

# Silicon Diode

## **1N4446**

75V/300mA

# DATASHEET

OEM – Fairchild

Source: Fairchild Databook 1978

# 1N914/A/B • 1N916/A/B • 1N4148/9 • 1N4446-1N4449

## HIGH CONDUCTANCE ULTRA FAST SWITCHING DIODES

### DIFFUSED SILICON PLANAR

- $t_{rr}$  ... 4.0 ns (MAX)
- BV ... 100 V (MIN)

#### ABSOLUTE MAXIMUM RATINGS (Note 1)

##### Temperatures

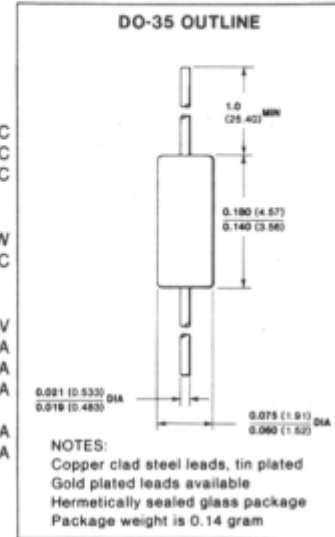
Storage Temperature Range	-65° to +200°C
Max Junction Operating Temperature	+175°C
Lead Temperature	+260°C

##### Power Dissipation (Note 2)

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

##### Maximum Voltage and Currents

WIV	Working Inverse Voltage	75 V
$I_O$	Average Rectified Current	200 mA
$I_f$	DC Forward Current	300 mA
$i_f$	Recurrent Peak Forward Current	400 mA
$i_f(\text{surge})$	Peak Forward Surge Current	1.0 A
	Pulse Width = 1.0 s	4.0 A
	Pulse Width = 1.0 $\mu$ s	



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

SYMBOL	CHARACTERISTIC	MIN	MAX	UNITS	TEST CONDITIONS
BV	Breakdown Voltage	100 75		V V	$I_R = 100 \mu\text{A}$ $I_R = 5.0 \mu\text{A}$
$I_R$	Reverse Current		25 50 5.0	nA $\mu\text{A}$ $\mu\text{A}$	$V_R = 20 \text{ V}$ $V_R = 20 \text{ V}, T_A = 150^\circ\text{C}$ $V_R = 75 \text{ V}$
$V_F$	Forward Voltage	0.62 0.63	0.72 0.73 1.0 1.0 1.0 1.0 1.0	V V V V V V V	$I_F = 5.0 \text{ mA}$ $I_F = 5.0 \text{ mA}$ $I_F = 10 \text{ mA}$ $I_F = 20 \text{ mA}$ $I_F = 30 \text{ mA}$ $I_F = 100 \text{ mA}$
$t_{rr}$	Reverse Recovery Time		4.0	ns	$I_F = 10 \text{ mA}, V_R = 6.0 \text{ V},$ $R_L = 100 \Omega \text{ Rec. to } 1.0 \text{ mA}$
C	Capacitance		4.0 2.0	pF pF	$V_R = 0, f = 1 \text{ MHz}$ $V_R = 0, f = 1 \text{ MHz}$
$V_{fr}$	Peak Forward Recovery Voltage		2.5	V	50 mA Peak Square Wave, 0.1 $\mu$ s pulse width, 5 kHz - 100 kHz rep. rate
RE	Rectification Efficiency		45	%	2.0 V rms, $f = 100 \text{ MHz}$

#### NOTES:

1. 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. For family characteristic curves, refer to Chapter 4, D4.

**CURVE SET NUMBER D4**

HIGH SPEED GENERAL PURPOSE SMALL SIGNAL DIODE

**TYPICAL ELECTRICAL CHARACTERISTIC CURVES**  
AT 25°C AMBIENT TEMPERATURE UNLESS OTHERWISE NOTED

