

Features

- Frequency: 1~40GHz
- Dynamic Range: 30dB
- BCB Layer Protected
- Die Size: 1.25mm×1.25mm×0.1mm

Typical Applications

- Radar and ECM
- RF/ Microwave Radio
- Test and Measurement
- Instrumentation

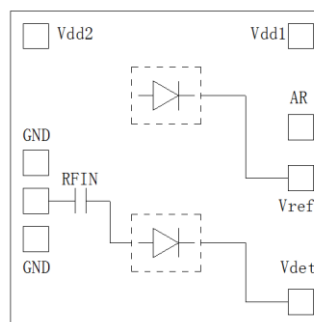
General Description

SAC1002 is an envelope detector that integrates a matched detection diode (Vdet). A reference diode is also available to be used in differential mode (Vref).

It is designed for wide range of applications where an accurate transmitted power control is required, typically commercial communication systems.

The circuit is manufactured with a Schottky diode MMIC process with via holes through the substrate. It is available in bare die chip.

Functional Diagram



Electrical Performance ($T_A=+25^\circ\text{C}$, $V_D=+5\text{V}$, $Z_0=+50\Omega$)

Parameter	Min.	Typ.	Max.	Units
Frequency	1~40			GHz
Flatness	—	1	—	dB
Dynamic Range	—	30	—	dB
Input Return Loss	—	-10	—	dB
Rise Time	—	50	—	ns
Fall Time	—	300	—	ns
I_D	—	2	—	mA

Absolute Maximum Ratings

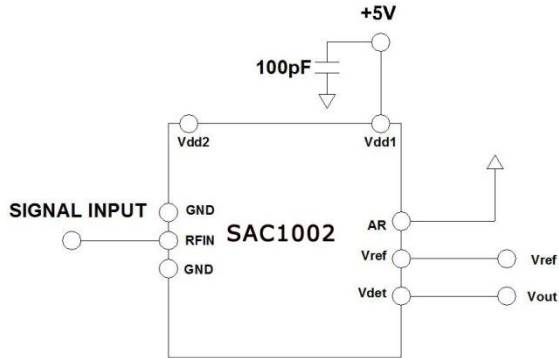
Maximum Input Power detection	+18dBm	Operating temperature range	-55°C~+85°C
V_D	+6V	Storage temperature range	-65°C~+150°C

