FAIRCHILD SEMICONDUCTOR TM

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74F1056
8-Bit Schottky Barrier Diode Array

General Description

The 74F1056 is an 8-bit Schottky barrier diode array designed to be employed as termination on the inputs to memory bus lines or CLOCK lines. This device is designed to suppress negative transients caused by line reflections, switching noise and crosstalk.

Features

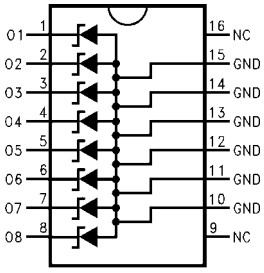
- 8-Bit array structure designed to suppress negative transients
- Guaranteed ESD protection (HBM) in excess of 4 kV
- Common anode shared by all eight diodes
- Broadside pinout for ease of bus routing

Ordering Code:

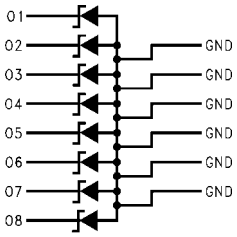
Order Number	Package Number	Package Description
74F1056SC	M16A	16-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-012, 0.150 Narrow

Devices also available in Tape and Reel. Specify by appending the suffix letter "X" to the ordering code.

Connection Diagram



Schematic Diagram



Absolute Maximum Ratings(Note 1)

Storage Temperature	−65°C to +150°C
Operating Free-Air Temperature	0°C to 70°C
Steady State Reverse Voltage, (V_R)	7.0V
Continuous Total Power Dissipation at or below	
25°C Free-Air Temperature, (P_D)	750 mW
Continuous Forward Current, (I_f)	
Any Output Pin to GND	50 mA
Total Through All GND Pins	170 mA
Repetitive Peak Forward Current, Ifp (Note 2)	
Any Output Pin to GND	300 mA
Total Through All GND Pins	1.2A
ESD (HBM)	4 kV

Note 1: Absolute maximum ratings are valued beyond which the device may be damaged or have its useful life impaired. Functional operation under these conditions is not implied.

Note 2: These values apply for the $t_w \leq 100$ µs, duty cycle ≤ 20%.

DC Electrical Characteristics

Over recommended operating free air temperature range, unless otherwise noted

SINGLE DIODE OPERATION (Note 3)

Symbol	Parameter	Min	Typ	Max	Units	Conditions
V_{BR}	Reverse Breakdown Voltage	7.0			V	I_R = 10 µA
I_R	Static Reverse Current			10	µA	V_R = 7V
V_F	Static Forward Voltage		−0.65	−0.85	V	I_F = −16 mA
			−0.8	−1.0		I_F = −50 mA
C_T	Total Capacitance		5	10	pF	V_I = 0V, f = 1 MHz
			4	8		V_I = 2V, f = 1 MHz

Note 3: These tests apply to separate diode operation, diodes not under test are open-circuit.

MULTIPLE DIODE OPERATION

Symbol	Parameter	Min	Typ	Max	Units	Conditions
I_{CR}	Internal Crosstalk Current		0.2	2	mA	Total GND current = 1.2A (Note 4)

Note 4: I_{CR} is measured under the following conditions: One diode static, all others switching

Switching diodes: t_W = 100 µs; Static diode: V_{IN} = 6V

Duty cycle = 20%, I_f = 200 mA

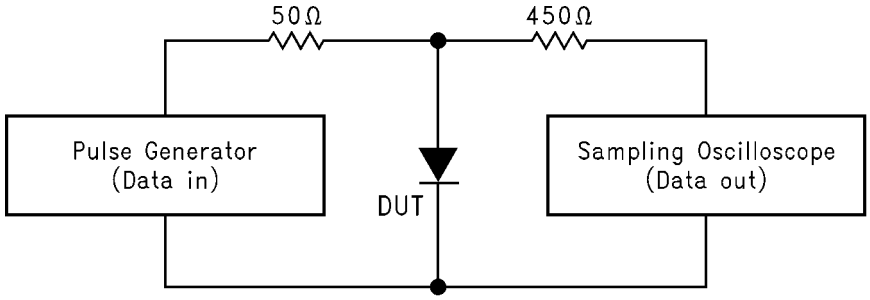
The static diode input current is the internal crosstalk current I_{CR}.

