

NUP1301ML3T1G, SZNUP1301ML3T1G

MAXIMUM RATINGS (Each Diode) ($T_J = 25^\circ\text{C}$ unless otherwise noted)

Rating	Symbol	Value	Unit
Reverse Voltage	V_R	70	Vdc
Forward Current	I_F	215	mAdc
Peak Forward Surge Current	$I_{FM(surge)}$	500	mAdc
Repetitive Peak Reverse Voltage	V_{RRM}	70	V
Average Rectified Forward Current (Note 1) (averaged over any 20 ms period)	$I_{F(AV)}$	715	mA
Repetitive Peak Forward Current	I_{FRM}	450	mA
Non-Repetitive Peak Forward Current $t = 1.0 \mu\text{s}$ $t = 1.0 \text{ms}$ $t = 1.0 \text{S}$	I_{FSM}	2.0 1.0 0.5	A

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. $FR-5 = 1.0 \times 0.75 \times 0.062 \text{ in.}$

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance Junction-to-Ambient	$R_{\theta JA}$	625	$^\circ\text{C/W}$
Lead Solder Temperature Maximum 10 Seconds Duration	T_L	260	$^\circ\text{C}$
Junction Temperature	T_J	-65 to 150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-65 to +150	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$ unless otherwise noted) (Each Diode)

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Reverse Breakdown Voltage ($I_{(BR)} = 100 \mu\text{A}$)	$V_{(BR)}$	70	-	-	Vdc
Reverse Voltage Leakage Current ($V_R = 70 \text{Vdc}$) ($V_R = 25 \text{Vdc}$, $T_J = 150^\circ\text{C}$) ($V_R = 70 \text{Vdc}$, $T_J = 150^\circ\text{C}$)	I_R	-	-	2.5 30 50	μAdc
Diode Capacitance (between I/O and ground) ($V_R = 0$, $f = 1.0 \text{MHz}$)	C_D	-	-	0.9	pF
Forward Voltage ($I_F = 1.0 \text{mAdc}$) ($I_F = 10 \text{mAdc}$) ($I_F = 50 \text{mAdc}$) ($I_F = 150 \text{mAdc}$)	V_F	-	-	715 855 1000 1250	mV_{dc}

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

2. $FR-5 = 1.0 \times 0.75 \times 0.062 \text{ in.}$

3. Alumina = $0.4 \times 0.3 \times 0.024 \text{ in.}$, 99.5% alumina.

4. Include SZ-prefix devices where applicable.

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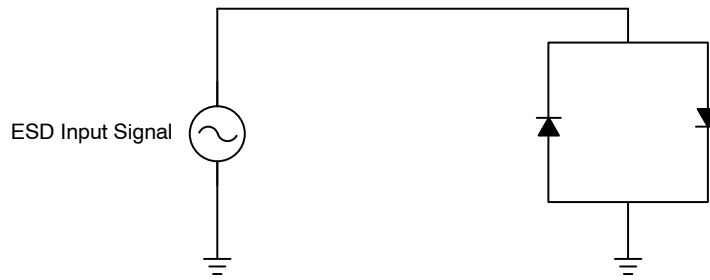


Figure 1. ESD Test Circuit

APPLICATION NOTE

Electrostatic Discharge

A common means of protecting high-speed data lines is to employ low-capacitance diode arrays in a rail-to-rail configuration. Two devices per line are connected between two fixed voltage references such as V_{CC} and ground. When the transient voltage exceeds the forward voltage (V_F) drop of the diode plus the reference voltage, the diodes direct the

surge to the supply rail or ground. This method has several advantages including low loading capacitance, fast response time, and inherent bidirectionality (within the reference voltages). See Figure 1 for the test circuit used to verify the ESD rating for this device.

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