SAC1002

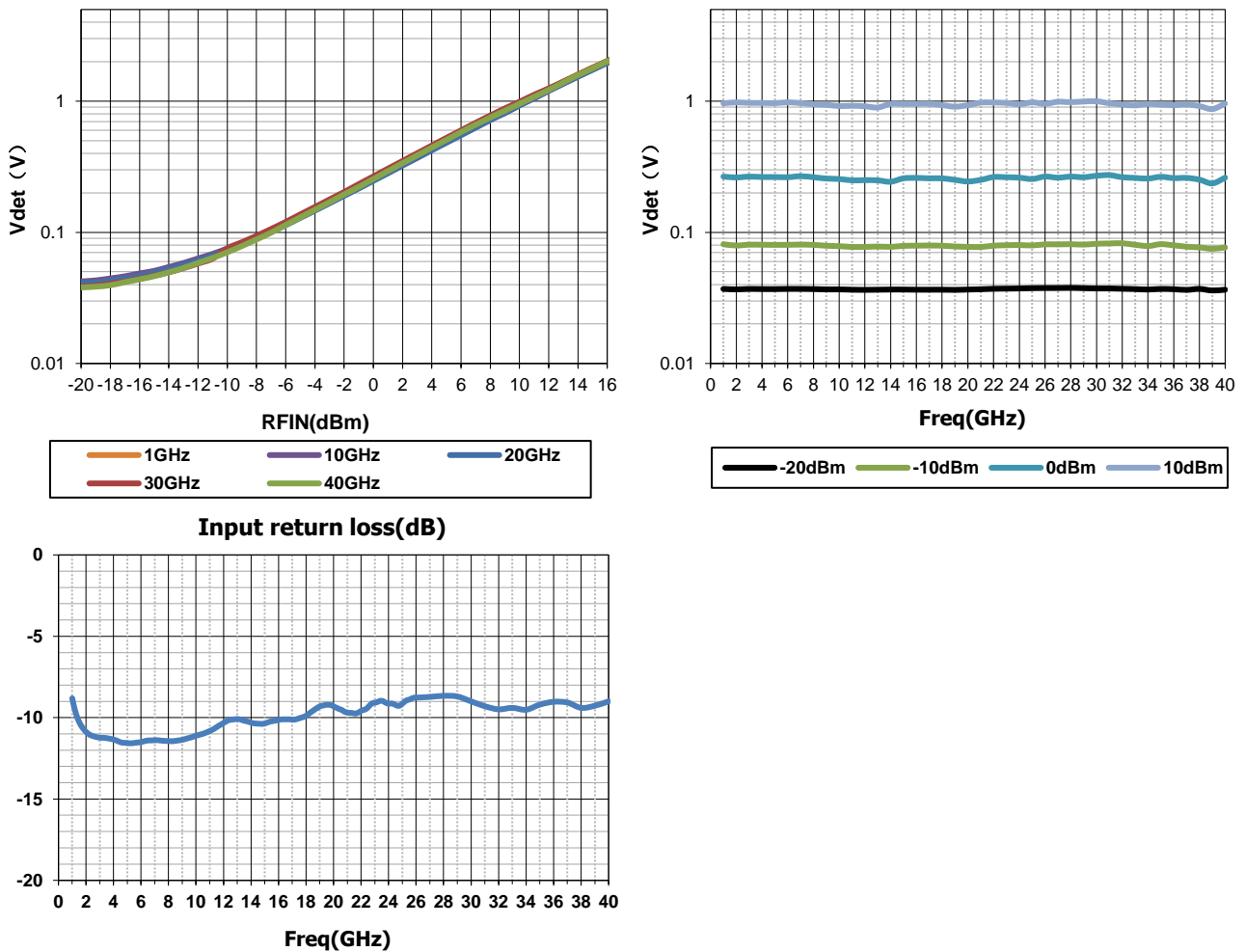
GaAs MMIC Envelope Detector
1~40GHz

Rev 1.7

Application 1 (1~40GHz detector)



Typical Performance Curve



SuperApex, LLC

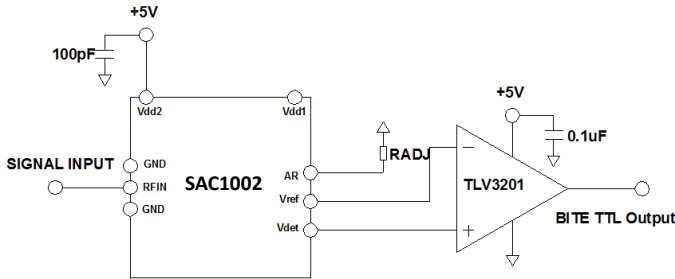
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SAC1002

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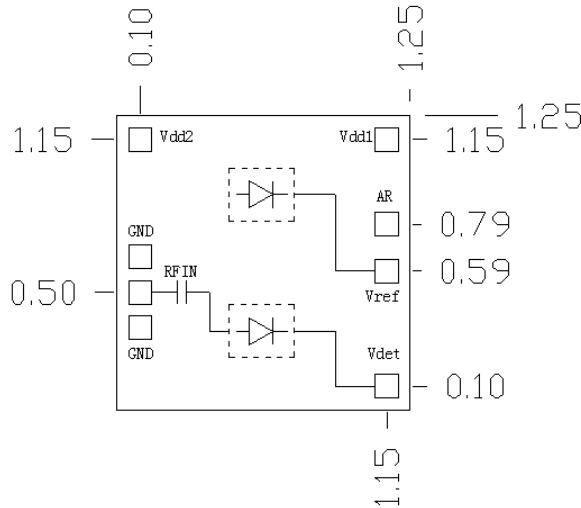
Rev 1.7

Application 2 (1~40GHz BITE)



The circuit is used in built-in test equipment. Resistor R1 sets threshold power. When the input signal is higher than threshold power, the comparator generates output TTL high level. R1: 510ohm~5.1KOhm.

Die Outline (All dimensions are in mm)



Chip thickness: 100µm
Chip size: 1.25×1.25×0.1mm±35µm
Pads size: 100/100µm

ESD CAUTION



ESD (electrostatic discharge) sensitive device. Charged devices, the circuit boards, can discharge without detection. Damage may occur on devices subjected to high energy ESD. Therefore, proper ESD precautions should be taken to avoid performance degradation or loss of functionality.