SAC3234Q4

GaAs MMIC PIN Switch
22GHz~38GHz SP2T

Rev 1.0

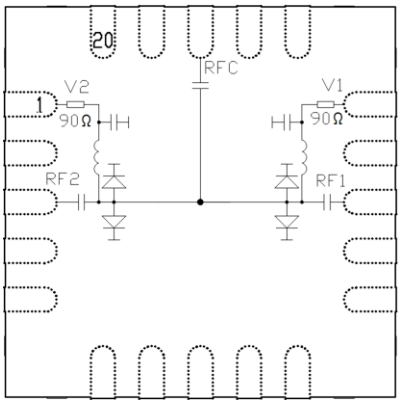
Features

- Frequency: 22~38GHz
- Insertion Loss: 2.3dB@29GHz
- Isolation: 38dB@29GHz
- Reflective switch
- Package: QFN4x4

Description

SAC3234Q4 is a wideband reflective SP2T switch housed in a QFN surface mount package, 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℃, Z_0=50Ω, 15mA/-5V, CW

Parameter	Min.	Typ.	Max.	Units
Frequency	22	—	38	GHz
Insertion Loss	—	2	3.5	dB
Return $Loss_{RFC}$	—	-8	-5	dB
Return $Loss_{RFX}$	—	-8	-5	dB
Isolation	25	35	—	dB
Forward Bias Current	—	15	22	mA
Switching Speed	—	25	—	nS
Forward Bias Voltage	—	1	—	V

Absolute Maximum Ratings

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

RoHS

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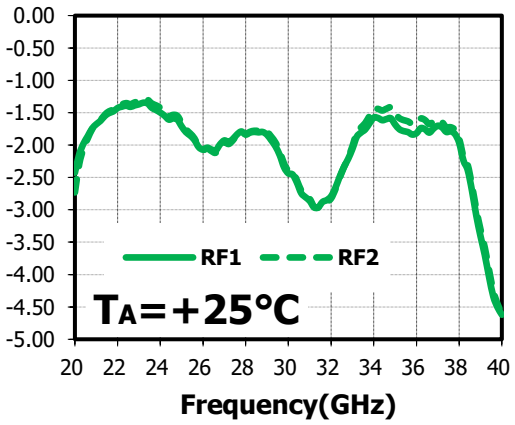
Typical Performance Curve

The following curves are taken from SAC3234Q4 evaluation board. De-embedding operation has been Implemented.
+15mA/-5V, CW, T_{BASE}=+25℃

Insertion Loss(dB)RFC2RF$_X$ vs.Frequency



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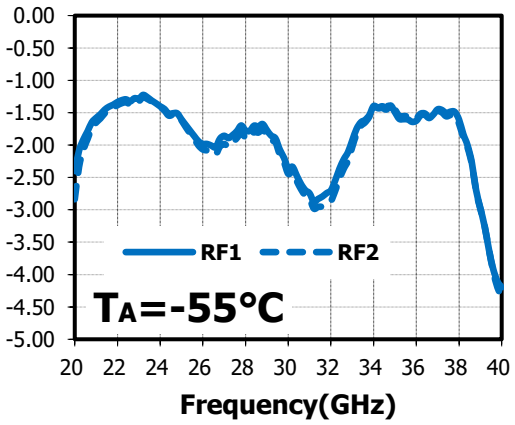

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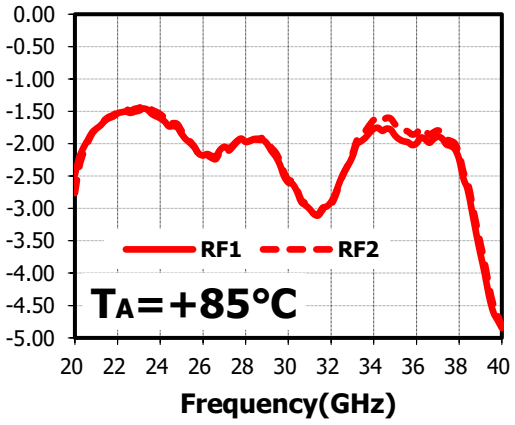
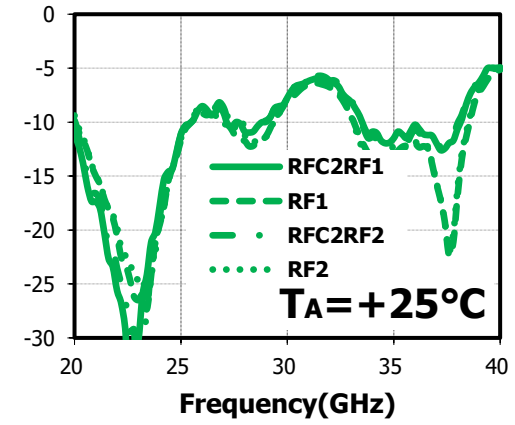
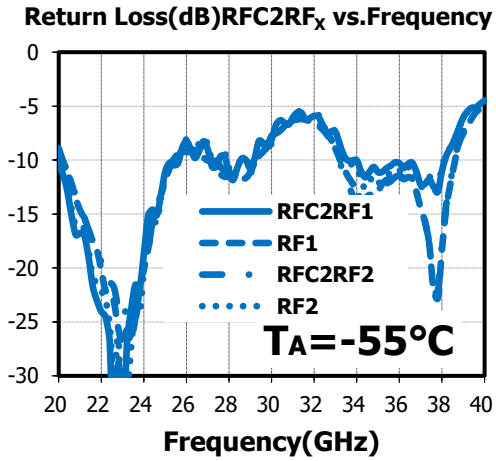
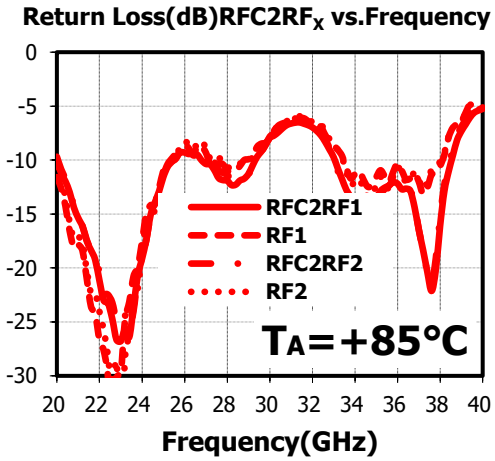
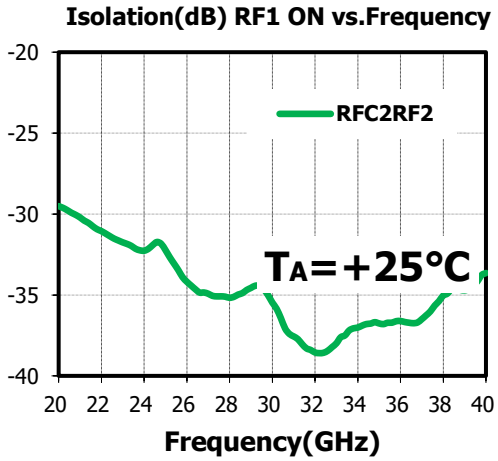


