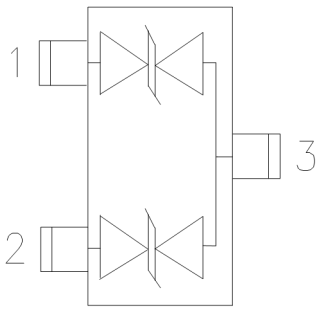
Description

The NUP2105L is a bi-directional TVS diode array, utilizing leading monolithic silicon technology to provide fast response time and low ESD clamping voltage, making this device an ideal solution for protecting sensitive semicon ductor components from damage. The NUP2105L complies with the IEC 61000-4-2 (ESD) standard with ±15kV air and ±8kV contact discharge. It is assembled into a lead-free SOT-23 package. It is designed to protect components which are connected to data and transmission lines from voltage surges.

Features

* 420W peak pulse power (8/20μs)
* Protects two bi-directional lines
* Ultra low leakage: nA level
* Operating voltage: 24V
* AEC-Q101 qualified
* Low clamping voltage
* Complies with following standards:
  – IEC 61000-4-2 (ESD) immunity test
    Air discharge: ±30kV
    Contact discharge: ±30kV
  – IEC61000-4-4 (EFT) 40A (5/50ns)
  – IEC61000-4-5 (Lightning) 9A (8/20μs)
* RoHS Compliant

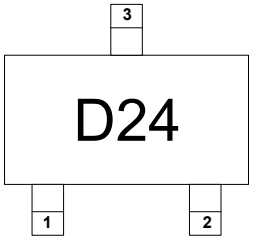
Circuit Diagram



Applications

* Cellular Handsets and Accessories
* Notebooks and Handhelds
* Portable Instrumentation
* Set Top Box
* Industrial Controls
* Server and Desktop PC

Marking Diagram



Transparent top view

D24: Device Marking Code

Ordering Information

Part Number	Packaging	Reel Size
NUP2105L	3000/Tape & Reel	7 inch

Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

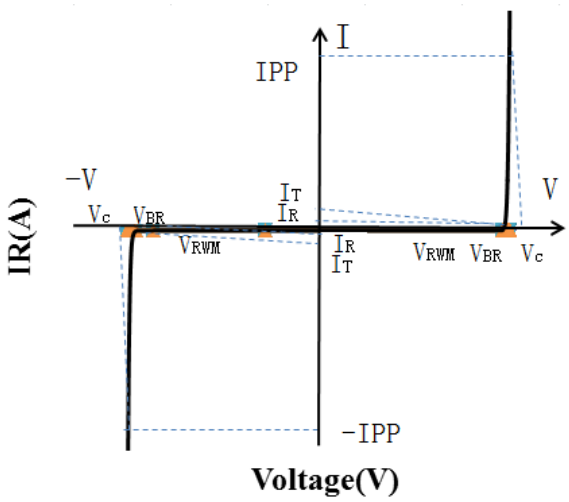
Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20μs)	Ppk	420	W
Peak Pulse Current (8/20μs)	IPP	9	A
ESD per IEC 61000−4−2 (Air) ESD per IEC 61000−4−2 (Contact)	VESD	±30 ±30	kV
Operating Temperature Range	TJ	−55 to +125	°C
Storage Temperature Range	Tstg	−55 to +150	°C

Electrical Characteristics (T_A=25°C unless otherwise specified)

