

## SuperESD - NUP4201MR6T1G

### 1. Description

The NUP4201MR6T1G is designed to protect voltage sensitive components from ESD and transient voltage events. Excellent clamping capability, low leakage, and fast response time, make these parts ideal for ESD protection on designs where board space is at a premium.

### 2. Features

- IEC 61000-4-2 Level 4 ESD Protection
  - $\pm 25$ kV Contact Discharge
  - $\pm 25$ kV Air Discharge
- 375W Peak pulse Power (8/20us)
- Low clamping voltage
- Working voltage: 5V
- Low leakage current
- RoHS compliant
- Protecting 4 unidirectional lines
- Ultra-low capacitance: 1.5pF Typ.

### 3. Applications

- USB 2.0
- Monitors and flat panel displays
- 10/100/1000 ethernet
- Notebook computers
- SIM ports
- ATM interface

### 4. Ordering Information

Part Number	Package	Marking	Material	Packing	Quantity per reel	Flammability Rating	Reel Size
NUP4201MR6T1G	SOT-23-6L	.V05	Halogen free	Tape & Reel	3,000 PCS	UL 94V-0	7 inches

Table-1 Ordering information

## 5. Pin Configuration and Functions


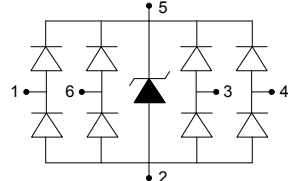
Pin	Name	Description	Outline	Circuit Diagram
1	IO1	Connect to I/O		
2	GND	Connect to GND		
3	IO2	Connect to I/O		
4	IO3	Connect to I/O		
5	VCC	Connect to Vcc		
6	IO4	Connect to I/O		

Table-2 Pin configuration

## 6. Specification

### 6.1. Absolute Maximum rating

Over operating free-air temperature range (unless otherwise noted)

Parameters	Symbol	Min.	Max.	Unit
Peak pulse power (tp=8/20us)@25°C	P <sub>pk</sub>	-	375	W
Peak pulse current (tp=8/20us)@25°C	I <sub>PP</sub>	-	15	A
ESD (IEC61000-4-2 air discharge) @25°C	V <sub>ESD</sub>	-	±25	kV
ESD (IEC61000-4-2 contact discharge) @25°C	V <sub>ESD</sub>	-	±25	kV
Junction temperature	T <sub>J</sub>	-	125	°C
Operating temperature	T <sub>OP</sub>	-40	125	°C
Storage temperature	T <sub>STG</sub>	-55	150	°C
Lead temperature	T <sub>L</sub>	-	260	°C

