



December 1993
Revised August 1999

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

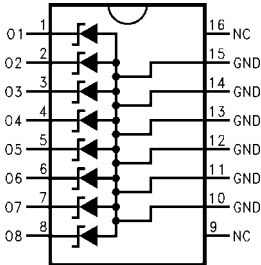
- 8-Bit array structure designed to suppress negative transients
- Guaranteed ESD protection (HBM) in excess of 4 kV
- Common anode shared by all eight diodes
- Broadside pinout for ease of bus routing

Ordering Code:

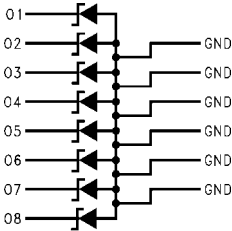
| Order Number | Package Number | Package Description |
|--------------|----------------|---|
| 74F1056SC | M16A | 16-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-012, 0.150 Narrow |

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

Connection Diagram



Schematic Diagram



74F1056 8-Bit Schottky Barrier Diode Array

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, I_{FP} (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 $t_w \leq 100 \mu s$, duty cycle $\leq 20\%$.

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 | $I_R = 10 \mu A$ |
| I_R | Static Reverse Current | | | 10 | μA | $V_R = 7V$ |
| V_F | Static Forward Voltage | | −0.65 −0.8 | −0.85 −1.0 | V | $I_F = -16 \text{ mA}$ $I_F = -50 \text{ mA}$ |
| C_T | Total Capacitance | | 5 4 | 10 8 | pF | $V_1 = 0V, f = 1 \text{ MHz}$ $V_1 = 2V, f = 1 \text{ MHz}$ |

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: $t_W = 100 \mu s$; Static diode: $V_{IN} = 6V$

Duty cycle = 20%, $I_F = 200 \text{ mA}$

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

AC Electrical Characteristics

$T_A = 25^\circ C$

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

AC Loading and Waveforms

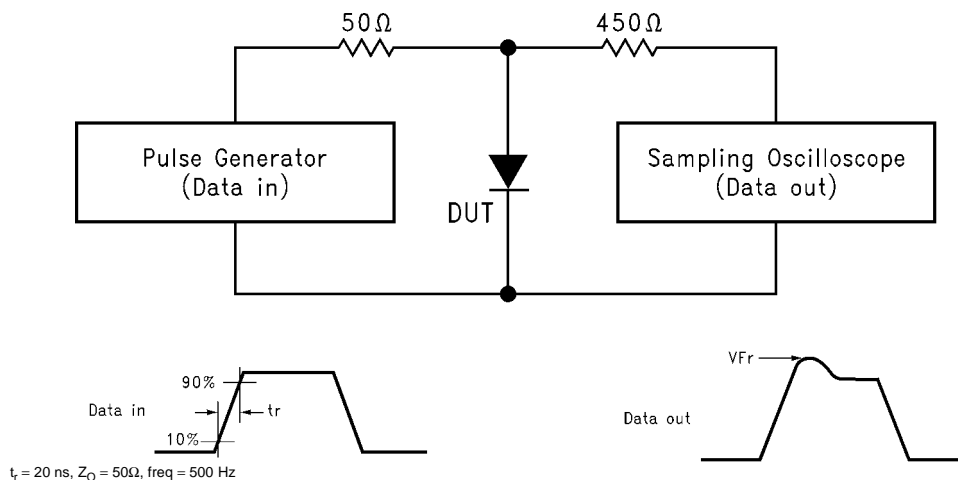


FIGURE 1. Forward Recovery Voltage

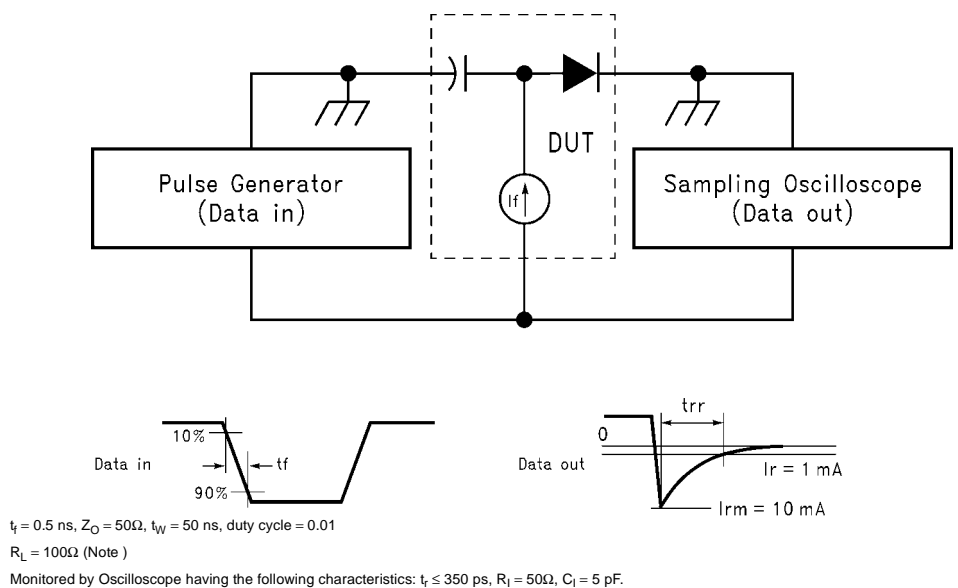
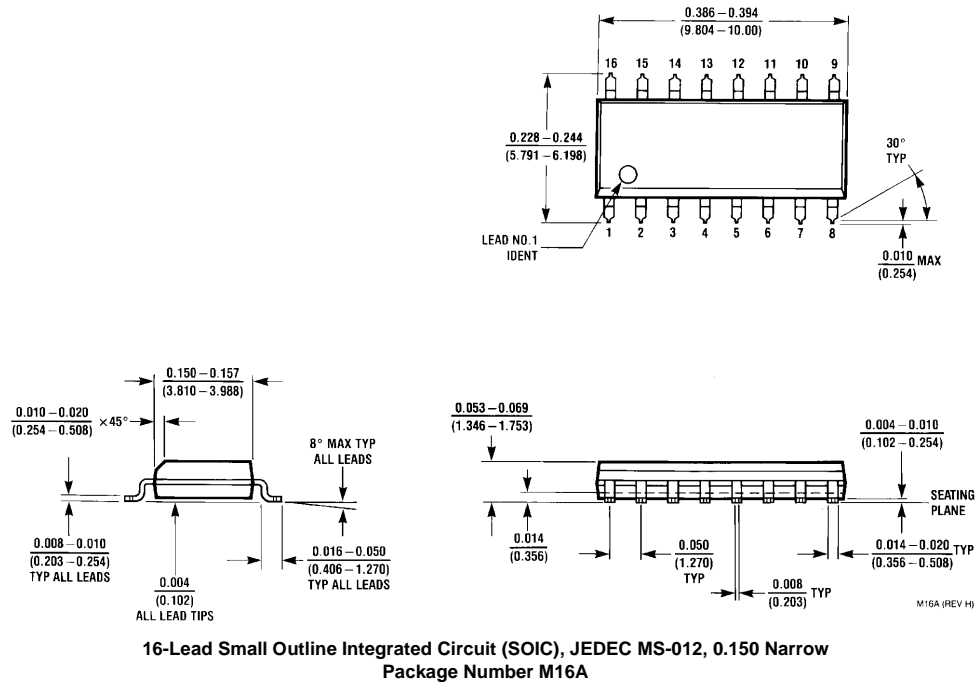


FIGURE 2. Reverse Recovery Time

Physical Dimensions inches (millimeters) unless otherwise noted



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