

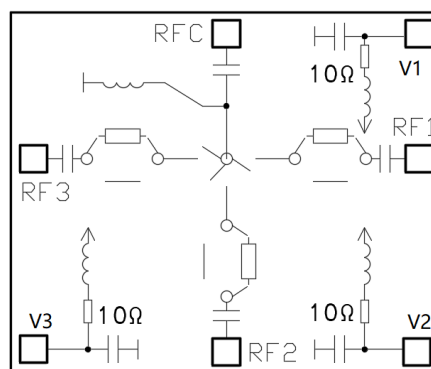
Features

- Frequency: 15~50GHz
- Insertion Loss: 2.5dB@50GHz
- Isolation: 35dB@50GHz
- Absorption switch

Description

SAC3237 is a wideband Absorption SP3T switch, The device is fully passivated and has a layer of PBO for scratch protection. Each RF port contains DC blocking capacitors and a DC bias circuit consisting of high impedance lines and decoupling capacitor.

Functional Diagram



Electrical Performance

$T_{BASE}=25^{\circ}\text{C}$, $Z_0=50\Omega$, +30mA/-5V, CW

Parameter	Min.	Typ.	Max.	Units
Frequency	15	—	50	GHz
Insertion Loss	—	2	2.8	dB
RFC Return Loss	—	12	—	dB
RF _x Return Loss	—	11	—	dB
Isolation	26	30	—	dB
Forward Bias Current	20	25	40	mA
Switching Speed	—	25	—	nS
Forward Bias Voltage	—	1	—	V

Absolute Maximum Ratings

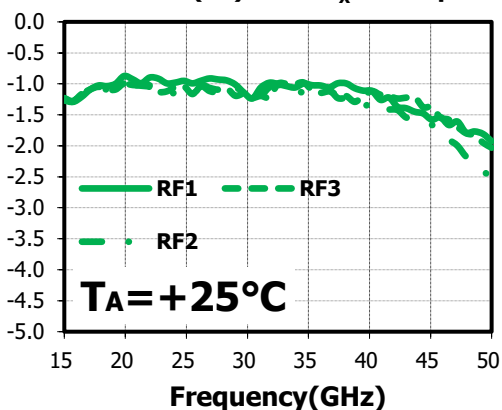
Input Power	+27dBm (-V: -15V)	Operating Temperature (T_{BASE})	-55°C~+85°C
Junction Temperature	150°C	Storage Temperature	-55°C~+150°C
Forward Bias Current	55mA	Reverse Bias Voltage (-V)	-30V

Typical Performance Curve

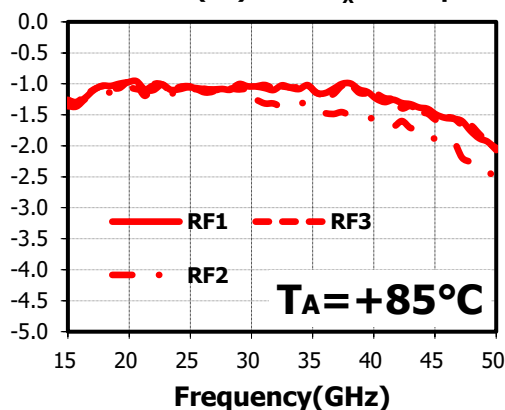
The following curves are taken from SAC3237 evaluation board. De-embedding operation has been Implemented.