Table-3 Absolute Maximum rating

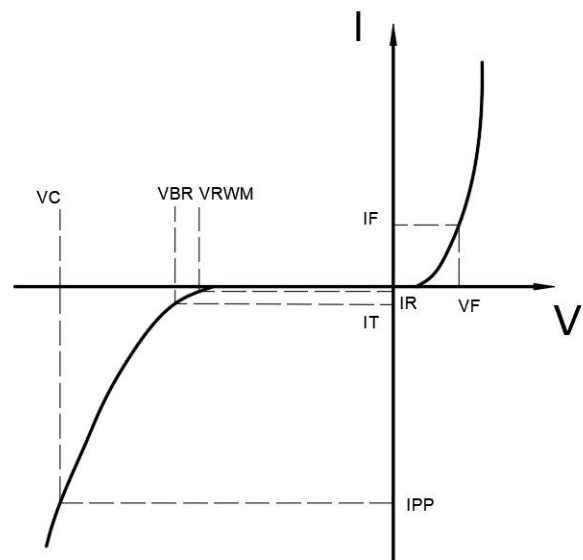
## 6.2. Electrical Characteristics

At TA = 25°C unless otherwise noted

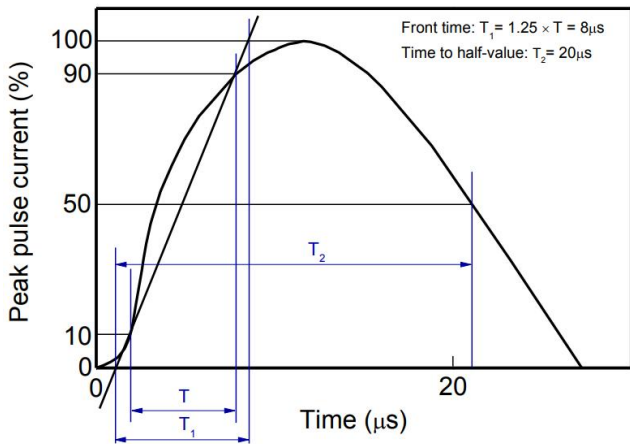
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Stand-off Voltage	$V_{RWM}$				5.0	V
Reverse Breakdown Voltage	$V_{BR}$	$I_T=1mA$	6.0.			V
Reverse Leakage Current	$I_R$	$V_{RWM}=5V$			10	$\mu A$
Clamping Voltage	$V_C$	$I_{PP}=1A$ ; $t_p=8/20\mu s$		10.0	12.0	V
Clamping Voltage	$V_C$	$I_{PP}=15A$ ; $t_p=8/20\mu s$		22.0	25.0	V
Junction Capacitance	$C_J$	I/O to GND; $V_R=0V$ ; $f=1MHz$		1.5	2.0	pF
		Between I/O; $V_R=0V$ ; $f=1MHz$		0.75	1.0	pF

Table-4 Electrical Characteristics

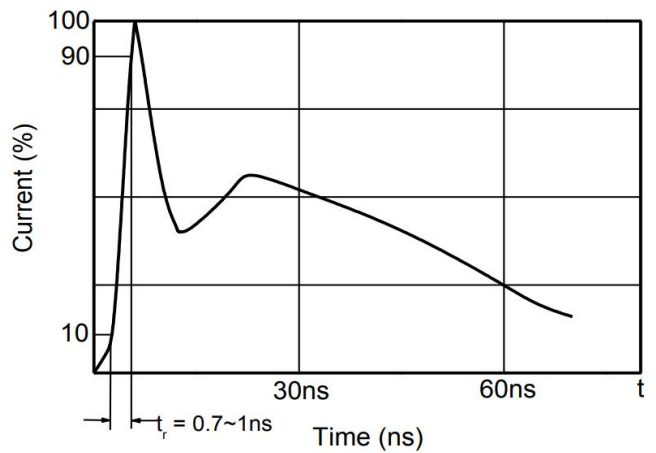
Symbol	Parameters
$V_{RWM}$	Peak Reverse Working Voltage
$I_R$	Reverse Leakage Current @ $V_{RWM}$
$V_{BR}$	Breakdown Voltage @ $I_T$
$I_T$	Test Current
$I_{PP}$	Maximum Reverse Peak Pulse Current
$V_C$	Clamping Voltage @ $I_{PP}$
$I_F$	Forward Current
$V_F$	Forward Voltage @ $I_F$



