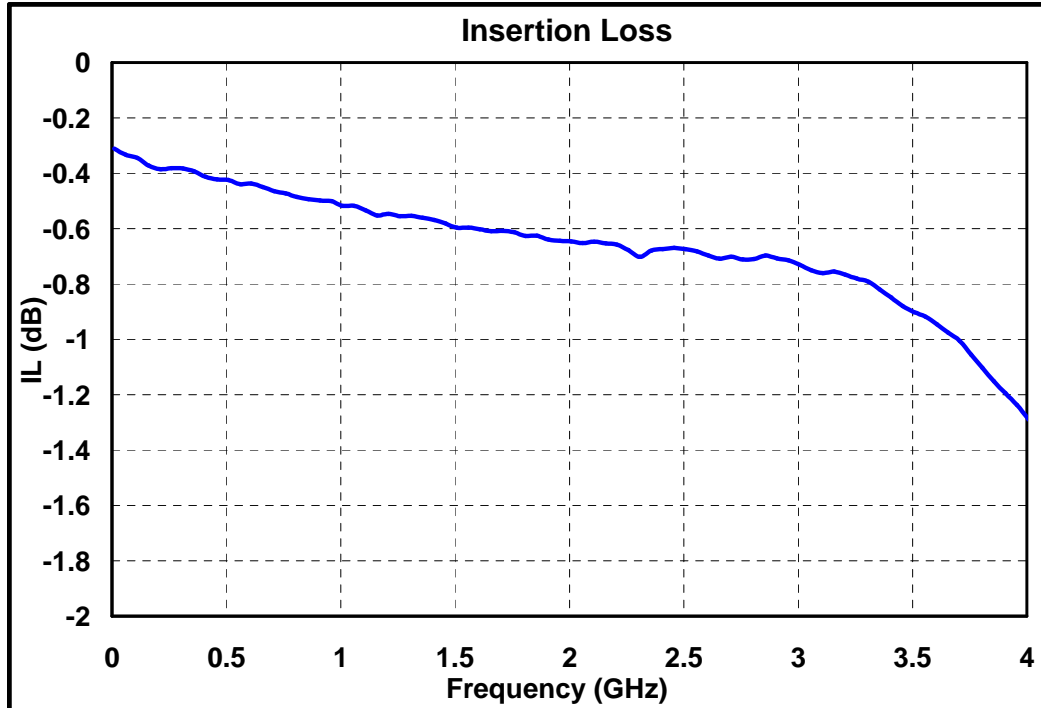
1. Operation beyond these limits may cause permanent damage to the component

