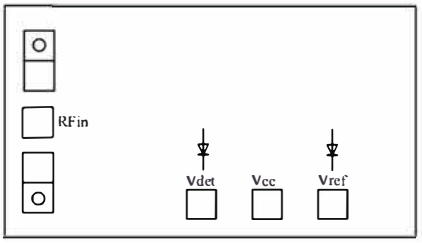
GPD-1560
GaAs MMIC Negative Peak Power Detector Chip

Performance Characteristics

- Frequency range: 15GHz~60GHz
- Detection sensitivity: 290mV/mW
- Return loss: ≤ -9.5dB
- Dynamic range: 30dB
- Chip size: 1.25mm x 0.70mm x 0.07mm

Functional Block Diagram



Product Introduction

This chip is made using GaAs Schottky diode technology and grounded through back through-hole. Operating frequency 15GHz~60GHz, powered by a +5V power supply. The Vdet single ended output detection voltage has a negative slope and can compensate for temperature deviation by subtracting it from the Vref voltage.

Microwave Electrical Parameters (TA=+25 ° C, Vcc=5V, Pi: 0dBm, load open circuit)

Index	Symbol	Min	Typ	Max	Unit
Input Frequency	f_{in}	15		60	GHz
Detection Sensitivity	βv		290		mV/mW
Return Loss	RL			-9.5	dB
Detection Voltage Difference	V_{diff}	20		2000	mV
Dynamic Range	D_r		30		dB
Working Current	I_{CC}		0.3		mA

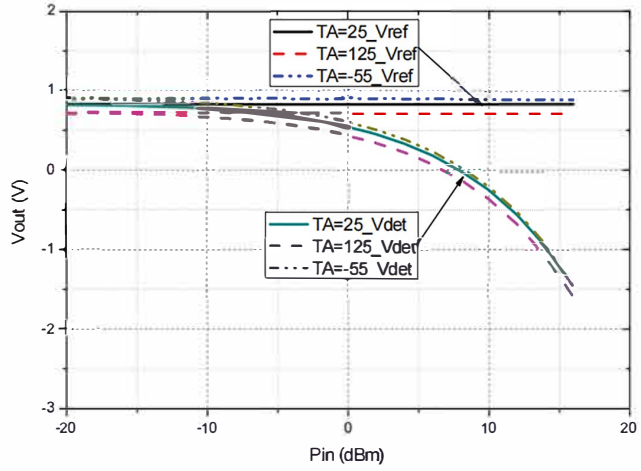
The formula for calculating the detection voltage difference is: V mountain n=Vref - Vdet, Vde, which is the detection output voltage, and Vref is the reference output voltage of about 0.8V.

Use Restriction Parameters

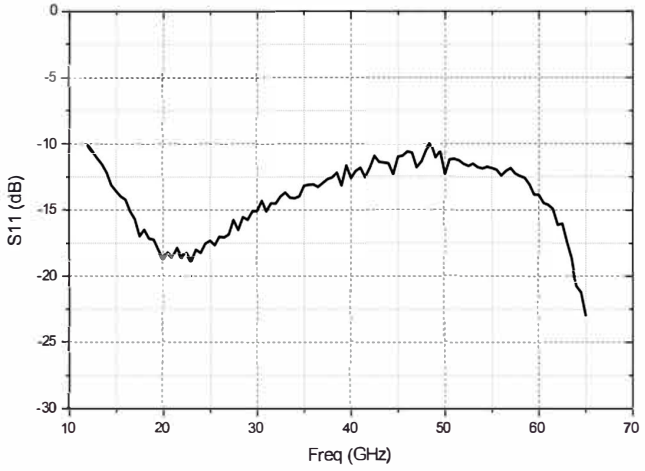
Parameter	Symbol	Limit Value
Maximum Input Power	P_p	+20dBm
Maximum Operating Voltage	V_{max}	6V
Operating Temperature	T_{op}	-55℃～+125℃
Storage Temperature	T_{STG}	-65℃～+150℃

Typical curve (test conditions: TA=+25 ° C, Vcc=5.0V, Pj : OdBm, Load open circuit)

