# 1N5770

## Isolated Diode Array with HiRel MQ, MX, MV, and MSP Screening Options

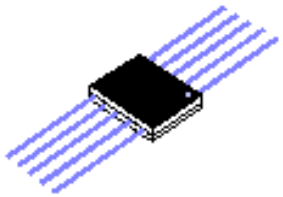
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## DESCRIPTION

These low capacitance diode arrays with common anode are multiple, discrete, isolated junctions fabricated by a planar process and mounted in a 10-PIN package for use as steering diodes protecting up to eight I/O ports from ESD, EFT, or surge by directing them to ground (see figure 1). This circuit application is further complimented by the 1N5768 (separate data sheet) that has a common cathode. An external TVS diode may be added between the positive supply line and ground to prevent overvoltage on the supply rail. They may also be used in fast switching core-driver applications. This includes computers and peripheral equipment such as magnetic cores, thin-film memories, plated-wire memories, etc., as well as decoding or encoding applications. These arrays offer many advantages of integrated circuits such as high-density packaging and improved reliability. This is a result of fewer pick and place operations, smaller footprint, smaller weight, and elimination of various discrete packages that may not be as user friendly in PC board mounting.

**IMPORTANT:** For the most current data, consult *MICROSEMI's* website: **http://www.microsemi.com**

## APPEARANCE



**10-PIN Ceramic Flat Pack**

## FEATURES

- Hermetic Ceramic Package
- Isolated Diodes To Eliminate Cross-Talk Voltages
- High Breakdown Voltage $V_{BR}$ > 60 V at 10 µA
- Low Leakage $I_R$< 100nA at 40 V
- Low Capacitance C < 8.0 pF
- Options for screening in accordance with MIL-PRF-19500/474 for JAN, JANTX, JANTXV, and JANS are available by adding MQ, MX, MV, or MSP prefixes respectively to part numbers. For example, designate MX1N5770 for a JANTX screen.

## APPLICATIONS / BENEFITS

- High Frequency Data Lines
- RS-232 & RS-422 Interface Networks
- Ethernet: 10 Base T
- Computer I/O Ports
- LAN
- Switching Core Drivers
- IEC 61000-4 Compatible (see circuit in figure 1)
  - 61000-4-2 ESD : Air 15kV, contact 8kW
  - 61000-4-4 (EFT) : 40A – 5/50 ns
  - 61000-4-5 (surge): 12A 8/20 µs

## MAXIMUM RATINGS

- $V_{BR}$ Reverse Breakdown Voltage 60 V min (Notes 1 & 2)
- $I_O$ Continuous Forward Current 300 mA (Notes 1 & 3)
- $I_{FSM}$ Forward Surge Current (tp=1/120 s) 500 mA (Note 1)
- 400 mW Power Dissipation per Junction @ 25°C
- 500 mW Power Dissipation per Package @ 25°C (Note 4)
- Operating Junction Temperature range –65 to +150°C
- Storage Temperature range of –65 to +200°C

**NOTE 1:** Each Diode
**NOTE 2:** Pulsed: $P_W$ = 100 ms max; duty cycle ≤20%
**NOTE 3:** Derate at 2.4 mA/°C above +25°C
**NOTE 4:** Derate at 4.0 mW/°C above +25°C

## MECHANICAL AND PACKAGING

- 10-PIN Ceramic Flat Pack
- Weight 0.25 grams (approximate)
- Marking: Logo, part number, date code and dot identifying pin #1
- Carrier Tubes; 19 pcs (standard)

## ELECTRICAL CHARACTERISTICS (Per Diode) @ 25°C unless otherwise specified

| PART NUMBER | MAXIMUM FORWARD VOLTAGE $V_{F1}$ $I_F$ = 100 mA (Note 1) | MAXIMUM FORWARD VOLTAGE $V_{F2}$ $I_F$ = 500 mA (Note 1) | MAXIMUM REVERSE CURRENT $I_{R1}$ $V_R$ = 40 V | MAXIMUM CAPACITANCE (PIN TO PIN) $C_t$ $V_R$ = 0 V F = 1 MHz | MAXIMUM FORWARD RECOVERY TIME $t_{fr}$ $I_F$ = 500 mA | MAXIMUM REVERSE RECOVERY TIME trr $I_F$ = $I_R$ = 200 mA $i_{rr}$ = 20 mA $R_L$ = 100 ohms |
|---|---|---|---|---|---|---|
| | Vdc | Vdc | µAdc | pF | ns | ns |
| **1N5770** | 1 | 1.5 | 0.1 | 8.0 | 40 | 20 |