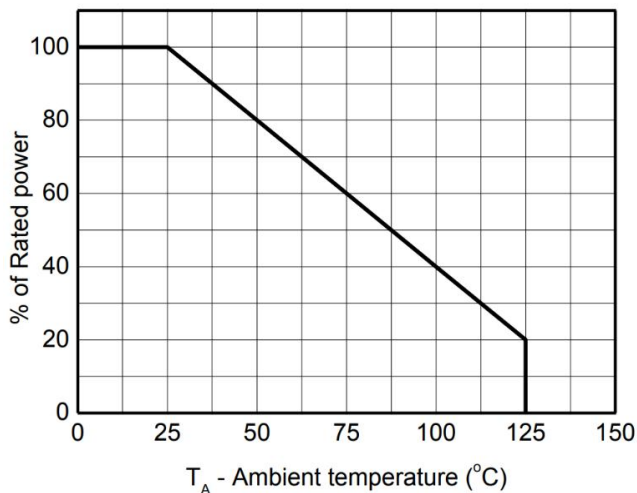
**7. Typical Characteristic**



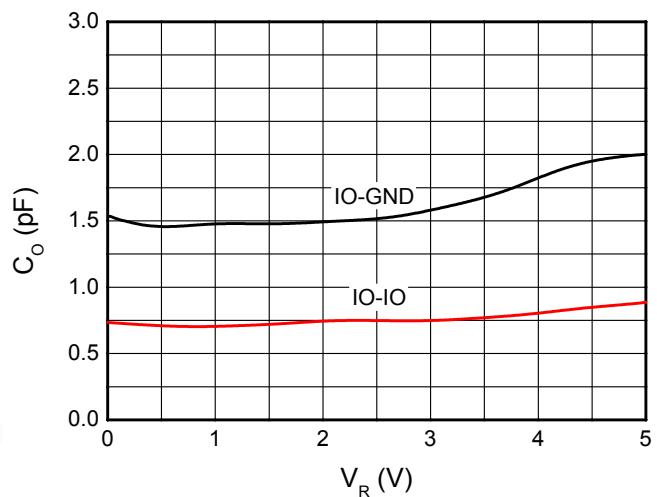
8/20μs waveform per IEC61000-4-5



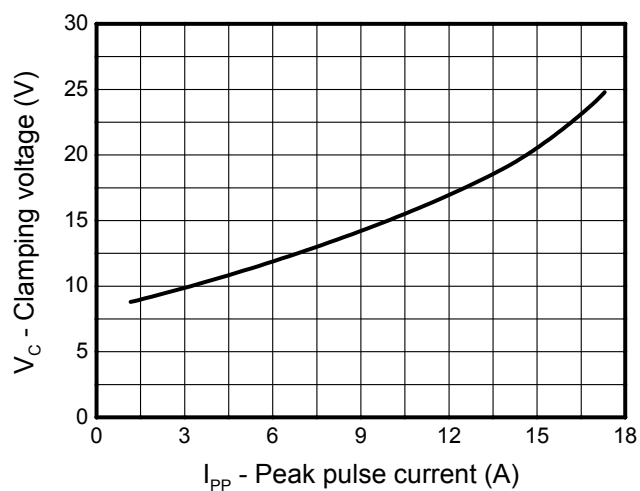
Contact discharge current waveform per IEC61000-4-2



Power derating vs. Ambient temperature

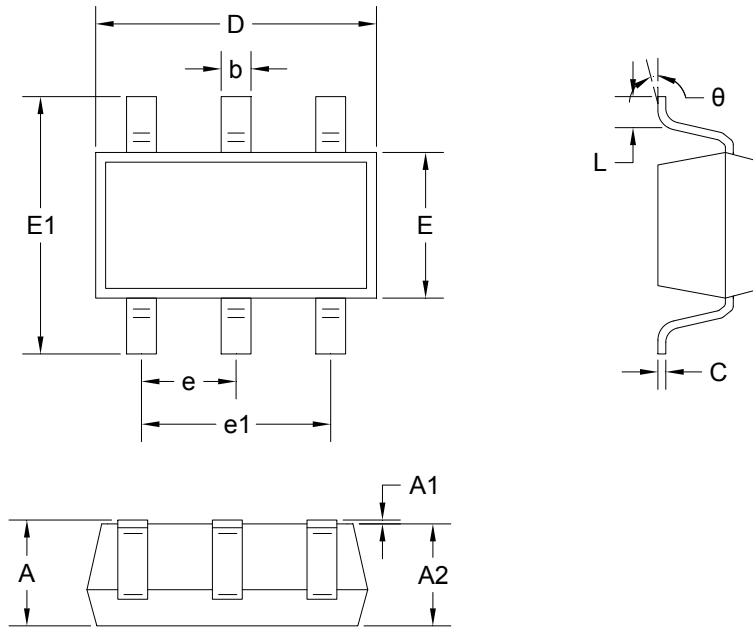


Capacitance vs. Reverse voltage



Clamping voltage vs. Peak pulse current

8. Dimension (SOT-23-6L)



Unit: mm

Symbol		A	A1	A2	b	c	D
Spec	Min	1.050	0.000	1.050	0.300	0.100	2.820
	Max	1.250	0.100	1.150	0.500	0.200	3.020
Symbol		E	E1	e	e1	L	$\theta$
Spec	Min	1.500	2.650	0.950BSC	1.800	0.300	0°
	Max	1.700	2.950		2.000	0.600	8°

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