Agilent Technologies
Innovating the HP Way

PIN Diode Chips for Hybrid MIC Switches/Attenuators

Technical Data

5082-0001
5082-0012

Features

- **Low Series Resistance 0.8 Ω Typical**
- **Nitride Passivated**

Description

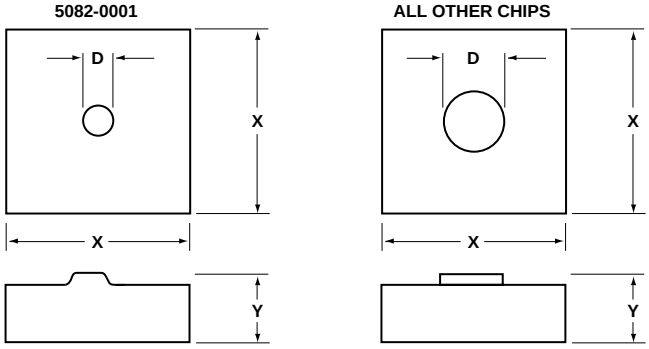
These PIN diode chips are silicon dioxide or nitride passivated. The 5082-0001 has a mesa construction and the 5082-0012 has a planar construction. The fabrication processes are optimized for long term reliability and tightly controlled for uniformity in electrical performance.

Applications

These general purpose PIN diodes are intended for low power switching applications such as duplexers, antenna switching matrices, digital phase shifters, time multiplex filters, TR switches, pulse and amplitude modulators, limiters, leveling circuits, and attenuators.

The 5082-0001 is optimized for applications requiring fast switching.

Outline 01B



DIMENSIONS	PART NO. 5082-	
	0012	0001
D ±0.03 (1)	0.10 (4)	0.06 (2.5)
X ±0.05 (2)	0.38 (15)	
Y ±0.03 (1)	0.10 (4.0)	0.11 (4.5)
Top Contact	Au. Cathode	Au. Anode
Bottom Contact	Au. Anode	Au. Cathode

Dimensions in millimeters (1/1000 inch)

Maximum Ratings

Junction Operating and Storage Temperature Range ..... -65°C to +150°C
Soldering Temperature
5082-0001 ..... +300°C for 1 min. max.
5082-0012 ..... +425°C for 1 min. max.

Electrical Specifications at T_A = 25°C — Typical Parameters

Chip Part Number 5082-	Nearest Equivalent Packaged Part No. 5082-	Minimum Breakdown Voltage V_{BR} (V)	Maximum Junction Capacitance C_j (pF)	Typical Series Resistance R_S (Ω)	Typical Lifetime τ (ns)	Typical Reverse Recovery Time t_{rr} (ns)
0001	3041	70	0.16*	0.8*	35*	5
0012	3001	150	0.12	1.0	400	100
Test Conditions		$V_R = V_{BR}$ Measure $I_R \leq 10$ mA	V_R = 50 V *V_R = 20 V f = 1 MHz	I_F = 100 mA *I_F = 20 mA f = 100 MHz	I_F = 50 mA I_R = 250 mA *I_R = 6 mA *I_F = 10 mA	I_F = 20 mA V_R = 10 V 90% Recovery

Assembly and Handling Procedures for PIN Chips

1. Storage

Devices should be stored in a dry nitrogen purged dessicator or equivalent.

2. Cleaning

If required, surface contamination may be removed with electronic grade solvents. Typical solvents, such as freon (T.F. or T.M.C.), acetone, deionized water, and methanol, or their locally approved equivalents, can be used singularly or in combinations. Typical cleaning times per solvent are one to three minutes. DI water and methanol should be used (in that order) in the final cleans. Final drying can be accomplished by placing the cleaned dice on clean filter paper and drying with an infrared lamp for 5-10 minutes. Acids such as hydrofluoric (HF), nitric (HNO_3) and hydrochloric (HCl) should not be used.

The effects of cleaning methods/solutions should be verified on small samples prior to submitting the entire lot.

Following cleaning, dice should be either used in assembly (typically within a few hours) or stored in clean containers in a reducing atmosphere or a vacuum chamber.

3. Die Attach

a. Eutectic

5082-0001
AuSn preform with stage temperature of 300°C for one minute max.

5082-0012
AuSn preform with stage temperature of 310°C for one minute max.
AuGe preform with stage temperature of 390°C for one minute max.

b. Epoxy

For epoxy die-attach, conductive silver-filled or gold-filled epoxies are recommended. This method can be used for all Agilent PIN chips.

4. Wire Bonding

Either ultrasonic or thermocompression bonding techniques can be employed. Suggested wire is pure gold, 0.7 to 1.5 mil diameter. Ultrasonic bonding method should be avoided for the 5082-0001 diode chip.

5965-8880E (11/99)