

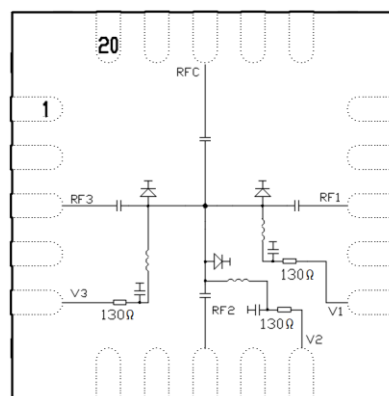
## Features

- Frequency: 24~35GHz
- Insertion Loss: 1.5dB@33GHz
- Isolation: 30dB@33GHz
- Reflective switch
- Package: QFN4x4

## General Description

SAC3233Q4 is a wideband reflective SP3T 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

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

Parameter	Min.	Typ.	Max.	Units
Frequency	24	—	35	GHz
Insertion Loss	—	1.5	2.5	dB
RFC Return Loss	—	13	—	dB
RF <sub>x</sub> Return Loss	—	12	—	dB
Isolation	26	30	—	dB
Forward Bias Current	8	10	20	mA
Switching Speed	—	25	—	nS
Forward Bias Voltage	—	1	—	V

## Absolute Maximum Ratings

Input Power	+33dBm (-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

# SAC3233Q4



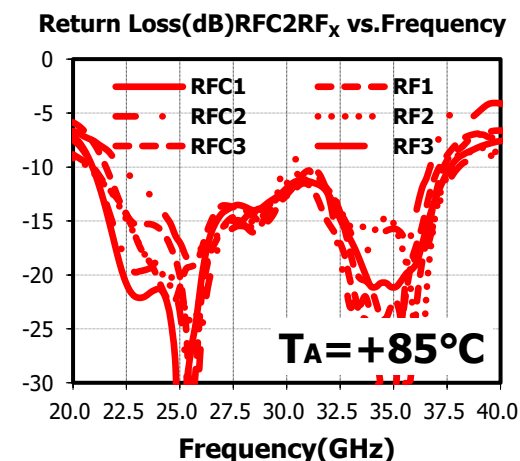
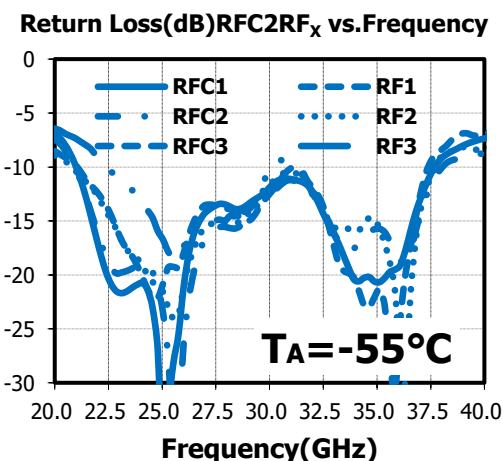
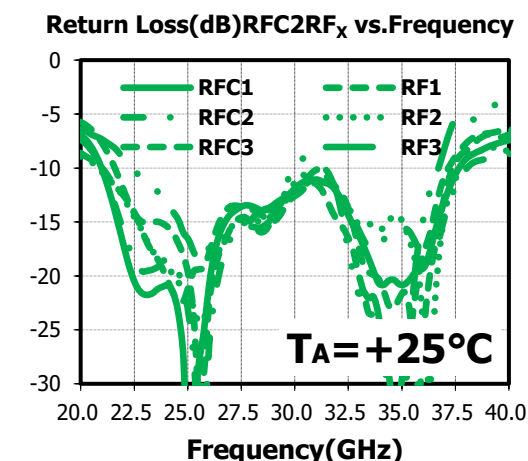
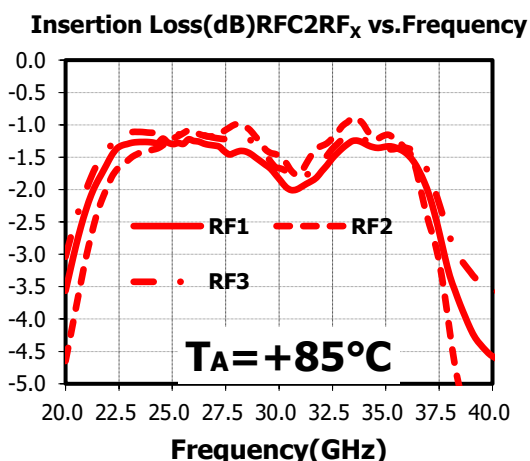
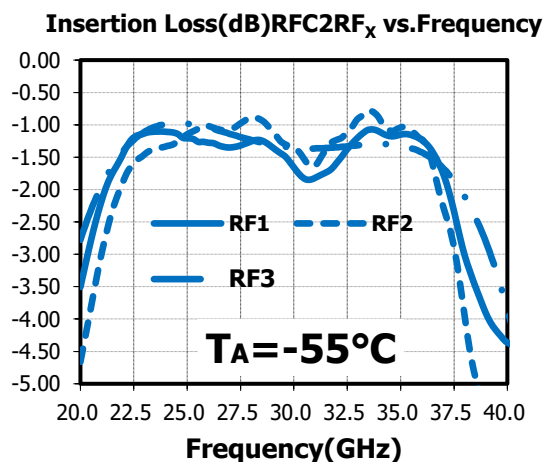
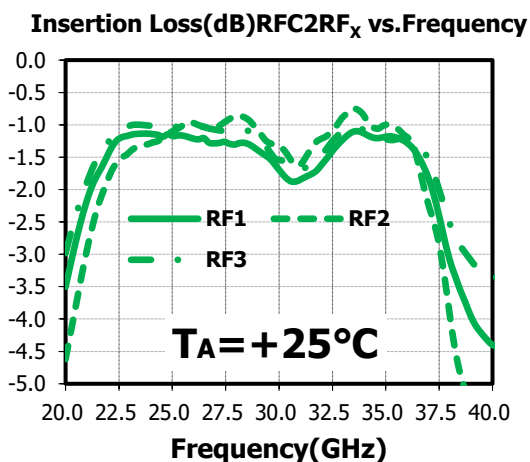
GaAs MMIC PIN Switch  
24GHz~35GHz SP3T