+30mA/-5V, CW, $T_{BASE}=+25^{\circ}C$

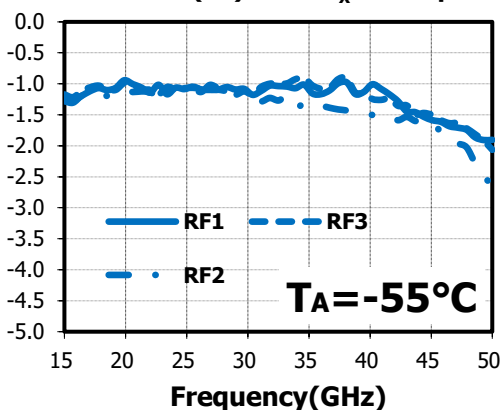
Insertion Loss(dB)RFC2RF_x vs.Frequency



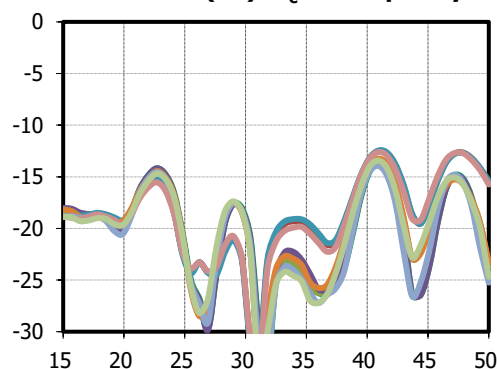
Insertion Loss(dB)RFC2RF_x vs.Frequency



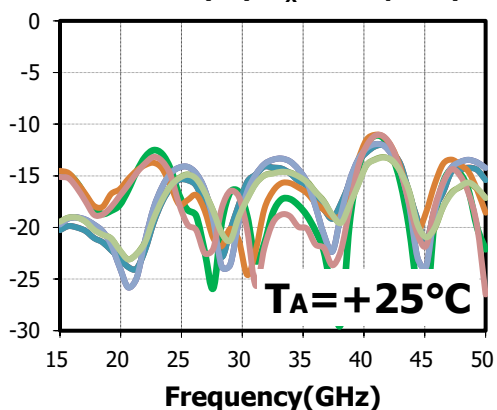
Insertion Loss(dB)RFC2RF_x vs.Frequency



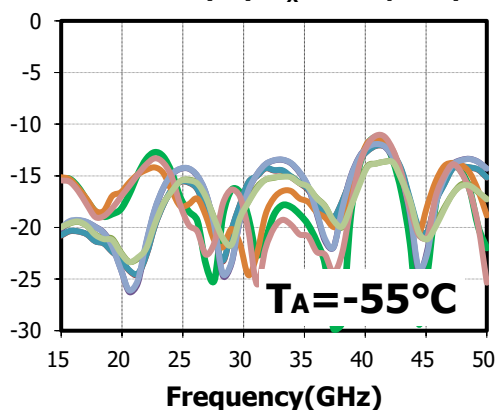
Return Loss(dB)RF_c vs.Frequency



Return Loss(dB)RF_x vs.Frequency



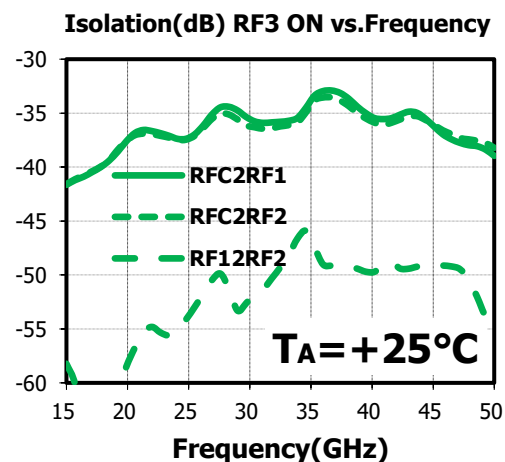
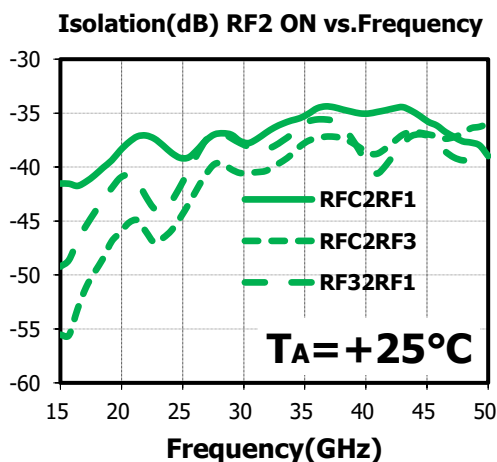
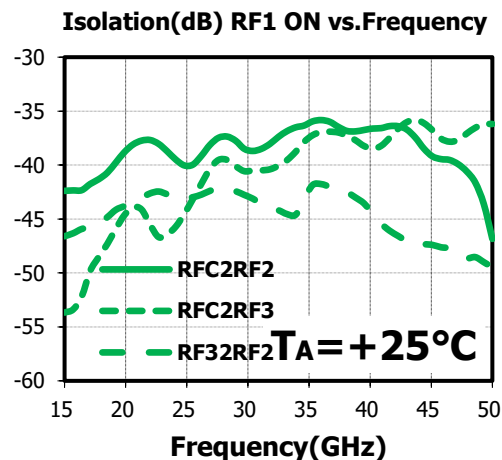
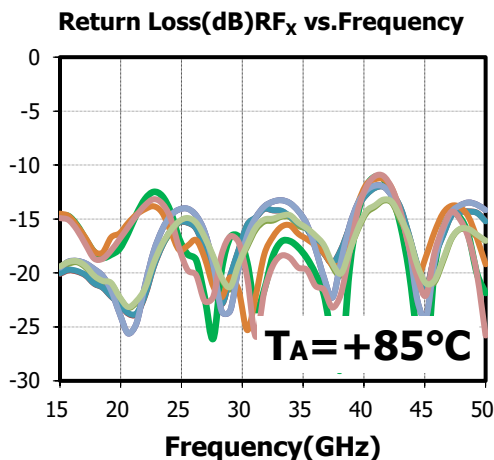
Return Loss(dB)RF_x vs.Frequency



SAC3237

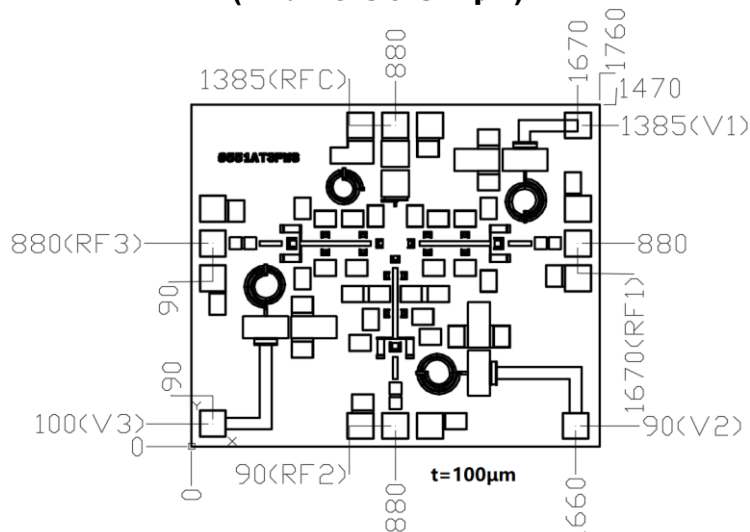
GaAs MMIC PIN Switch
15GHz~50GHz SP3T

Rev 1.0



Die Outline Drawing

(All dimensions in μm)



Truth Table

Inputs			RF Path		
V1	V2	V3	RFC-RF1	RFC-RF2	RFC-RF3
-V	+V	+V	ON	OFF	OFF
+V	-V	+V	OFF	ON	OFF
+V	+V	-V	OFF	OFF	ON

1. -V is reverse bias voltage, A -5V voltage can be used to reverse bias the PIN diode of the chip, for high power applications, a higher negative voltage can be used,

2. +V is forward bias voltage, A voltage of 3-5 V can be used to forward bias the PIN diode, forward bias current is set using external bias resistors placed at pads V1 and V2.

Attention:

1. The back of bare chip is RF and DC ground.
2. The RFC and RFx ports are AC coupled, the withstand voltage is 30V.

Revision History

Revision	Date	Comment
1.0	2024-05-31	First Release