

Keysight Technologies

HSCH-9161 HSCH-9162

GaAs Detector Diode

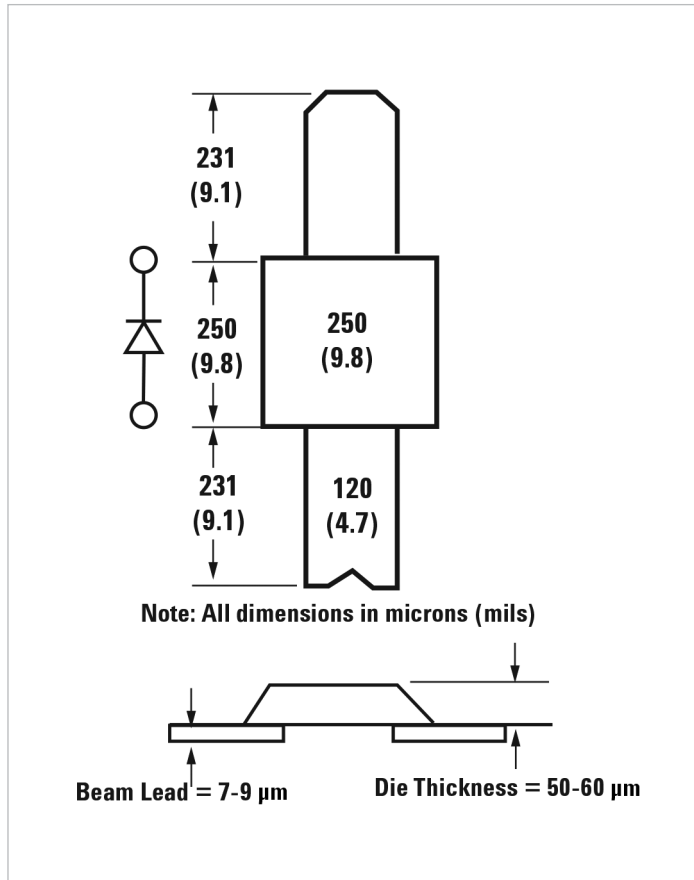
Data Sheet

Features

- Low junction capacitance
- $f_c > 200$ GHz
- Lower temperature coefficient than silicon
- Durable construction
Typical 6 gram beam lead strength
High power handling capability

Description

The HSCH-916x is a discrete, beam lead, GaAs diode fabricated using the modified barrier integrated diode (MBID) process.



Absolute Maximum Ratings

Symbol	Parameters/conditions	Typ.	Min.	Max.	Units
T_{op}	Operating temperature range		-65	150	°C
T_{stg}	Storage temperature range		-65	200	°C
P_B	Burnout power	20			dBm

DC Specifications/Physical Properties

($T_A = 25\text{ °C}$)

Part number	Junction capacitance (pF)		Video resistance (kΩ)		Voltage sensitivity strength (mV/μW)		Beam lead strength	
	Typ.	Min.	Max.	Min.	Typ.	Max.	Unit	
HSCH-9161	0.035	2.5	7.5	0.5		3	Grams	
HSCH-9162	0.035	1.8	7.5	0.5		3	Grams	

