

NUP2201MR6

Low Capacitance TSOP-6 Diode-TVS Array for High Speed Data Lines Protection

The NUP2201MR6 transient voltage suppressor is designed to protect high speed data lines from ESD, EFT, and lightning.

Features:

- Low Capacitance (3 pF Maximum Between I/O Lines)
- ESD Rating of Class 3B (Exceeding 8 kV) per Human Body model and Class C (Exceeding 400 V) per Machine Model
- Protection for the Following IEC Standards:
IEC 61000-4-2 (ESD) 15 kV (air) 8 kV (contact)
IEC 61000-4-4 (EFT) 40 A (5/50 ns)
IEC 61000-4-5 (lighting) 23 A (8/20 μ s)
- UL Flammability Rating of 94 V-0

Typical Applications:

- High Speed Communication Line Protection
- USB 1.1 and 2.0 Power and Data Line Protection
- Digital Video Interface (DVI)
- Monitors and Flat Panel Displays
- Pb-Free Package May be Available. The G-Suffix Denotes a Pb-Free Lead Finish

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

Rating	Symbol	Value	Unit
Peak Power Dissipation 8 x 20 μ s @ $T_A = 25^\circ\text{C}$ (Note 1)	P_{pk}	500	W
Operating Junction Temperature Range	T_J	-40 to +125	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55 to +150	$^\circ\text{C}$
Lead Solder Temperature – Maximum (10 Seconds)	T_L	235	$^\circ\text{C}$
Human Body Model (HBM) Machine Model (MM) IEC 61000-4-2 Air (ESD) IEC 61000-4-2 Contact (ESD)	ESD	16000 400 20000 20000	V

1. Non-repetitive current pulse per Figure 1 (Pin 5 to Pin 2)

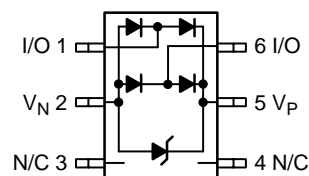


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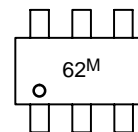
TSOP-6 LOW CAPACITANCE DIODE TVS ARRAY 500 WATTS PEAK POWER 6 VOLTS

PIN CONFIGURATION AND SCHEMATIC



TSOP-6
CASE 318G
PLASTIC

MARKING DIAGRAM



62 = Specific Device Code
M = Date Code

ORDERING INFORMATION

Device	Package	Shipping†
NUP2201MR6T1	TSOP-6	3000/Tape & Reel
NUP2201MR6T1G	TSOP-6	3000/Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

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

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Reverse Working Voltage	V_{RWM}	(Note 2)			5.0	V
Breakdown Voltage	V_{BR}	$I_T=1\text{ mA}$, (Note 3)	6.0			V
Reverse Leakage Current	I_R	$V_{RWM} = 5\text{ V}$			5.0	μA
Clamping Voltage	V_C	$I_{PP} = 5\text{ A}$ (Note 4)			12.5	V
Clamping Voltage	V_C	$I_{PP} = 8\text{ A}$ (Note 4)			20	V
Maximum Peak Pulse Current	I_{PP}	8x20 μs Waveform			25	A
Junction Capacitance	C_J	$V_R = 0\text{ V}$, $f=1\text{ MHz}$ between I/O Pins and GND		3.0	5.0	pF
Junction Capacitance	C_J	$V_R = 0\text{ V}$, $f=1\text{ MHz}$ between I/O Pins		1.5	3.0	pF

- TVS devices are normally selected according to the working peak reverse voltage (V_{RWM}), which should be equal or greater than the DC or continuous peak operating voltage.
- V_{BR} is measured at pulse test current I_T .
- Non-repetitive current pulse per Figure 1 (Pin 5 to Pin 2)