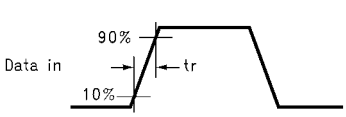
AC Electrical Characteristics

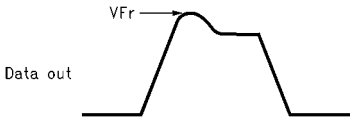
T_A = 25°C

Symbol	Parameter	Min	Typ	Max	Units	Conditions	Figure Number
V_{FR}	Forward Recovery Voltage		1.25		V	I_F = 300 mA	Figure 1
T_{RR}	Reverse Recovery Time			5.0	ns	I_F = 10 mA, I_R = 1 mA	Figure 2
						R_L = 100Ω	

AC Loading and Waveforms

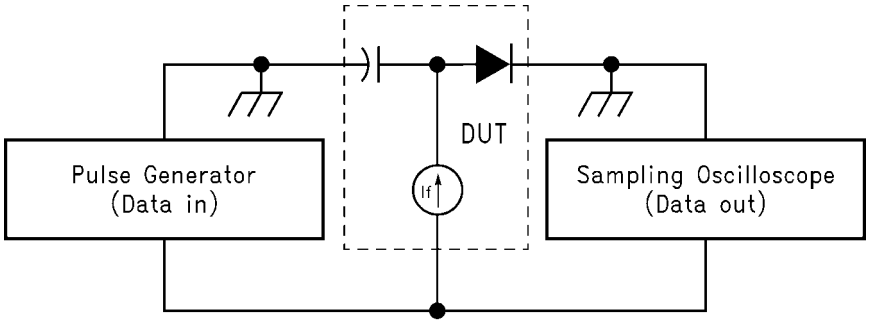


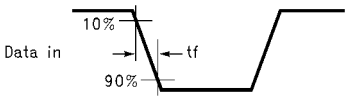


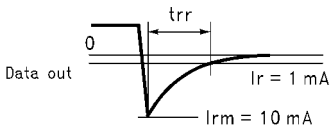


t_r = 20 ns, Z_O = 50Ω, freq = 500 Hz

FIGURE 1. Forward Recovery Voltage







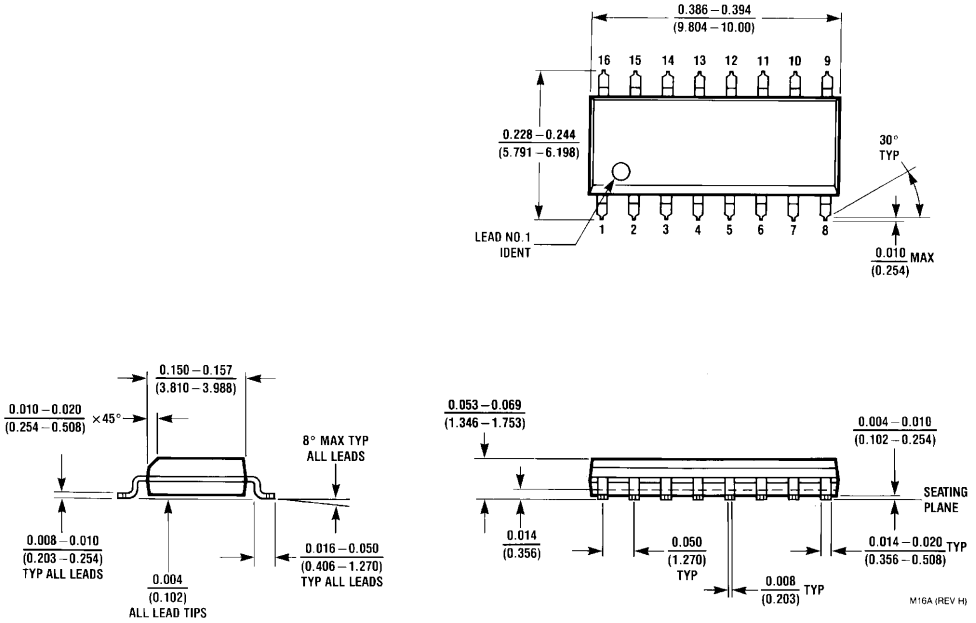
t_f = 0.5 ns, Z_O = 50Ω, t_W = 50 ns, duty cycle = 0.01

R_L = 100Ω (Note)

Monitored by Oscilloscope having the following characteristics: $t_r \leq 350$ ps, R_I = 50Ω, C_I = 5 pF.

FIGURE 2. Reverse Recovery Time

Physical Dimensions inches (millimeters) unless otherwise noted



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