Silicon Diode

1N4938

175V/500mA

DATASHEET

OEM – Fairchild

Source: Fairchild Databook 1978

Datasheet Rev. 1.3 – 02/19 – data without warranty / liability

1N3070 • 1N4938

HIGH SPEED HIGH CONDUCTANCE DIODES

DIFFUSED SILICON PLANAR

- **BV . . . 200 V (MIN)**
- **I_R . . . 100 nA (MAX)**

ABSOLUTE MAXIMUM RATINGS (Note 1)

Temperatures

Storage Temperature Range	−65°C to +200°C
Max Junction Operating Temperature	+175°C
Lead Temperature	+260°C

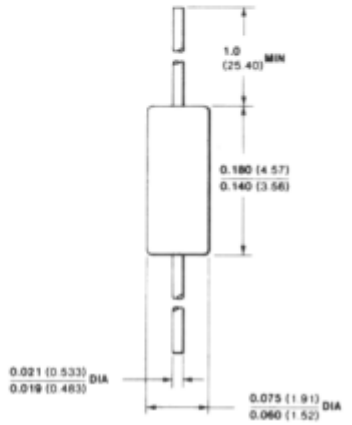
Power Dissipation (Note 2)

Maximum Total Dissipation at 25°C Ambient	500 mW
Linear Derating Factor (from 25°C)	3.33 mW / °C

Maximum Voltage and Currents

WIV	Working Inverse Voltage	175 V
I_O	Average Rectified Current	200 mA
I_F	Forward Current Steady State DC	500 mA
i_f	Recurrent Peak Forward Current	600 mA
$i_{f\ (surge)}$	Peak Forward Surge Current	
	Pulse Width = 1.0 s	1.0 A
	Pulse Width = 1.0 μs	4.0 A

DO-35 OUTLINE



NOTES:
Copper clad steel leads, tin plated
Gold plated leads available
Hermetically sealed glass package
Package weight is 0.14 gram

ELECTRICAL CHARACTERISTICS (25°C Ambient Temperature unless otherwise noted)

SYMBOL	CHARACTERISTIC	MIN	MAX	UNITS	TEST CONDITIONS
I_R	Reverse Current		100 100	nA μA	V_R = 175 V V_R = 175 V, T_A = 150°C
BV	Breakdown Voltage	200		V	I_R = 100 μA
V_F	Forward Voltage		1.0	V	I_F = 100 mA
C	Capacitance		5.0	pF	V_R = 0, f = 1.0 MHz
t_{rr}	Reverse Recovery Time (Note 3)		50	ns	I_f = I_r = 30 mA, R_L = 100 Ω
RE	Rectification Efficiency (Note 4)	35		%	f = 100 MHz

NOTES:
1. The maximum ratings are limiting values above which life or satisfactory performance may be impaired.
2. These are steady state limits. The factory should be consulted on applications involving pulsed or low duty-cycle operation.
3. Recovery to 1.0 mA.
4. Rectification efficiency is defined as the ratio of dc load voltage to peak rf input voltage to the detector circuit, measured with 2.0 V rms input to the circuit. Load resistance: 5.0 kΩ, load capacitance 20 pF.
5. 1N3070 and IN4938 are electrically and mechanically identical.
6. For product family characteristic curves, refer to Chapter 4, D1.

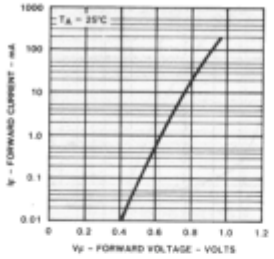
CURVE SET NUMBER D1

HIGH VOLTAGE SMALL SIGNAL DIODE

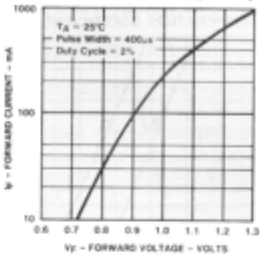
TYPICAL ELECTRICAL CHARACTERISTIC CURVES

AT 25°C AMBIENT TEMPERATURE UNLESS OTHERWISE NOTED

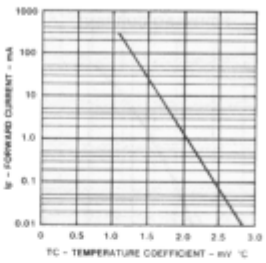
DC FORWARD CURRENT VERSUS FORWARD VOLTAGE



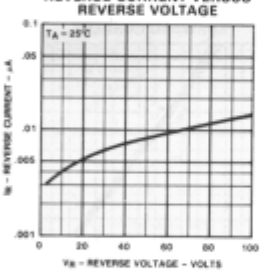
FORWARD CURRENT VERSUS FORWARD VOLTAGE (PULSE)



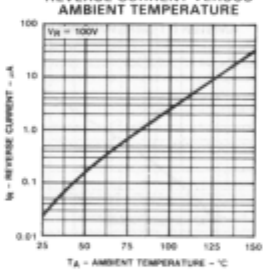
DC FORWARD CURRENT VERSUS TEMPERATURE COEFFICIENT



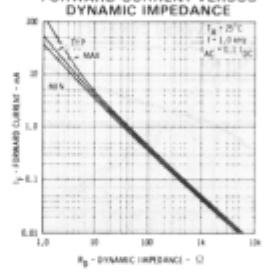
REVERSE CURRENT VERSUS REVERSE VOLTAGE



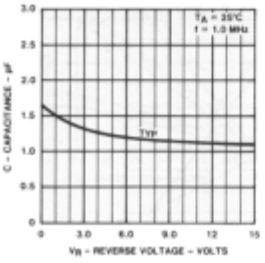
REVERSE CURRENT VERSUS AMBIENT TEMPERATURE



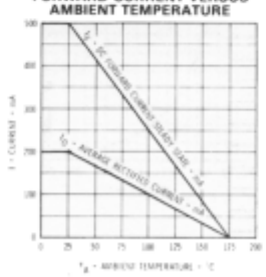
FORWARD CURRENT VERSUS DYNAMIC IMPEDANCE



CAPACITANCE VERSUS REVERSE VOLTAGE



AVERAGE RECTIFIED CURRENT AND FORWARD CURRENT VERSUS AMBIENT TEMPERATURE



POWER DERATING CURVE