

Features

FAST SWITCHING
LOW CAPACITANCE
HIGH CURRENT CAPABILITY

HIGH CONDUCTANCE DIODES

5082-1001 (1N 4456)
5082-1002
5082-1003
5082-1004
5082-1006

Description/Applications

The 5082-1000 series of diodes feature planar silicon epitaxial construction to provide high conductance, low capacitance, and nanosecond turn-on and turn-off. Process control of the diode manufacturing enables specification of effective minority carrier lifetime. Turn-on time and voltage overshoot are minimized in these diodes of low conductivity modulation.

These diodes are ideally suited for applications such as core drivers, pulse generators, input gates or wherever high conductance without loss of speed is required.

Maximum Ratings at $T_{CASE} = 25^{\circ}C$

WIV — Working Inverse Voltage
1006 40 Volts
1001/1002 30 Volts
1003/1004 20 Volts

I_F (Surge) — Forward Current Surge,
1.0 Second Duration 0.75 Amp

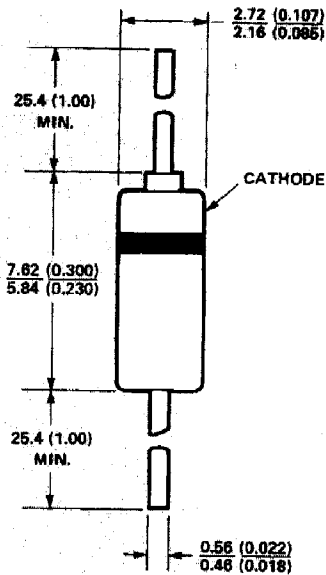
I_F (Surge) — Forward Current Surge,
1.0 Microsecond Duration 7.50 Amp

P_{DISS} — Power Dissipation^[1] 500 mW

T_A — Operating Temperature Range $-65^{\circ}C$ to $+175^{\circ}C$

T_{STG} — Storage Temperature Range $-65^{\circ}C$ to $+200^{\circ}C$

Operation of these devices within the above temperature ratings will assure a device Mean Time Between Failure (MTBF) of approximately 1×10^7 hours.



OUTLINE 11

DIMENSIONS IN MILLIMETERS AND (INCHES)

Electrical Specifications at $T_A = 25^{\circ}C$

Part Number 5082-	Minimum Breakdown Voltage V _{BR} (V)	Minimum Forward Current I _F (mA)	Minimum Forward Current I _F (mA)	Maximum Reverse Leakage Current I _R (nA)	Maximum Reverse Leakage Current I _R (μA)	Maximum Total Capacitance C ₀ (pF)	Maximum Reverse Recovery Time t _{rr} (ns)	Maximum Turn-On Time t _{on} (ns)
1001 (1N4456)	35	150	500	200	200	1.5	1.5	2.5
1002	35	300	800	200	200	3.0	2.0	2.5
1003	25	100	300	200	200	2.0	1.5	2.0
1004	25	200	600	200	200	4.0	2.0	2.0
1006	50	150	500	200	200	1.1	1.5	—
Test Conditions	I _R =10μA	V _F =1.0V [2]	V _F =1.4V [2]	[3]	150° C [3]	V _R =0V, f=1.0 MHz	(Figure 9)	(Figure 10)

NOTES: 1. Mounted on a printed circuit board in still air.

2. Measured at a repetition rate not to exceed the power dissipation.

3. V_R=35V for 1006; V_R=30V for 1001, 1002; V_R=20V for 1003, 1004.

4. Inductance measured at the edge of the glass package seal is typically 4.0 nH for all devices.

5. Rectification Efficiency is typically 65% for all devices



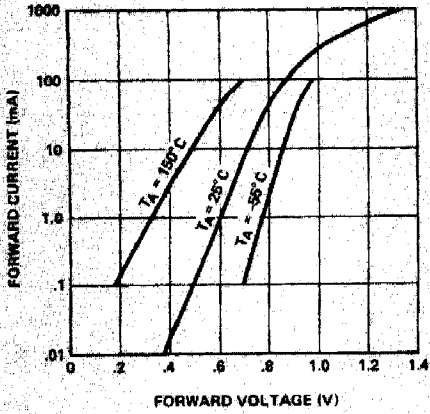


Figure 1. Typical Forward Conduction Characteristics, 5082-1001, 1003, and 1006.

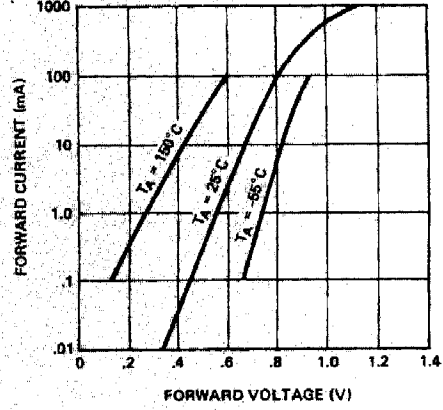


Figure 2. Typical Forward Conduction Characteristics, 5082-1002 and 1004.

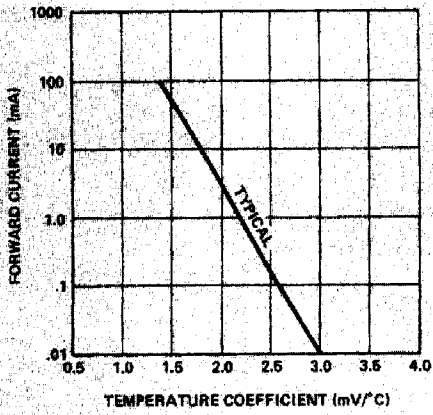


Figure 3. Typical Forward Current Temperature Coefficient.

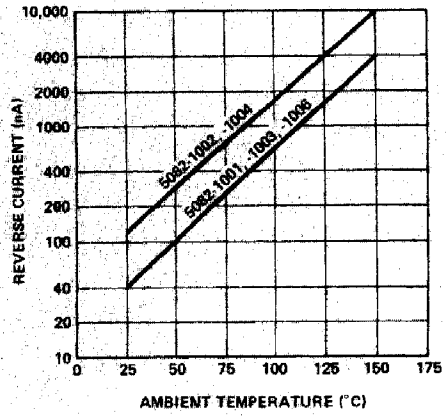


Figure 4. Typical Reverse Current at Specified V_R vs. Increasing Temperature.