Vref/VDet single ended output voltage vs Power @ 20GHz



Input return loss vs. Frequency



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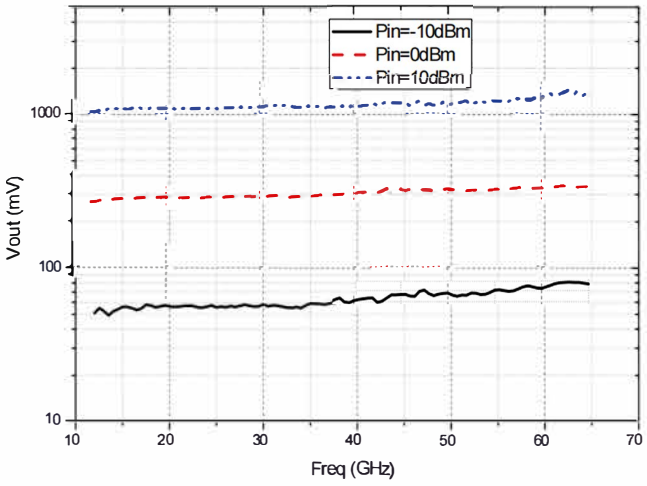
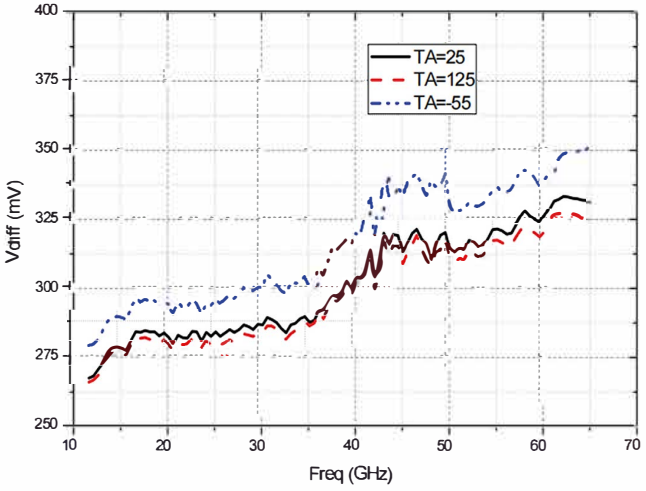
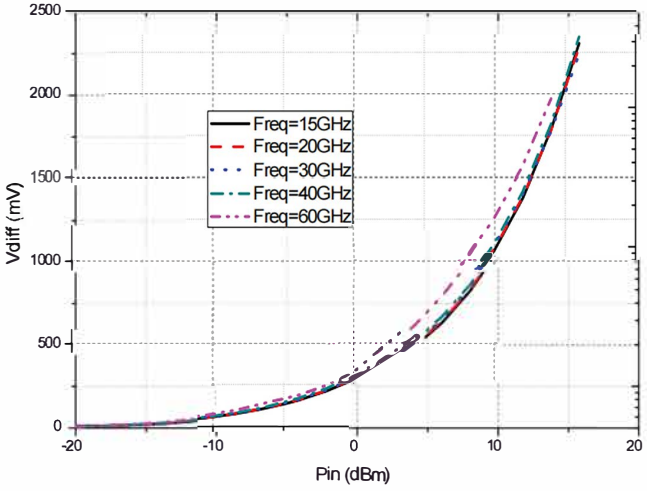
Detecting voltage difference $|V_{diff}|$ vs Frequnency



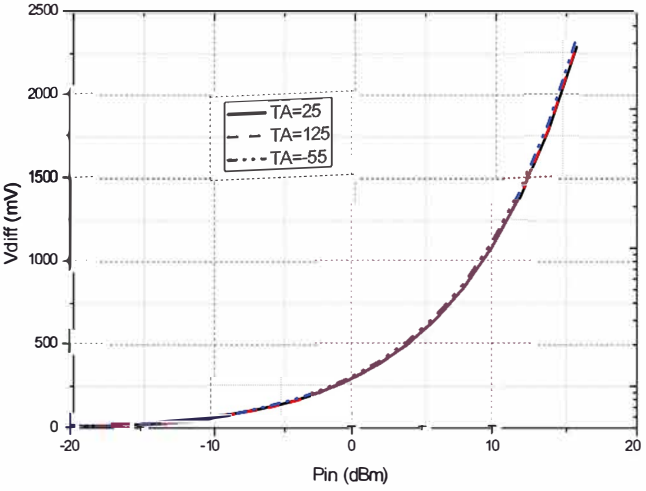
Detection sensitivity vs. Frequency



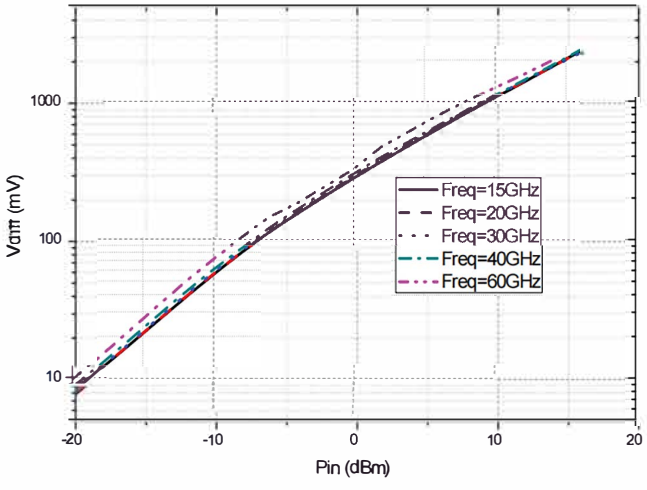
Detecting voltage difference $|V_{diff}|$ vs Power



