PL-1050

GaAs PIN-Diodes

- junction capacitance 0.15 pF
- charge carrier lifetime 5 ns
- thermal impedance 150 °C/W

The PL-1050 is a GaAs vertical Pin diode chip. It is ideally suited as a switching and limiting element for hybrid-integrated microwave modules with general sealing.

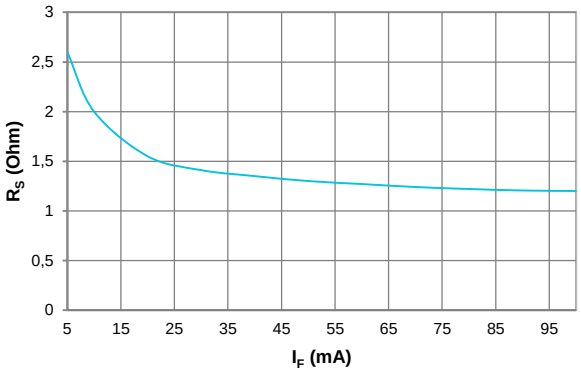
Electrical specifications (T = 25 °C)

Symbol	Parameter	Min.	Typ.	Max.	Unit
τ	Charge carrier lifetime	—	5	—	ns
C_{tot}	Junction capacitance	—	0.15	0.17	pF
V_F	Forward voltage	1.20	1.23	1.3	V
Θ	Thermal impedance	—	150	—	°C/W

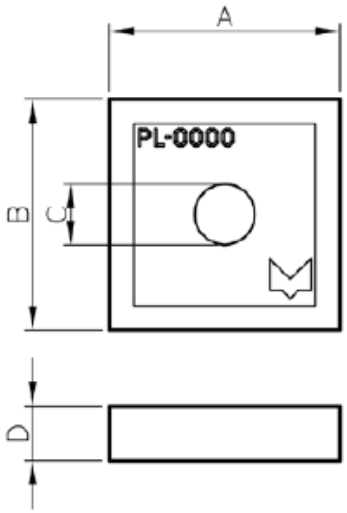
Absolute maximum ratings

Parameter	Value	Unit
Operating temperature	−60…+85	°C
Reverse voltage	40	V
Forward current	100	mA

Typical characteristics (T = 25 °C, f = 1 GHz, Pin = 1 mV)



Mechanical data



Symbol	Min.	Type	Max.	Unit
A	330	350	370	µm
B	—	A	—	
C	40(89)	43(92)	46(96)	
D	85	100	110	

NOTE Anode: Au-metalized round contact pad. Cathode: Au-metalized back side.

Application notes

Mounting and bonding techniques
The chip is back-metallized with gold and can be die mounted with AuSn eutectic alloy or with electrically conductive adhesive. The mounting surface should be clean and flat. Do not expose die to a temperature above 300 degrees for more than 10 seconds.

Wire Bonding
Microstrip substrates should be brought as close to the die as possible in order to minimize ribbon bond length. Recommendation for RF pads is two wires 25 µm in diameter or a foil stripe with minimal length. Wedge thermocompression bonding or ball bonding may be used to attach ribbons or wires to the anode bonding pad. All die attach and bonding methods should be compatible with gold metal.

DC coupling
All ports are DC coupled. RF_Input ports should be DC blocked externally using a series capacitor, whose value has been chosen to pass the necessary frequency range.

Recommended ESD Management

This device is susceptible to electrostatic and mechanical damage. Dies are supplied in antistatic containers, which should be opened in cleanroom conditions at an appropriately grounded antistatic workstation. Devices need careful handling using correctly designed collets, vacuum pickups or, with care, sharp tweezers.