Rev 1.0

## Typical Performance Curve

The following curves are taken from SAC3233Q4 evaluation board. De-embedding operation has been Implemented.

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



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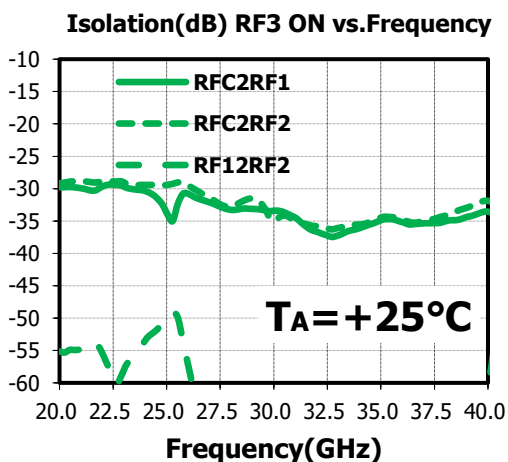
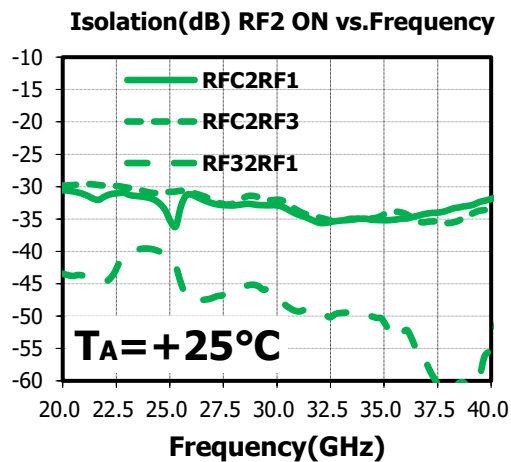
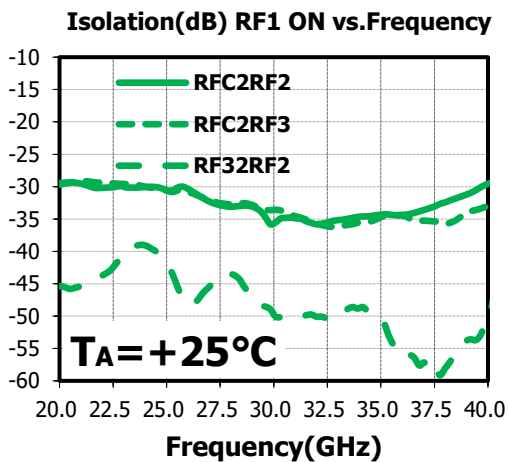
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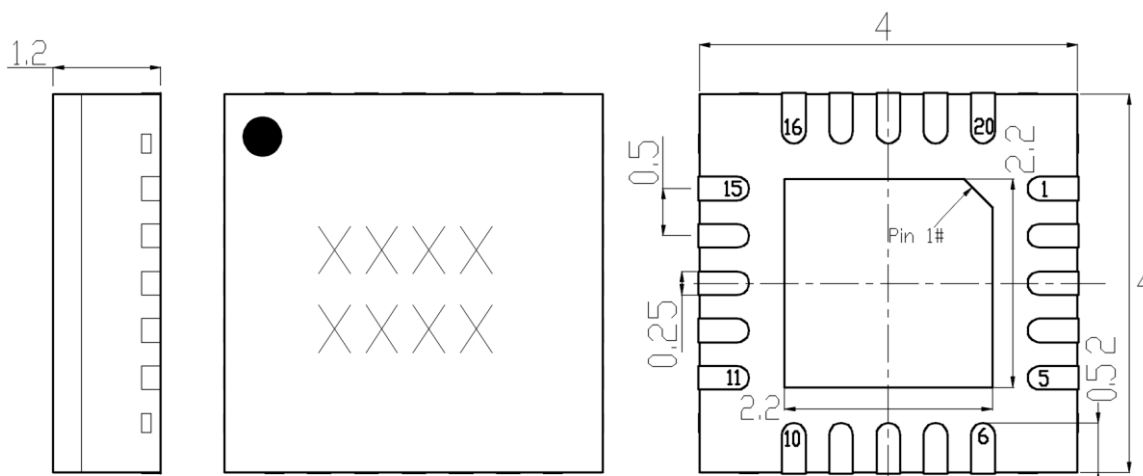