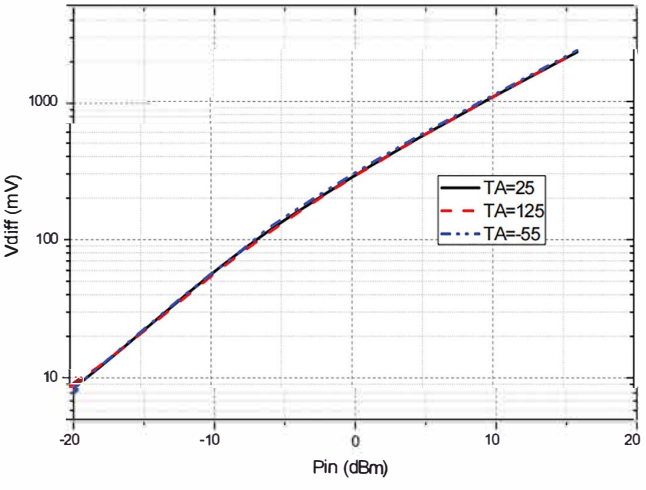
Detecting voltage difference $|V_{diff}|$ vs Power@20GHz



Detecting voltage difference W_{diff}|(LOG) vs Power



Detecting voltage difference W_{diff}|(LOG) vs Power@20GHz



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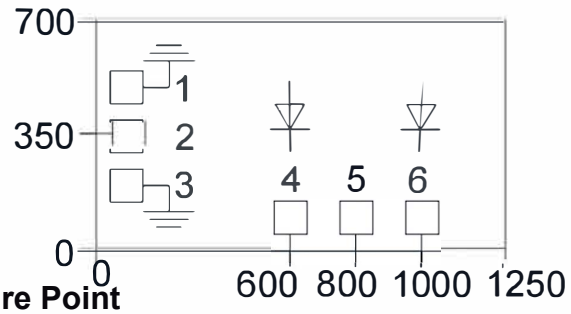
Outline Dimensions and Pressure Point Arrangement Dagram

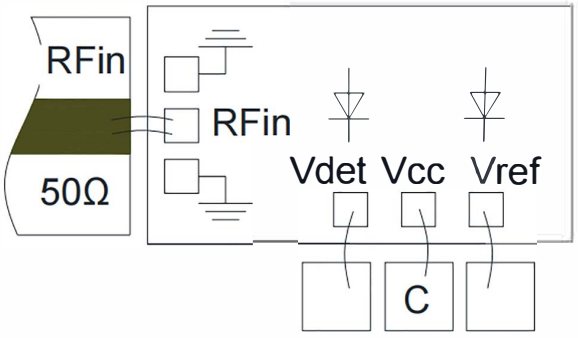


Note: The units in the figure are all micrometers (μm); The tolerance of the external dimensions is ±100μm.

Definition of Bonding Pressure Point

Pressure Point No.	Function Symbol	Function Description	PAD Dimensions
1	GND	Grounding point (for probe testing only)	100×100μm²
2	RFin	RF signal input terminal	100×100μm²
3	GND	Grounding point (for probe testing only)	100×100μm²
4	Vdet	Detection voltage output terminal	100×100μm²
5	Vcc	Power supply terminal	100×100μm²
6	Vref	Reference voltage output terminal	100×100μm²

Suggested Assembly Diagram



Note:

1. The equivalent resistance of the Vdet and Yref terminals needs to be over 100k ohms, and the Yref port can be opened when not in use;
2. The RFin RF end needs to add a DC blocking capacitor according to the usage conditions, while the Vee power supply end requires a chip filter capacitor of 1000pF

Note:

1) Assemble and use in a purified environment;
2) GaAs material is very brittle and the chip surface is easily damaged (do not touch the surface), so caution must be taken when using it;
3) Use 1-2 bonding wires (25 μ m diameter gold wire) for input and output, and keep the bonding wires as short as possible, not over 300 μm: the back of the chip must be grounded;
4) Use 80/20 gold tin sintering, with a sintering temperature not exceeding 300'C and a sintering time as short as possible, not exceeding 30 seconds; This product belongs to the category of electrostatic sensitive devices. Please pay attention to anti-static measures during storage and use;
5) Store in a dry, nitrogen environment;
6) Do not attempt to clean the surface of the chip using dry or wet chemical methods;
7) Please contact the supplier if you have any questions.

This product is sensitive to static electricity, please pay attention to anti-static measures during use

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