

NUP4201MR6

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

The NUP4201MR6 transient voltage suppressor is designed to protect high speed data lines from ESD, EFT, and lighting.

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
- Pb-Free Package is Available

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

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

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

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

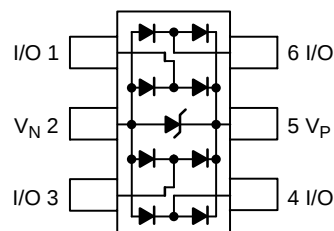


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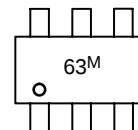
TSOP-6 LOW CAPACITANCE DIODE TVS ARRAY 500 WATTS PEAK POWER 6 VOLTS

PIN CONFIGURATION AND SCHEMATIC



TSOP-6
CASE 318G
PLASTIC

MARKING DIAGRAM



63 = Specific Device Code
M = Date Code

ORDERING INFORMATION

Device	Package	Shipping
NUP4201MR6T1	TSOP-6	3000/Tape & Reel
NUP4201MR6T1G	TSOP-6 (Pb-Free)	3000/Tape & Reel

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

NUP4201MR6

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}	$8 \times 20\text{ }\mu\text{s}$ 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 level.
- 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)

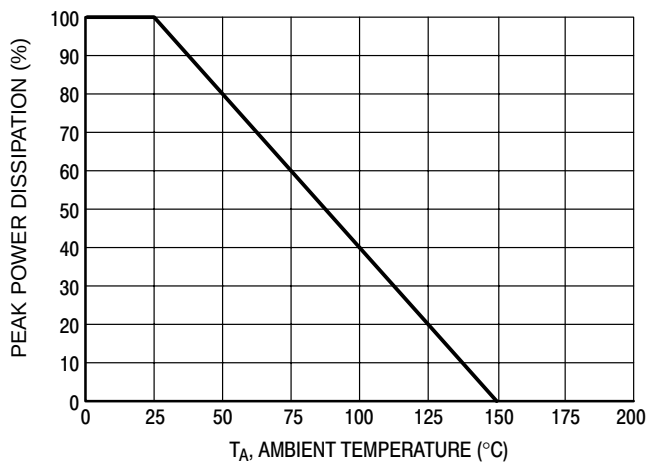


Figure 1. Pulse Derating Curve

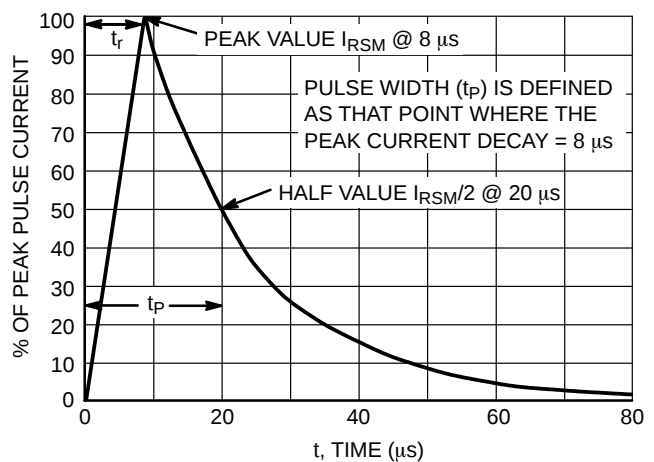


Figure 2. $8 \times 20\text{ }\mu\text{s}$ Pulse Waveform

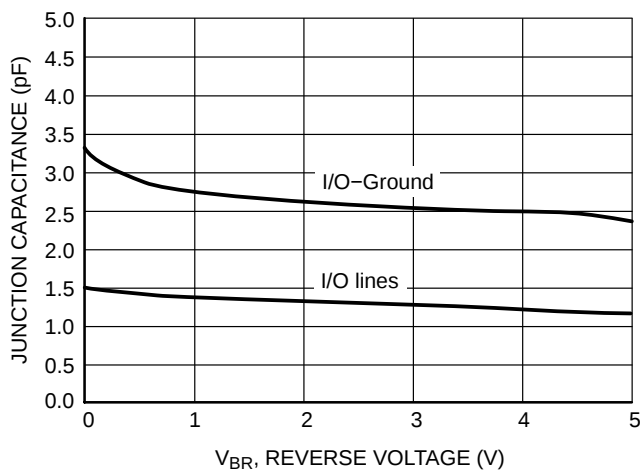


Figure 3. Junction Capacitance vs Reverse Voltage

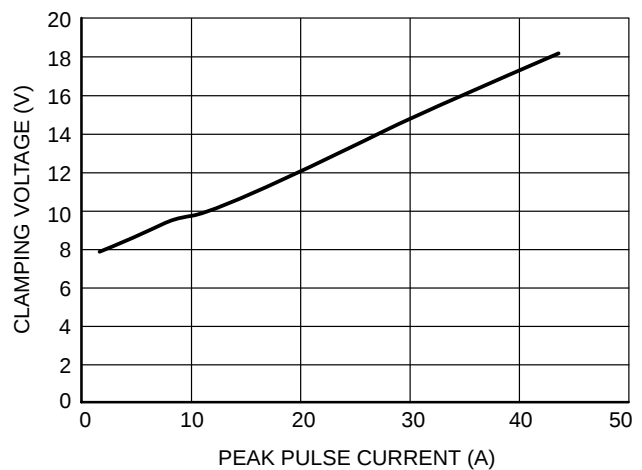
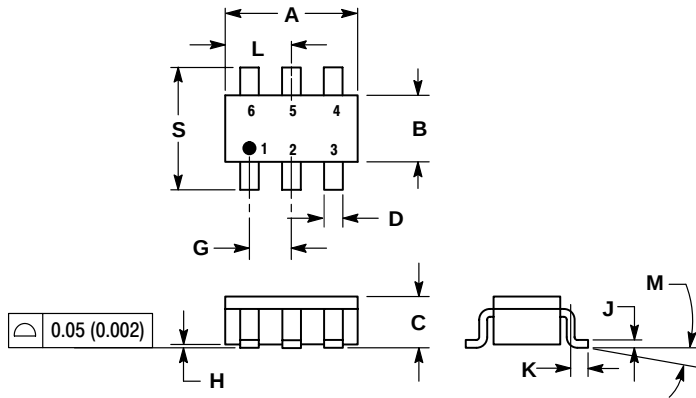


Figure 4. Clamping Voltage vs. Peak Pulse Current ($8 \times 20\text{ }\mu\text{s}$ Waveform)

NUP4201MR6

PACKAGE DIMENSIONS

TSOP-6
CASE 318G-02
ISSUE N

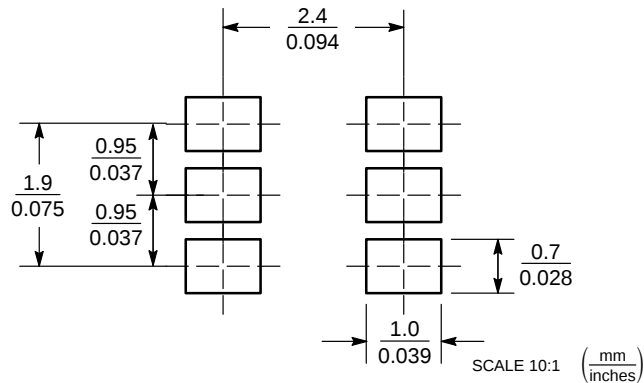


NOTES:

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*



*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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