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## Outline Drawing (mm)



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## Truth Table

Inputs			Outputs		
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

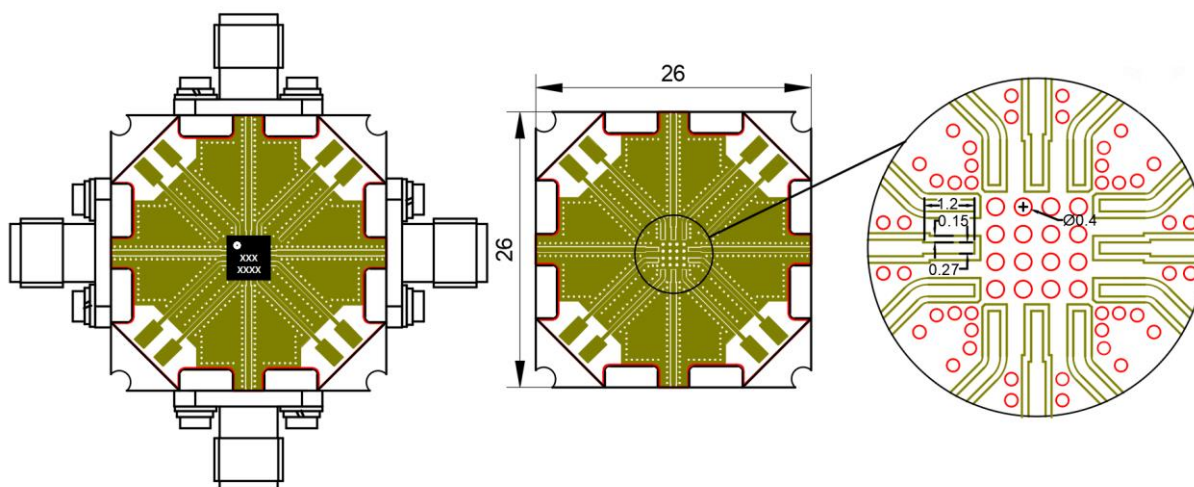
1. -V is reverse bias voltage, A -5V voltage can be used to reverse bias the PIN diode of the chip, for high power applications, a higher negative voltage can be used,

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.

## Pin Function

Pin No.	Description	Pin No.	Description
1	Connect to GND	11	V1
2	Connect to GND	12	Connect to GND
3	RF3	13	RF1
4	Connect to GND	14	Connect to GND
5	V3	15	Connect to GND
6	Connect to GND	16	Connect to GND
7	Connect to GND	17	Connect to GND
8	RF2	18	RFC
9	Connect to GND	19	Connect to GND
10	V2	20	Connect to GND

## SAC3233Q4 Evaluation Board



The Evaluation board is a 2-layer board fabricated using Rogers 4350  $t=0.254$  and using best practices for high frequency RF design. The RF input and RF output traces have a  $50 \Omega$  characteristic impedance.

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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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