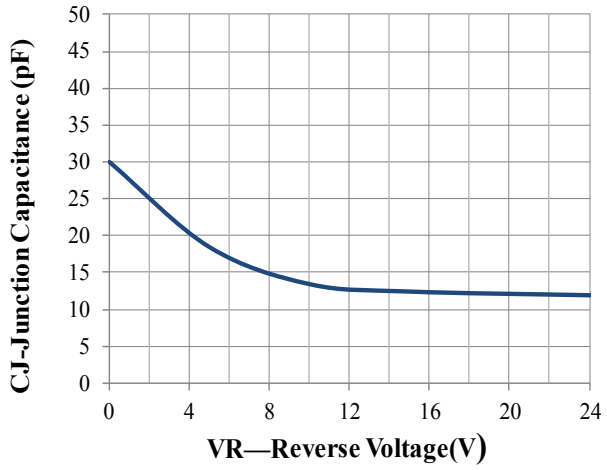
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Reverse Working Voltage	V_{RWM}				24	V
Breakdown Voltage	V_{BR}	I_T = 1mA	26	28.5	30. 5	V
Reverse Leakage Current	I_R	V_{RWM} = 24V			0.5	μA
Clamping Voltage	V_C	I_{PP} = 1A (8 x 20μs pulse)		35	40	V
Clamping Voltage	V_C	I_{PP} = 9A (8 x 20μs pulse)		45	58	V
Junction Capacitance	C_J	VR = 0V, f = 1MHz		30	50	pF

Portion Electronics Parameter

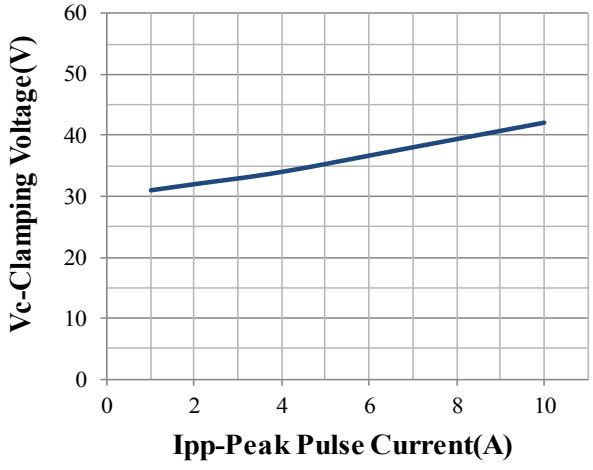
Symbol	Parameter
I_T	Test Current
I_{PP}	Maximum Reverse Peak Pulse Current
Vc	Clamping Voltage @Ic



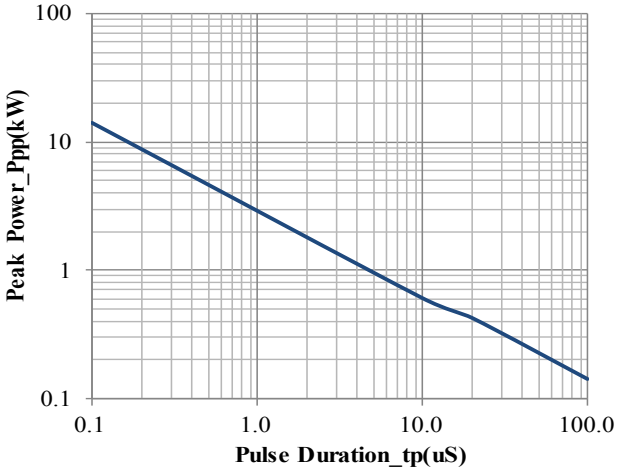
Typical Performance Characteristics (T_A=25°C unless otherwise Specified)



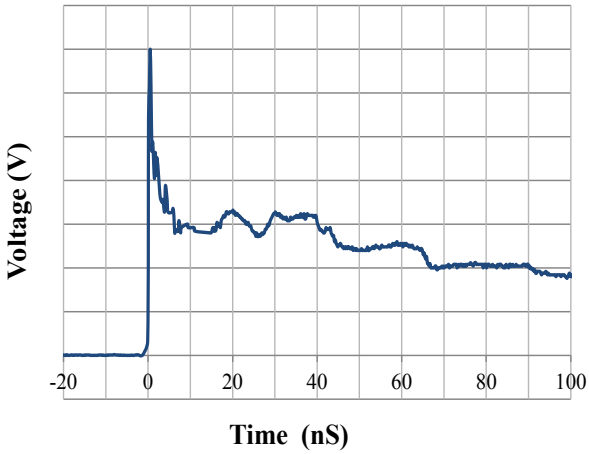
Junction Capacitance vs. Reverse Voltage



