Silicon Diode

1N4454

50V/300mA

DATASHEET

OEM – Fairchild

Source: Fairchild Databook 1978

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

1N3064· 1N4305· 1N4454

ULTRA FAST LOW CAPACITANCE DIODES

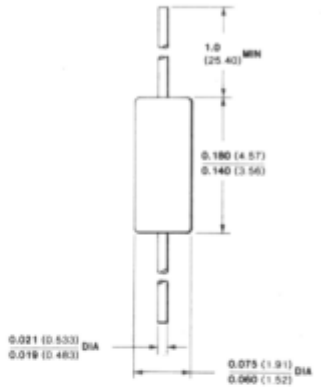
DIFFUSED SILICON PLANAR

- **C . . . 2.0 pF @ V_R = 0, f = 1.0 MHz**
- **t_{rr} . . . 4.0 ns @ I_f = 10 mA, I_r = 10 mA, V_r = 1.0 V**
- **BV . . . 75 V (MIN)**

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		500 mW
Linear Derating Factor (from 25°C)		3.33 mW / °C
Maximum Voltages and Currents		
WIV	Working Inverse Voltage	50 V
I_O	Average Rectified Current	100 mA
I_F	Forward Current Steady State	300 mA
i_f	Recurrent Peak Forward Current	400 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
V_F	Forward Voltage		0.610	0.710	V	I_F = 2.0 mA
			0.550	0.650	V	I_F = 1.0 mA
			0.505	0.575	V	I_F = 250 μA
		1N3064, 1N4454		1.0	V	I_F = 10 mA
		1N4305	0.70	0.85	V	I_F = 10 mA
I_R	Reverse Current			0.1	μA	V_R = 50 V
				100	μA	V_R = 50 V, T_A = 150°C
BV	Breakdown Voltage		75		V	I_R = 5.0 μA
t_{rr}	Reverse Recovery Time (Note 3)	1N4305		2.0	ns	I_f = 10 mA, V_r = 6.0 V, R_L = 100 Ω
		1N3064, 1N4305, 1N4454		4.0	ns	I_f = I_r = 10 mA, R_L = 100 Ω, V_r = 1.0 V
C	Capacitance			2.0	pF	V_R = 0, f = 1.0 MHz
RE	Rectification Efficiency (Note 4)		45		%	f = 1.0 MHz
ΔV_F / °C	Forward Voltage Temperature Coefficient (Note 5)			3.0	mV / °C	

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 Ω, load capacitance 20 pF
5. This value for ΔV_F / °C is a typical value not a minimum or maximum.
6. For product family characteristic curves, refer to Chapter 4, D4.

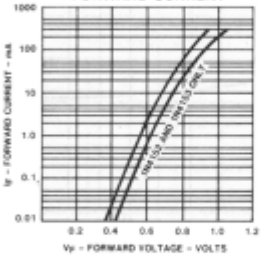
CURVE SET NUMBER D4

HIGH SPEED GENERAL PURPOSE SMALL SIGNAL DIODE

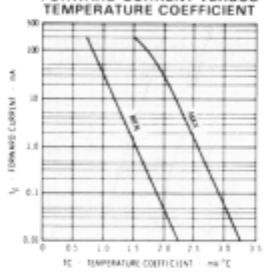
TYPICAL ELECTRICAL CHARACTERISTIC CURVES

AT 25°C AMBIENT TEMPERATURE UNLESS OTHERWISE NOTED

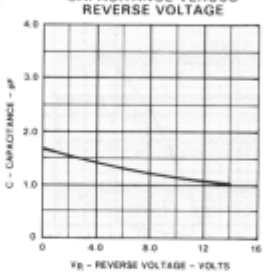
FORWARD VOLTAGE VERSUS FORWARD CURRENT



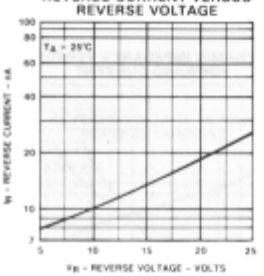
FORWARD CURRENT VERSUS TEMPERATURE COEFFICIENT



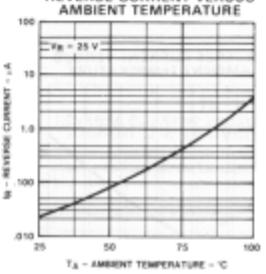
CAPACITANCE VERSUS REVERSE VOLTAGE



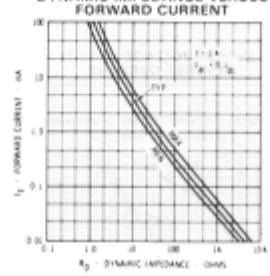
REVERSE CURRENT VERSUS REVERSE VOLTAGE



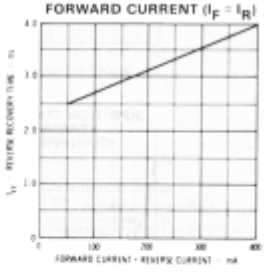
REVERSE CURRENT VERSUS AMBIENT TEMPERATURE



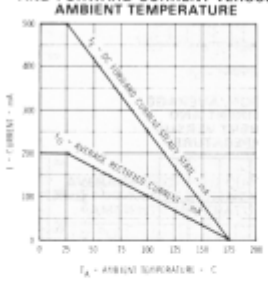
DYNAMIC IMPEDANCE VERSUS FORWARD CURRENT



REVERSE RECOVERY TIME VERSUS FORWARD CURRENT ($I_F = I_R$)



AVERAGE RECTIFIED CURRENT AND FORWARD CURRENT VERSUS AMBIENT TEMPERATURE



POWER DERATING CURVE