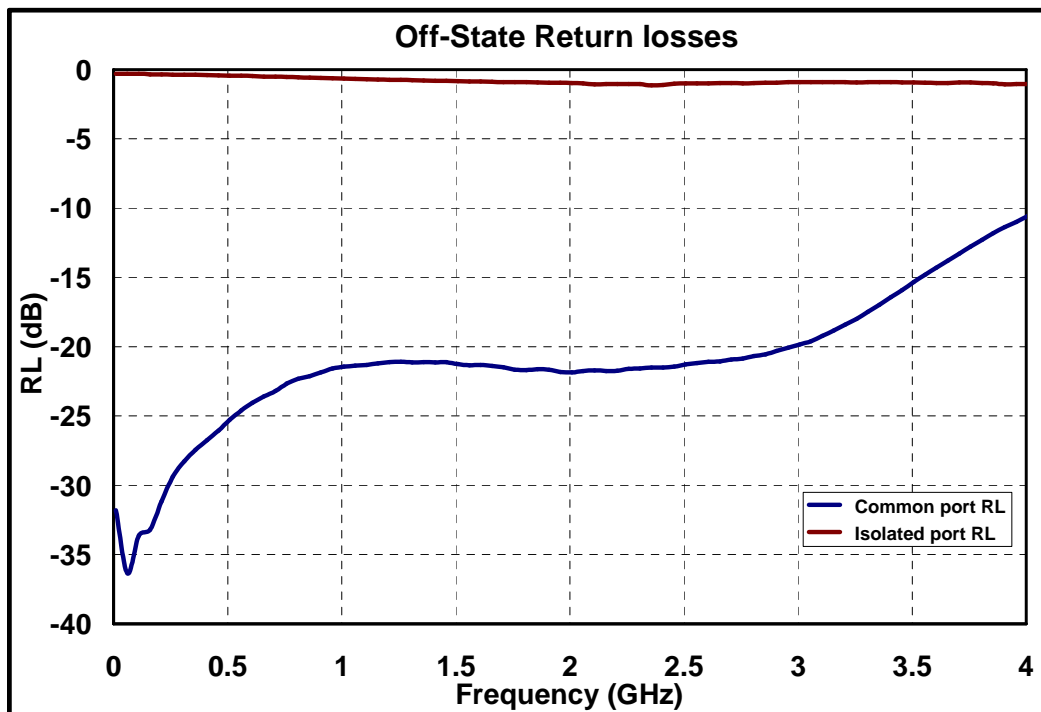
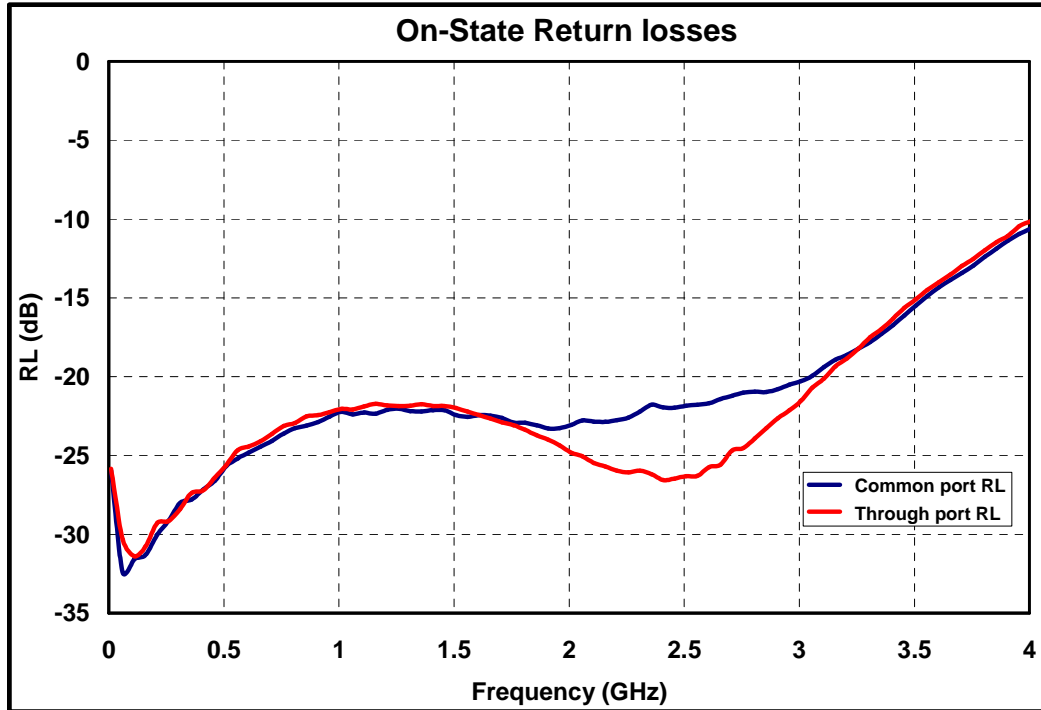
Electrical Specifications ⁽¹⁾ @ T_A = 25 °C, 0/+5V control, Z_o = 50 Ω

Parameter	Min.	Typ.	Max.	Units
Frequency	0.5	-	4.0	GHz
Insertion Loss	-	1.0	1.3	dB
Isolation	35	40	-	dB
Input Return Loss	10	20	-	dB
Output Return Loss	10	20	-	dB
Input Power for 1dB compression (P1dBin)	-	20	-	dBm
Bias Voltage	+5,-5			Volts
Control Voltage	0/+5			Volts
Switching Speed	10			ns

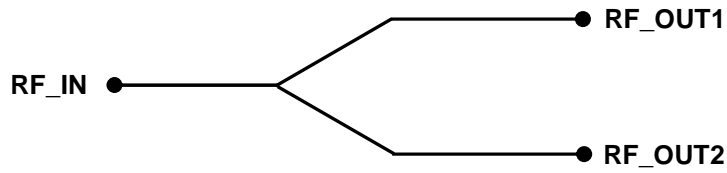
Note:

1. The above mentioned electrical specifications are measured in 50ohm line PCB test fixture broad.
2. The RF input & output ports are DC coupled.
3. For reliable operation external DC blocking capacitors are required at the RF input & output ports.

