



# HSCH-9161 HSCH-9162 GaAs Detector Diode

## Data Sheet

### Description

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

### Applications

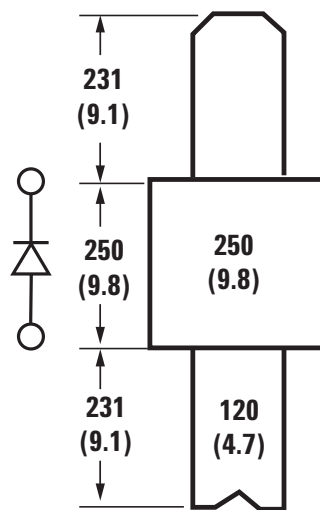
This diode is suitable for medium– low barrier, zero bias detector applications. The HSCH-916x is functional through W–band (110 GHz) and can be mounted in microstrip, finline, and coplanar circuits.

### Assembly Techniques

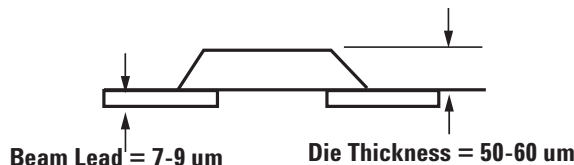
Diodes are ESD sensitive. ESD preventive measures must be employed in all aspects of storage, handling, and assembly. Diode ESD precautions, handling considerations, and bonding methods are critical factors in successful diode performance and reliability.

Agilent application note #55, "Beam Lead Diode Bonding and Handling Procedures" provides basic information on these subjects.

Additional References:  
PN# 2, "TC611 Diode Model," and  
PN# 12, "TC611 GaAs Detector Diode Sensitivity Measurements."



Note: All dimensions in microns (mils)



### 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

### Absolute Maximum Ratings

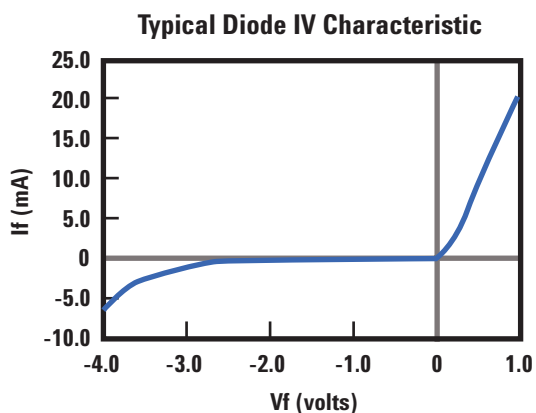
Symbol	Parameters/Conditions	Min.	Typ.	Max.	Units
$T_{op}$	Operating Temp. Range	–65		150	°C
$T_{stg}$	Storage Temp. Range	–65		200	°C
$P_B$	Burnout Power		20		dBm



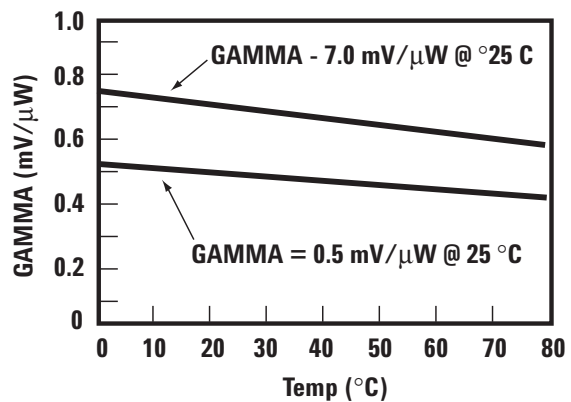
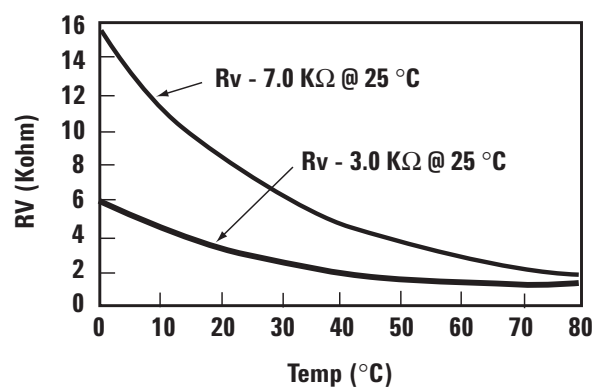
## DC Specifications/Physical Properties ( $T_A = 25\text{ }^\circ\text{C}$ )

Part Number	Junction Capacitance (pF)	Video Resistance (kW)		Voltage Sensitivity (mV/mW)		Beam Lead Strength	
		Typical	Min.	Max.	Min.	Typ.	Max.
HSC-9161	.035	2.5	7.5	0.5		3	grams
HSC-9162	.035	1.8	7.5	0.5		3	grams

### Typical Diode IV Characteristic



### Diode Parameter Variation with Temperature



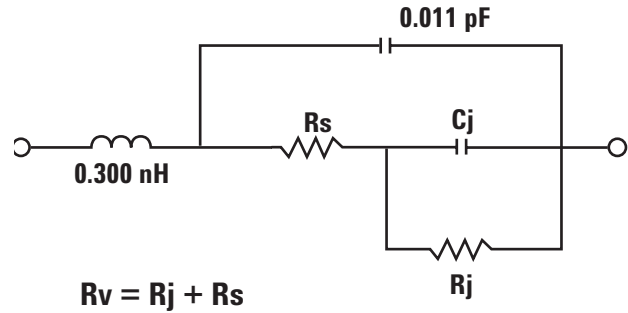
DC measurement assumes  $50\Omega$  load; ideal diode would be  $1\text{mV}/\mu\text{W}$ ,

Note: Each line represents a different value of  $R_V$  or  $\text{Gamma}$  at room temperature.

### Typical Small Signal Parameters as a Function of Bias

Parameter	Bias Voltage			
	-4.0V	Zero Bias	+0.1V	+0.5V
$R_s(\Omega)$	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 @ -20 dBm.



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 WPTC GaAs ICs, for their design should obtain the current production specifications from WPTC Marketing. In this data sheet the term typical refers to the 50th percentile performance. For additional information contact WPTC Marketing at 707-577-4482.



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