**NOTE 1:** Pulsed: $P_W$ = 300 µs +/- 50 µs, duty cycle ≤2%, 90 µs after leading edge.



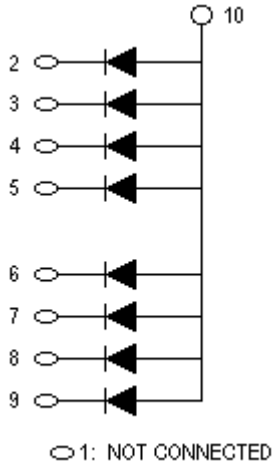
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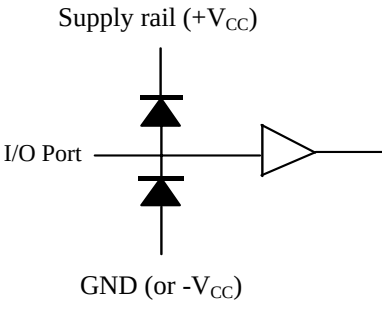
## SYMBOLS & DEFINITIONS

| Symbol | DEFINITION |
|---|---|
| $V_{BR}$ | Minimum Breakdown Voltage: The minimum voltage the device will exhibit at a specified current. |
| $V_F$ | Maximum Forward Voltage: The maximum forward voltage the device will exhibit at a specified current. |
| $I_R$ | Maximum Reverse Current: The maximum reverse current that will flow at the specified voltage and temperature. |
| $I_{FSM}$ | Forward Surge Current: The peak forward surge current at a specified pulse width |
| $C_t$ | Capacitance: The capacitance of the diode as defined @ 0 volts at a frequency of 1 MHz and stated in picofarads. |

## SCHEMATIC



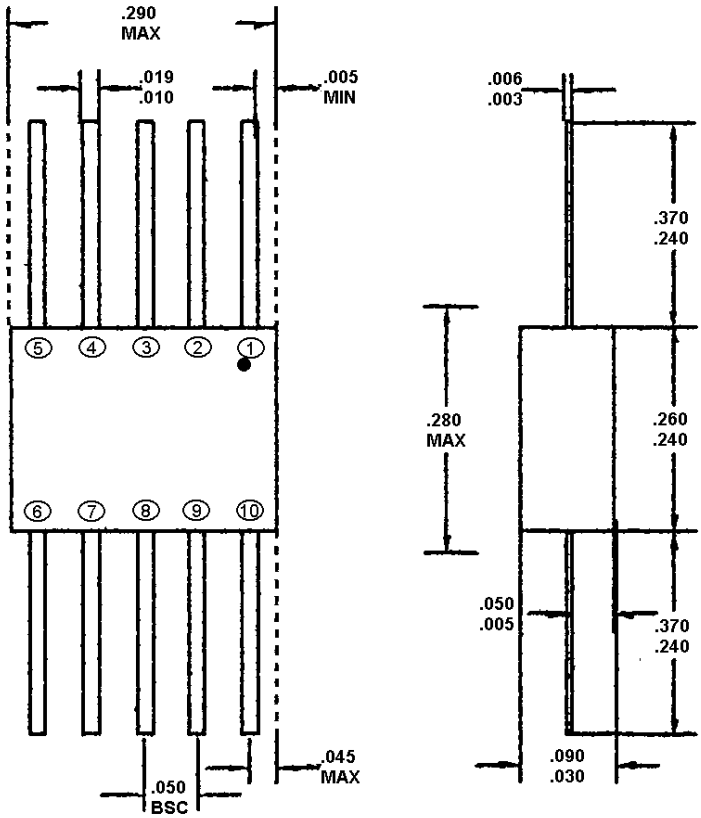

## CIRCUIT




**Steering Diode Application**

**FIGURE 1**

## PACKAGE DIMENSIONS




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