Silicon – Diode

FD700

20V/50mA

DATASHEET

OEM – Fairchild

Source: Fairchild Databook 1978

Datasheet Rev. 1.3 – 03/19 - data without warranty / liability

FD700 · FD777

PICOSECOND COMPUTER DIODES

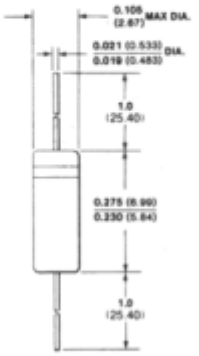
DIFFUSED SILICON PLANAR

- **C . . . 1.0 pF (MAX) @ V_R = 0, f = 1.0 MHz (FD 700)**
- **t_{rr} . . . 700 ps (MAX) @ I_f = I_r = 10 mA, R_L = 100 Ω (FD 700)**
- **CONTROLLED FORWARD CONDUCTANCE**

ABSOLUTE MAXIMUM RATINGS (Note 1)

		FD700	FD777
Temperatures			
Storage Temperature Range		−65°C to +200°C	−65°C to +200°C
Max Junction Operating Temperature		+175°C	+175°C
Lead Temperature		+260°C	+260°C
Power Dissipation			
Maximum Total Dissipation at 25°C Ambient		250 mW	250 mW
Linear Derating Factor (from 25°C)		1.67 mW/°C	1.67 mW/°C
Maximum Voltages and Currents			
WIV	Working Inverse Voltage	20 V	8.0 V
I_O	Average Rectified Current	50 mA	50 mA
I_F	Forward Current Steady State dc	150 mA	150 mA
i_f	Recurrent Peak Forward Current	150 mA	150 mA
i_f (surge)	Peak Forward Surge Current Pulse Width = 1.0 s	250 mA	250 mA

DO-7 OUTLINE



NOTES:
Dumet leads, tin plated
Gold plated leads available
Hermetically sealed glass package
Package weight is 0.19 gram

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

SYMBOL	CHARACTERISTIC	FD700 MIN	FD700 MAX	FD777 MIN	FD777 MAX	UNITS	TEST CONDITIONS
V_F	Forward Voltage	0.89	1.10	0.89	1.35	V	I_F = 50 mA
		0.81	0.95	0.81	1.00	V	I_F = 20 mA
		0.76	0.88	0.76	0.94	V	I_F = 10 mA
		0.64	0.74	0.64	0.79	V	I_F = 1.0 mA
		0.52	0.61	0.52	0.64	V	I_F = 0.1 mA
		0.42	0.50	0.42	0.53	V	I_F = 0.01 mA
BV	Breakdown Voltage	30		15		V	I_R = 5.0 μA
I_R	Reverse Current		50			nA	V_R = 20 V
					100	nA	V_R = 8.0 V
			50			μA	V_R = 20 V, T_A = 150°C
					50	μA	V_R = 8.0 V, T_A = 150°C
τ	Minority Carrier Lifetime		450		450	ps	(see Note 2)
t_{rr}	Reverse Recovery Time (Note 3)		700		750	ps	I_f = I_r = 10 mA, R_L = 100 Ω
C	Capacitance		1.0		1.3	pF	V_R = 0, f = 1.0 MHz

NOTES:
1. The maximum ratings are limiting values above which life or satisfactory performance may be impaired.
2. Measured as suggested by S. M. Krakauer, IRE Proceedings, Volume 50, July 1962, pp. 1674 - 1675.
3. Recovery to 0.1 I_R.
4. For product family characteristic curves, refer to Chapter 4, D3.

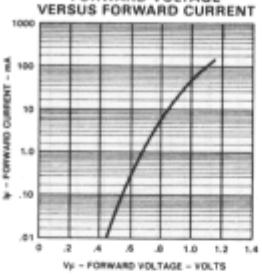
CURVE SET NUMBER D3

ULTRA-FAST SMALL SIGNAL DIODE

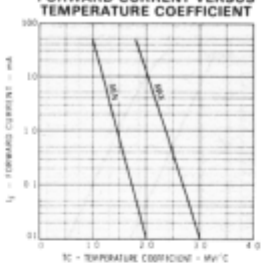
TYPICAL ELECTRICAL CHARACTERISTIC CURVES

AT 25°C AMBIENT TEMPERATURE UNLESS OTHERWISE NOTED

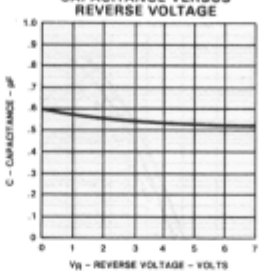
FORWARD VOLTAGE VERSUS FORWARD CURRENT



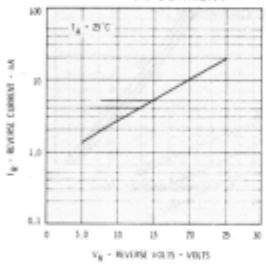
FORWARD CURRENT VERSUS TEMPERATURE COEFFICIENT



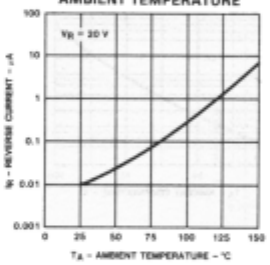
CAPACITANCE VERSUS REVERSE VOLTAGE



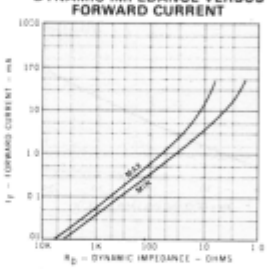
REVERSE VOLTAGE VERSUS REVERSE CURRENT



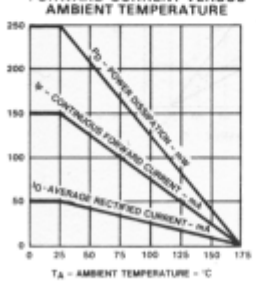
REVERSE CURRENT VERSUS AMBIENT TEMPERATURE



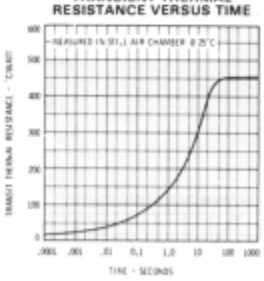
DYNAMIC IMPEDANCE VERSUS FORWARD CURRENT



POWER DISSIPATION, AVERAGE RECTIFIED CURRENT AND FORWARD CURRENT VERSUS AMBIENT TEMPERATURE



TRANSIENT THERMAL RESISTANCE VERSUS TIME



JUNCTION TEMPERATURE VERSUS TIME (COOLING CURVE)