Test fixture data*Driver Bias +5V,-5V; Control 0/+5V; $T_A = 25^\circ\text{C}$* 

Test fixture data
 $V_{dd} = 3V$, Total Current = 88 mA , $T_A = 25^\circ C$


Truth Table

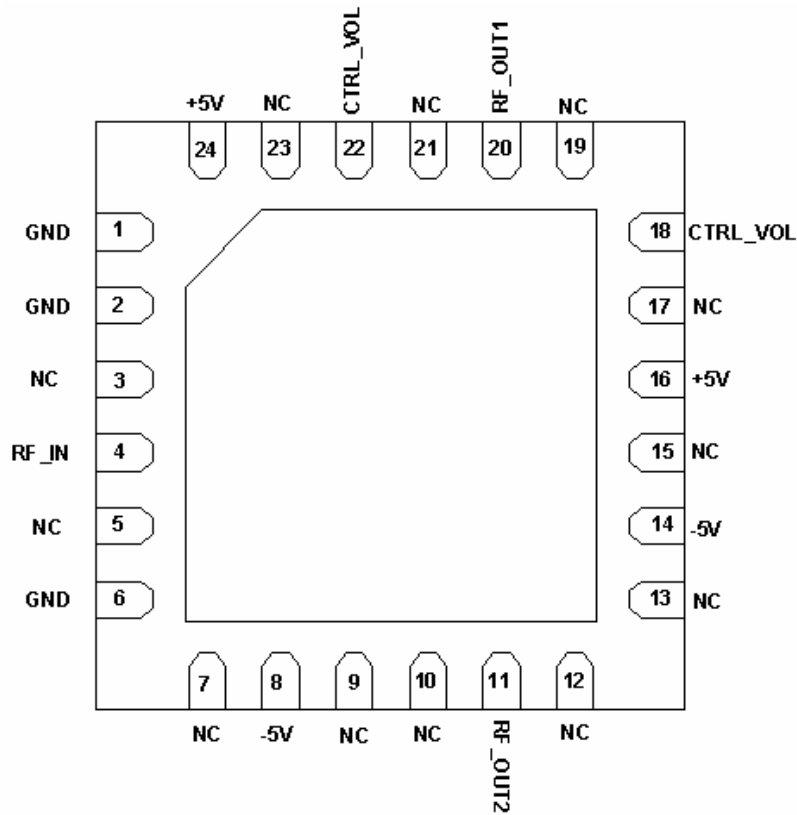


Control Volatges

State	Bias Conditions
Low "0"	0 to 0.5V
High "1"	3.5V to 5.0V

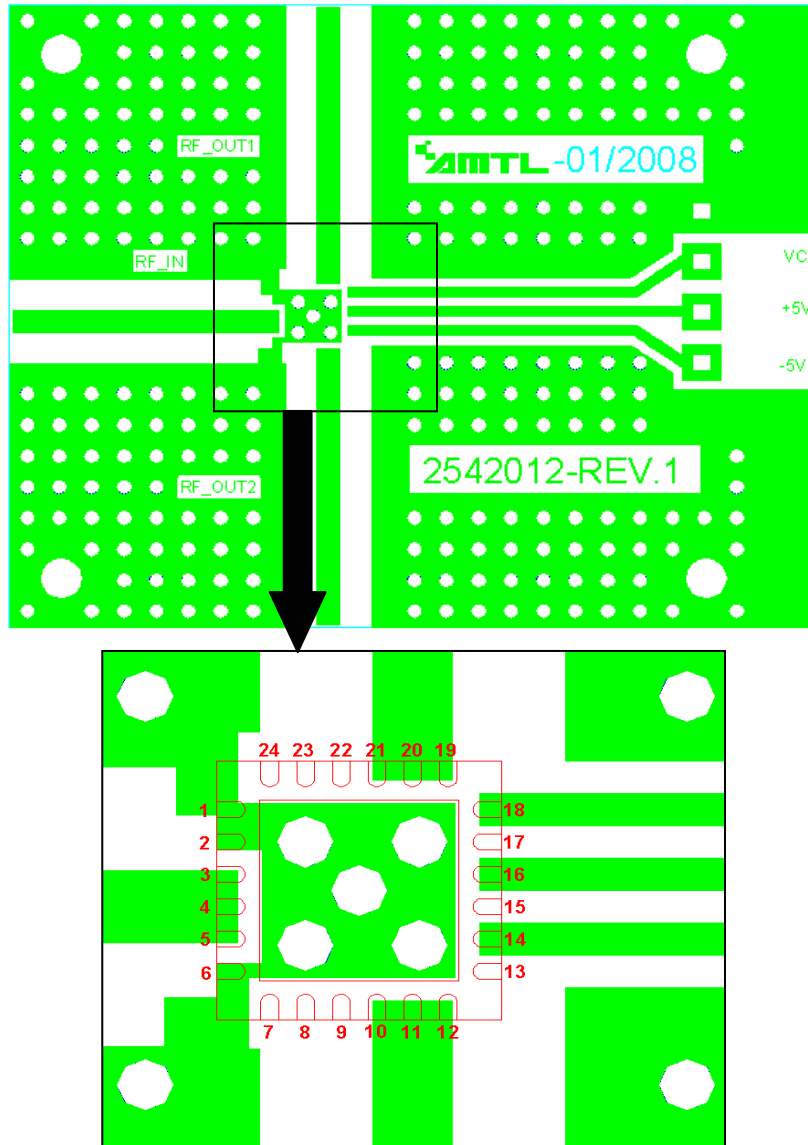
Control Voltage	RF_IN to RF_OUT1	RF_IN to RF_OUT2
Low "0"	OFF	ON
High "1"	ON	OFF