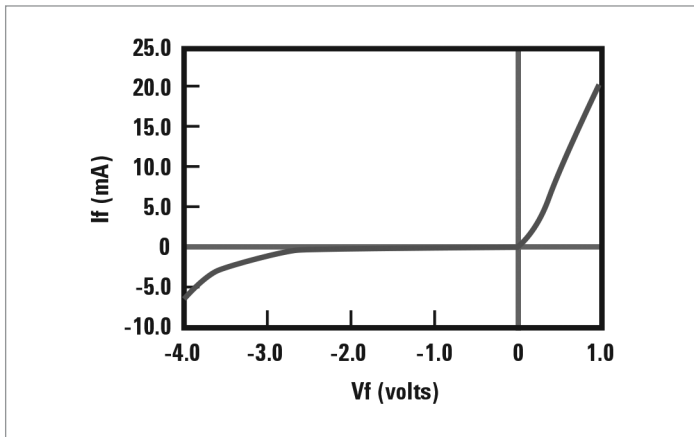


Figure 2. Typical diode IV characteristic

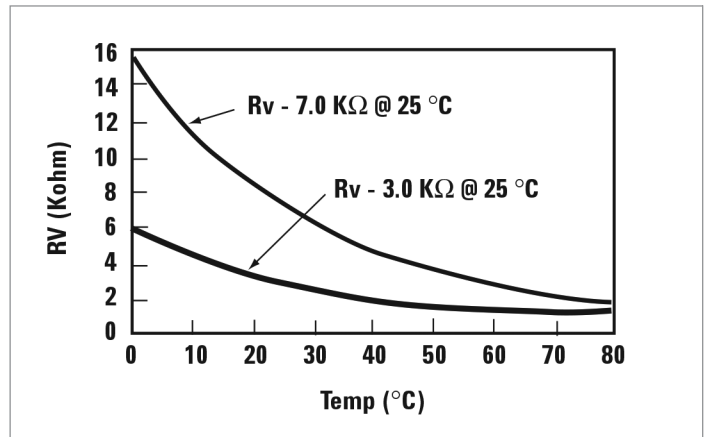


Figure 3. Diode parameter variation with temperature

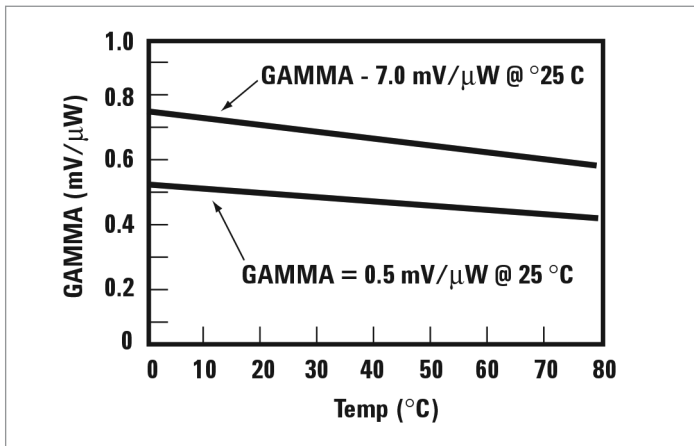


Figure 4. DC measurement assumes 50 Ω load; ideal diode would be 1 mV/μW

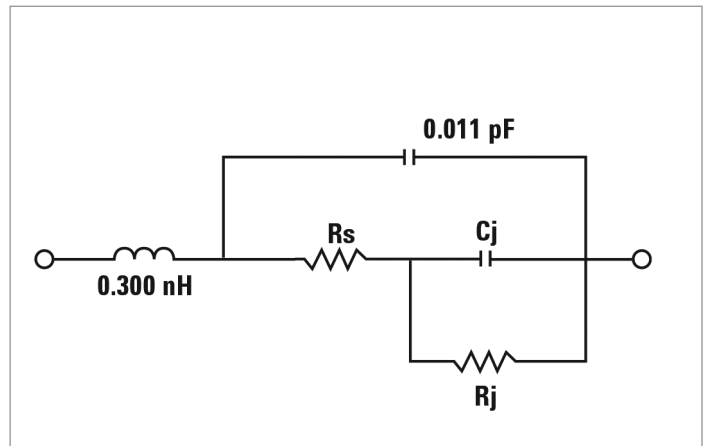


Figure 5. $R_v = R_j + R_s$

1. Note: Each graph line represents a different value of RV or gamma at room temperature.

Applications

This diode is suitable for medium–low barrier, zero bias detector applications. The HSCH-916x is functional through W–band (110 GHz) and can be mounted in microstrip, finline, and coplanar circuits.

Assembly Techniques

Diodes are ESD sensitive. ESD preventive measures must be employed in all aspects of storage, handling, and assembly. Diode ESD precautions, handling considerations, and bonding methods are critical factors in successful diode performance and reliability.

Beam Lead Diode Bonding and Handling Procedures, Application Note (5991-3513EN) provides basic information on these subjects.

Typical small signal parameters as a function of bias

Parameter	Bias voltage			
	-4.0 V	Zero bias	+0.1 V	+0.5 V
$R_s(\Omega)$	20	20	20	20
$R_j(\Omega)$	440	3000	277	34
$C_j(\text{pF})$	0.019	0.035	0.027	0.034

Note: Parameter values extracted from 26–40 GHz S–parameter data at –20 dBm.

Notes

This data sheet contains a variety of typical and guaranteed performance data. The information supplied should not be interpreted as a complete list of circuit specifications. Customers considering the use of this, or other TCA GaAs ICs, for their design should obtain the current production specifications from Keysight Technologies, Inc.. In this data sheet the term typical refers to the 50th percentile performance. For additional information and support email: mmic_help@keysight.com.

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