

1N6511

Isolated Diode Array with <u>HiRel MQ, MX, MV, and MSP Screening Options</u>

DESCRIPTION

These low capacitance diode arrays are multiple, discrete, isolated junctions fabricated by a planar process and mounted in a 14-PIN ceramic DIP package for use as steering diodes protecting up to seven I/O ports from ESD, EFT, or surge by directing them either to the positive side of the power supply line or to ground (see Figure 1). 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 coredriver 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.

APPEARANCE

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14-PIN Ceramic DIP

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

FEATURES

- Hermetic Ceramic Package
- Isolated Diodes to Eliminate Cross-Talk Voltages
- High Breakdown Voltage V_{BR} > 75 V at 5 μA
- Low Leakage I_R< 100nA at 40 V
- Low Capacitance C < 4.0 pF
- Switching Speeds less than 10 ns
- 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 MX1N6511 for a JANTX screen.

MAXIMUM RATINGS

- Reverse Breakdown Voltage of 75 Vdc (Note 1 & 2)
- Continuous Forward Current of 300 mA dc (Note 1 & 3)
- Peak Surge Current (tp=1/120 s) of 500 mA dc (Note 1)
- 400 mW Power Dissipation per Junction @ 25°C
- 600 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: Pw = 100 ms max; duty cycle <20%
 - **NOTE 3:** Derate at 2.4 mA/ $^{\circ}$ C above +25 $^{\circ}$ C
 - **NOTE 4:** Derate at 4.8 mW/°C above +25°C

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 15 kV, contact 8 kW 61000-4-4 (EFT): 40 A – 5/50 ns 61000-4-5 (surge): 12 A 8/20 μs

MECHANICAL AND PACKAGING

- 14-PIN Ceramic DIP
- Weight 2.05 grams (approximate)
- Marking: Logo, part number, date code
- Pin #1 to the left of the indent on top of package
- Carrier Tubes; 25 pcs (standard)

•	ELECTRICAL CHARACTERISTICS (Per Diode) @ 25°C unless otherwise specified								
		MAXIMUM FORWARD VOLTAGE V _{F1}	MAXIMUM REVERSE CURRENT	MAXIMUM REVERSE CURRENT	MAXIMUM CAPACITANCE (PIN TO PIN) Ct	MAXIMUM FORWARD RECOVERY TIME	MAXIMUM REVERSE RECOVERY TIME trr I _F = I _R = 10 mAdc	MAXIMUM FORWARD VOLTAGE MATCH	1N6511
		I _F = 100 mA	I _{R1}	I _{R2}	$V_R = 0 V$	t _{fr}	i _{rr} = 1 mAdc	V _{F5}	
	PART	(Note 1)	$V_R = 40 V$	$V_R = 20 V$	F = 1 MHz	I _F = 100 mA	R _L = 100 ohms	I _F = 10 mA	
	NUMBER	v	μA	nA	pF	ns	ns	mV	
	1N6511	1	0.1	25	4.0	15	10	5	
	NOTE 4. Dukady D = 200 vs $1/200$ vs duty such $200/200$ vs often landing addre								

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

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Symbol DEFINITION Minimum Breakdown Voltage: The minimum voltage the device will exhibit at a specified current. V_{BR} Maximum Forward Voltage: The maximum forward voltage the device will exhibit at a specified current. V_{F} Maximum Leakage Current: The maximum leakage current that will flow at the specified voltage and I_R temperature. Capacitance: The capacitance of the TVS as defined @ 0 volts at a frequency of 1 MHz and stated in Ct picofarads. SCHEMATIC PACKAGE DIMENSIONS .320 .290 10- $2 \subset$ -O 13 .310 .200 MAX .220 <u>200</u> 125 3 O 12 1 14 O 11 .023 O 10 5 2 (13) .014 O 9 6 3 12 .07<u>0</u> .030 \circ 8 .785 4 1 MAX (5) 10 6 .100 BSC 7) 8 .060 .015 CIRCUIT Supply rail $(+V_{CC})$ I/O Port GND (or $-V_{CC}$)

SYMBOLS & DEFINITIONS

.005

`MIN

.098

MAX

.015 .008

Steering Diode Application FIGURE 1