Pin Configuration



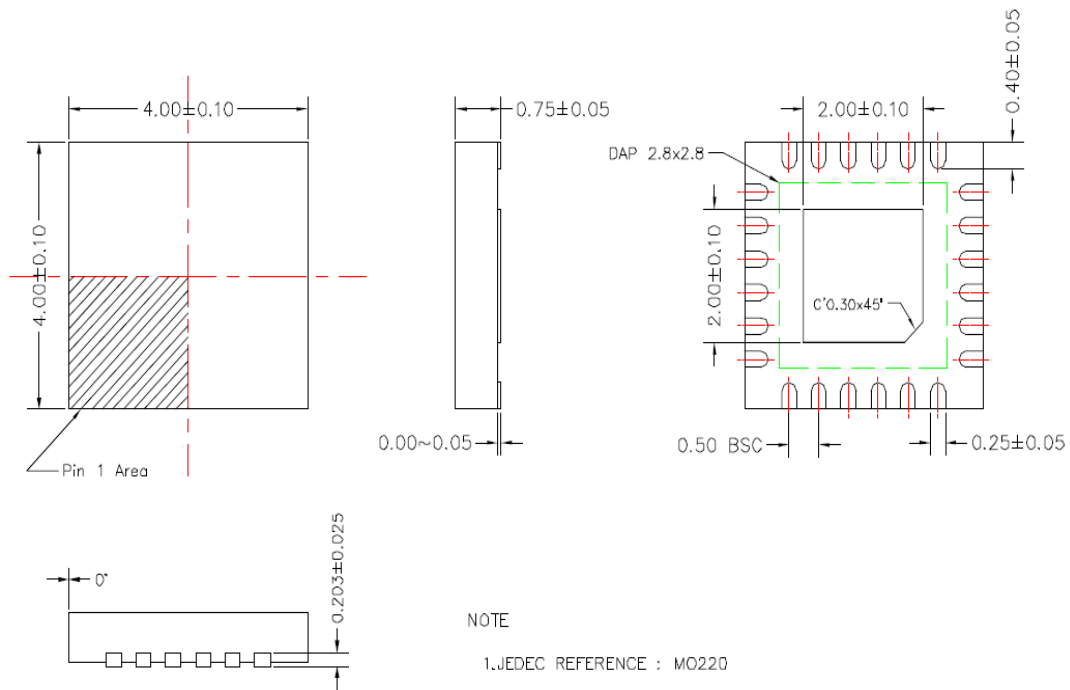
Pin Designations

Symbol	Pin No.	Description
GND	1,2,6	Ground
NC	3,5,7,9,10,12,13,15,17,19,21,23	No Connection
RF In	4	RF Input
-5V	8	Supply voltage
RF_OUT2	11	RF output 2
-5V	14	Supply voltage
+5V	16	Supply voltage
CTRL_VOL	18	control voltage
RF_OUT1	20	RF output 1
CTRL_VOL	22	control voltage
+5 V	24	Supply voltage

Test Board Pattern

Note:

1. Input and output 50 ohm lines are on 20 mil RO4350 substrate.
2. 0.1 μ F capacitors may be additionally used as a second level of bypass for reliable operation

Package Outline



All units are in millimeters



GaAs MMIC devices are susceptible to Electrostatic discharge. Proper precautions should be observed during handling, assembly & testing

All information and Specifications are subject to change without prior notice