

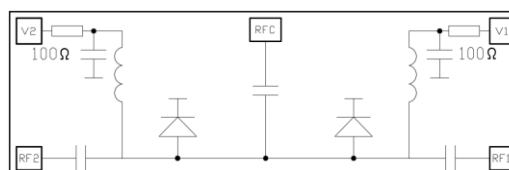
Features

- Frequency: 36~43.5GHz
- Insertion Loss: 0.8dB@38GHz
- Isolation: 24dB@38GHz
- Reflective switch

Description

SAC3238 is a wideband reflective SP2T 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

$T_{BASE}=25^{\circ}C, Z_0=50\Omega, +10mA/-5V, CW$

Parameter	Min.	Typ.	Max.	Units
Frequency	36	—	43.5	GHz
Insertion Loss	—	1	1.6	dB
RFC Return Loss	—	13	—	dB
RFx Return Loss	—	13	—	dB
Isolation	20	24	—	dB
Forward Bias Current	7	10	20	mA
Switching Speed	—	25	—	nS
Forward Bias Voltage	—	1	—	V

Absolute Maximum Ratings

Input Power	+28dBm (-V: -15V)	Operating Temperature (T_{BASE})	-55°C~+85°C
Junction Temperature	150°C	Storage Temperature	-55°C~+150°C
Forward Bias Current	25mA	Reverse Bias Voltage (-V)	-30V

SAC3238



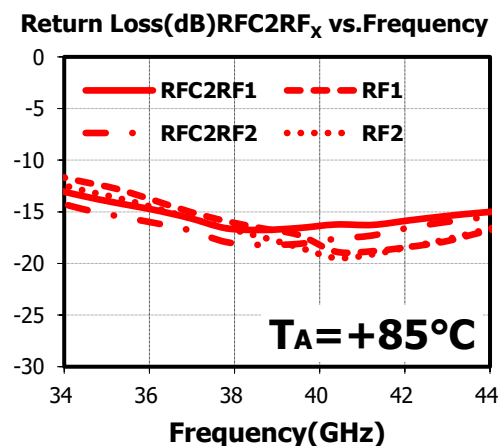
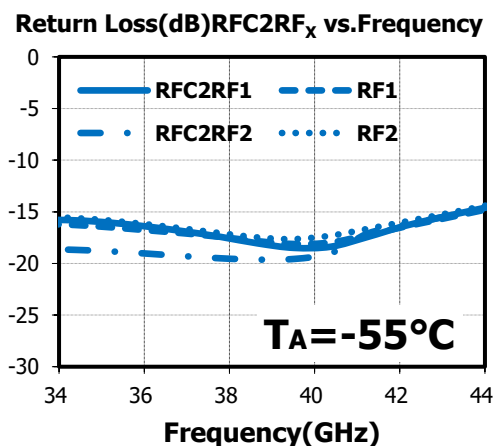
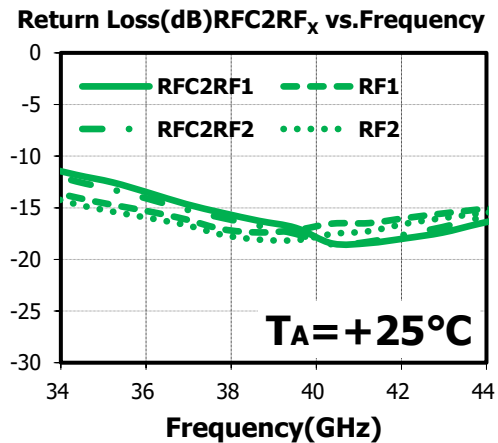
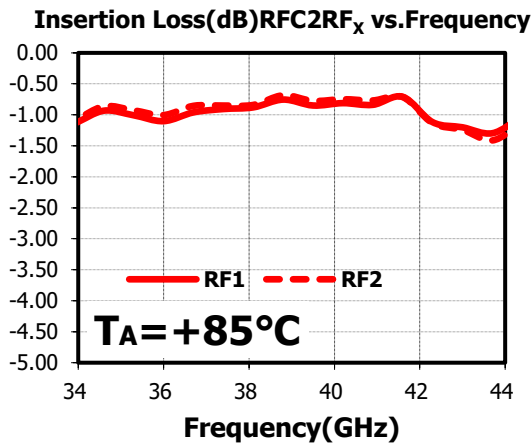
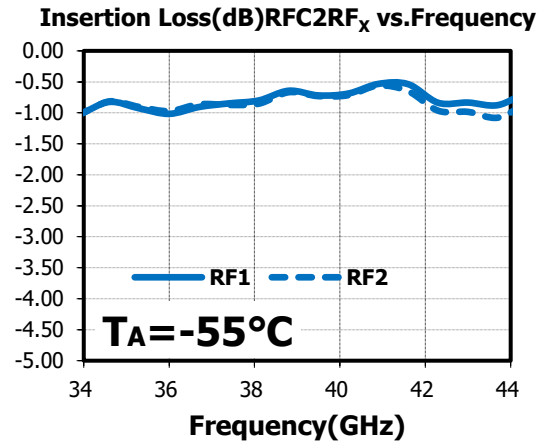
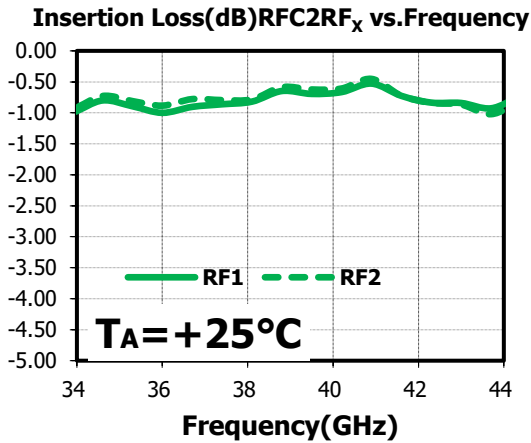
GaAs MMIC PIN Switch
36GHz~43.5GHz SP2T