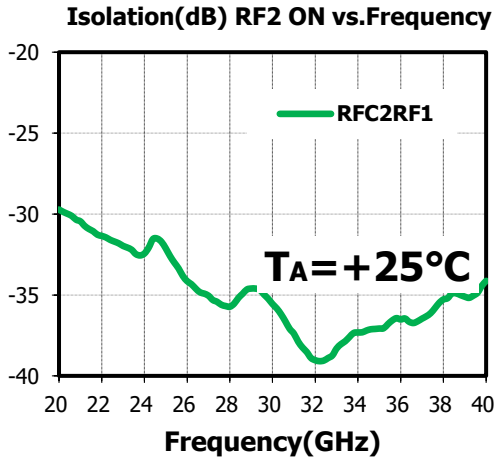
Return Loss(dB)RFC2RF$_X$ vs.Frequency



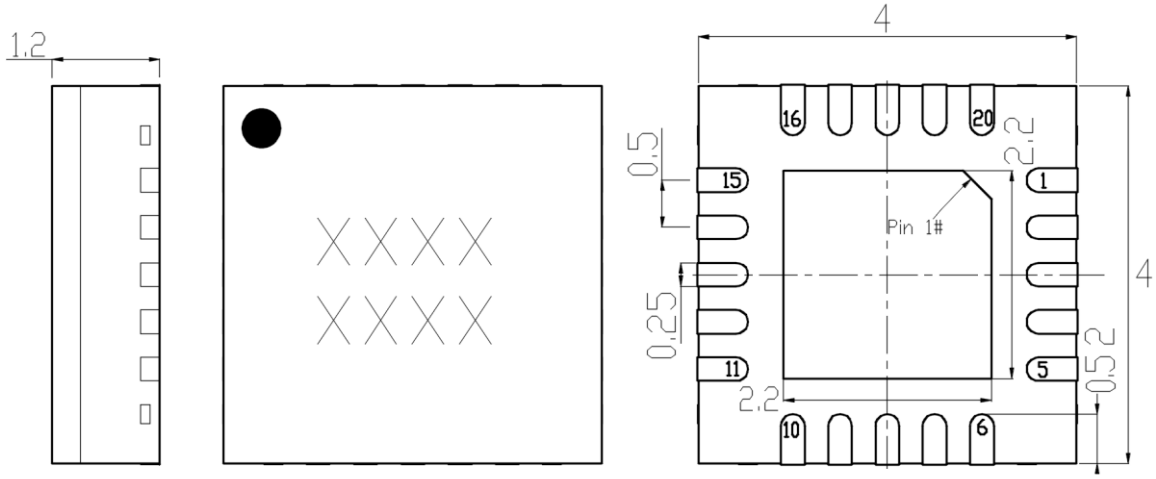








Outline Drawing (mm)



Truth Table

Inputs			Outputs		
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.

Pin Function

Pin No.	Description	Pin No.	Description
1	V2	11	Connect to GND
2	Connect to GND	12	Connect to GND
3	RF2	13	RF1
4	Connect to GND	14	Connect to GND
5	Connect to GND	15	V1
6	Connect to GND	16	Connect to GND
7	Connect to GND	17	Connect to GND
8	Connect to GND	18	RFC
9	Connect to GND	19	Connect to GND
10	Connect to GND	20	Connect to GND

Attention:

1. The RF input and output ports have integrated DC blocking capacitors with a voltage resistance of 30V.
2. ESD tolerance level is HBM Class 1A
3. The moisture resistance level of the packaged product is 2a, the storage environment is less than or equal to 30 ℃/60% RH, and the lifespan of the surrounding workshop is.
4. When using packaged products, try to use thin RF boards and increase the number of groundings vias at the bottom of the device to reduce grounding inductance.
5. Remove the vacuum packaging and bake in an environment of 125+/-5 ℃ for 6 hours before soldering.

Revision History

Revision	Date	Comment
1.0	2025-01-15	First Release

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