TYPICAL PERFORMANCE CURVES

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

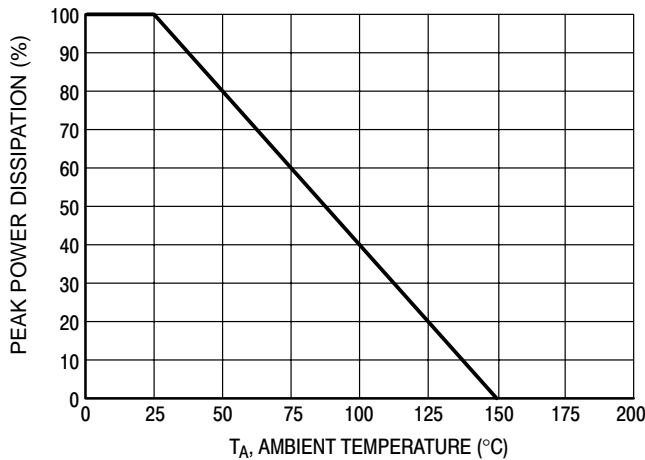


Figure 1. Pulse Derating Curve

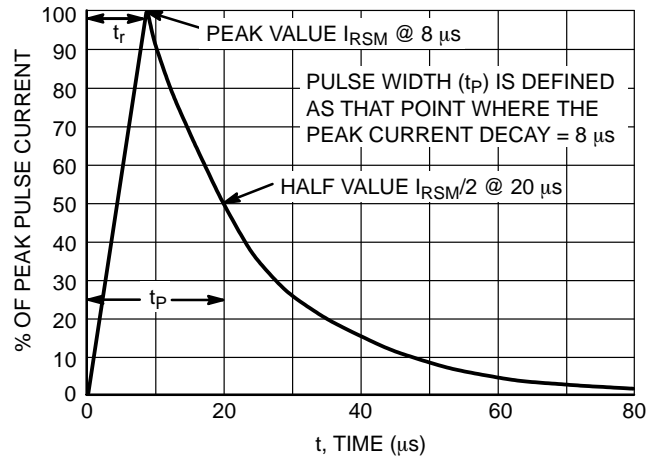


Figure 2. $8 \times 20\ \mu\text{s}$ Pulse Waveform

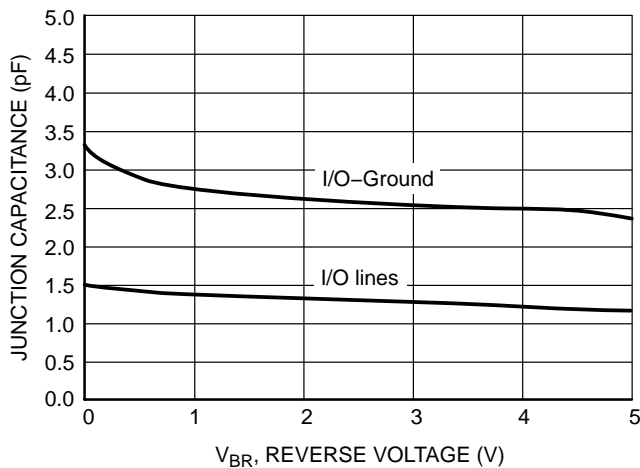


Figure 3. Junction Capacitance vs Reverse Voltage

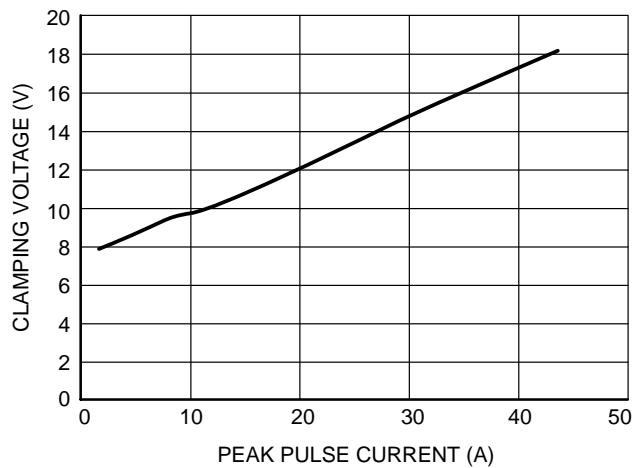
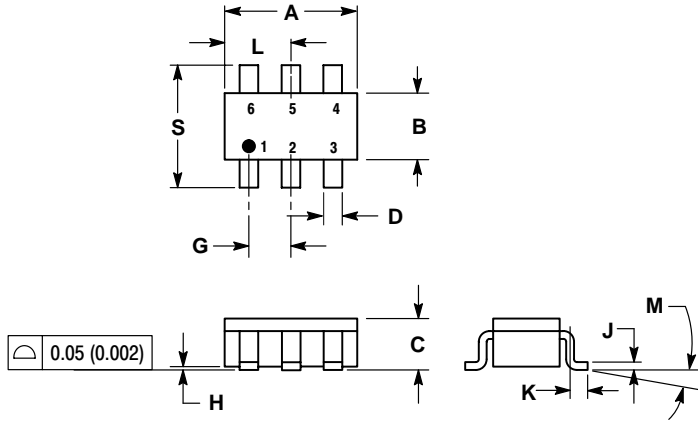


Figure 4. Clamping Voltage vs. Peak Pulse Current ($8 \times 20\ \mu\text{s}$ Waveform)

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PACKAGE DIMENSIONS

TSOP-6
CASE 318G-02
ISSUE K



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. DIMENSIONS A AND B DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.90	3.10	0.1142	0.1220
B	1.30	1.70	0.0512	0.0669
C	0.90	1.10	0.0354	0.0433
D	0.25	0.50	0.0098	0.0197
G	0.85	1.05	0.0335	0.0413
H	0.013	0.100	0.0005	0.0040
J	0.10	0.26	0.0040	0.0102
K	0.20	0.60	0.0079	0.0236
L	1.25	1.55	0.0493	0.0610
M	0	10	0	10
S	2.50	3.00	0.0985	0.1181

SOLDERING FOOTPRINT*

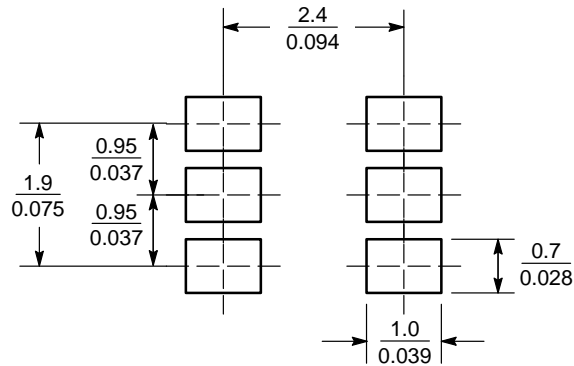


Figure 5. TSOP-6

*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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