Rev 1.0

Typical Performance Curve

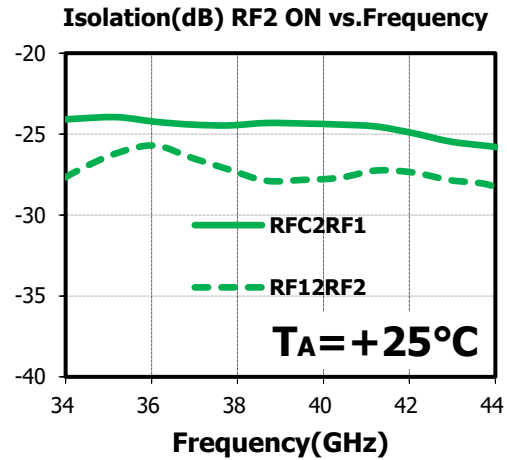
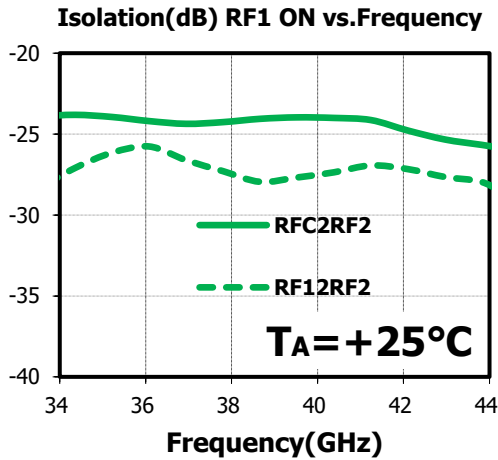
The following curves are taken from SAC3238 evaluation board. De-embedding operation has been Implemented.

+10mA/-5V, CW, T_{BASE}=+25°C



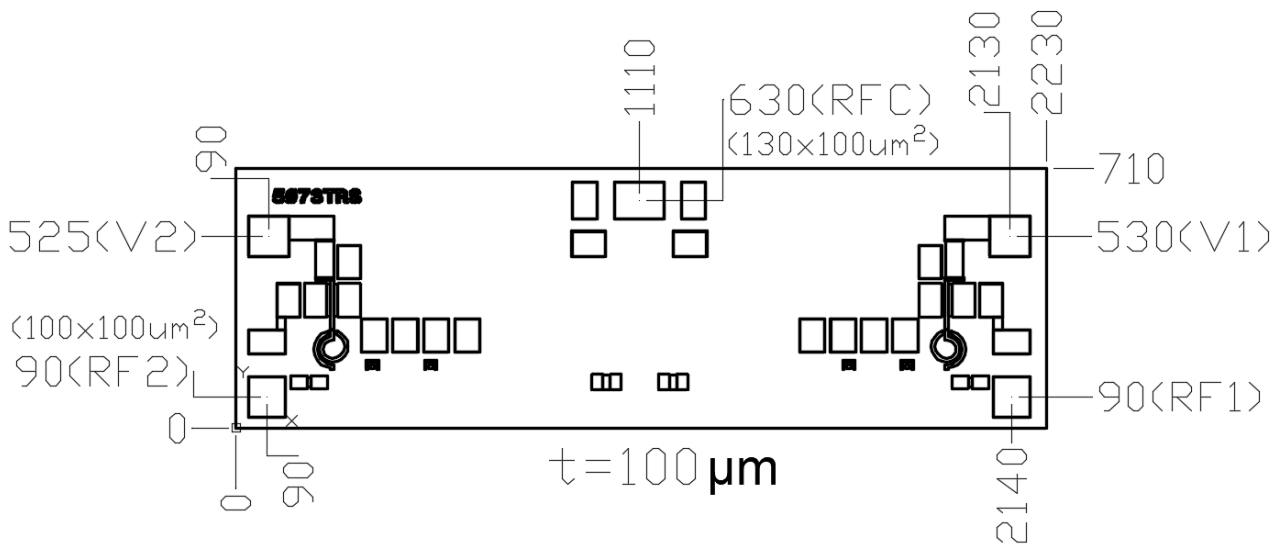
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Die Outline Drawing

(All dimensions in μm)



Truth Table

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

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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

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