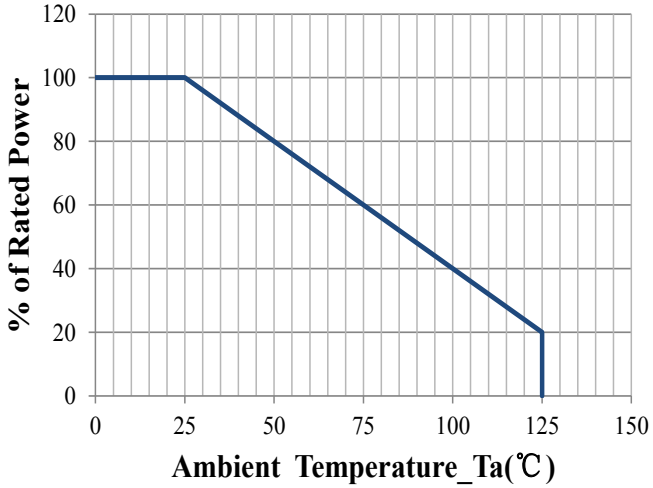
Clamping Voltage vs. Peak Pulse Current



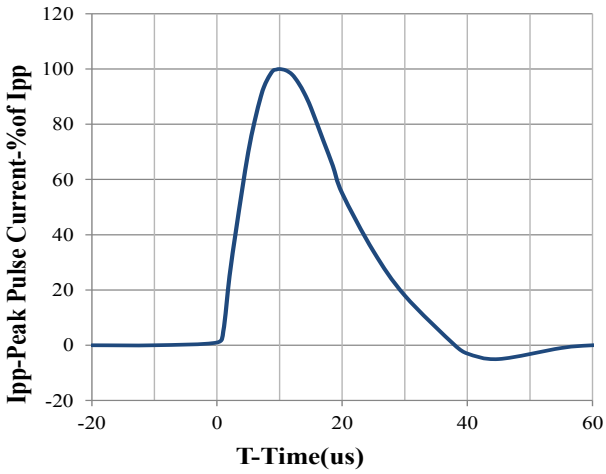
Peak Pulse Power vs. Pulse Time



IEC61000-4-2 Pulse Waveform

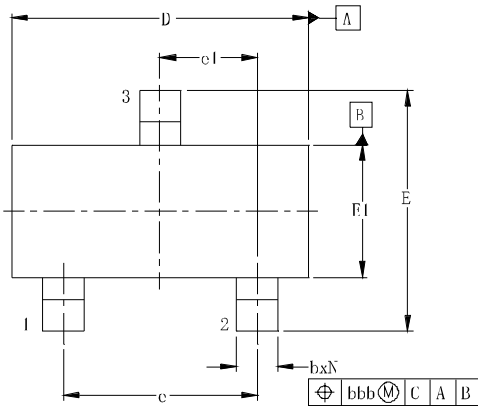


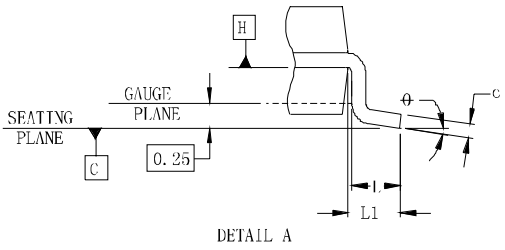
Power Derating Curve

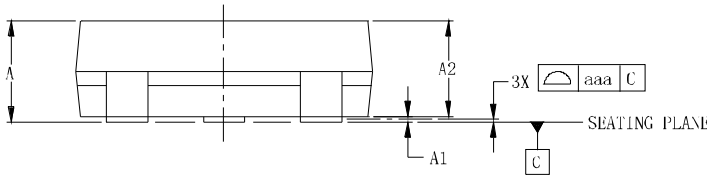


8 X 20us Pulse Waveform

SOT-23 Package Outline Drawing

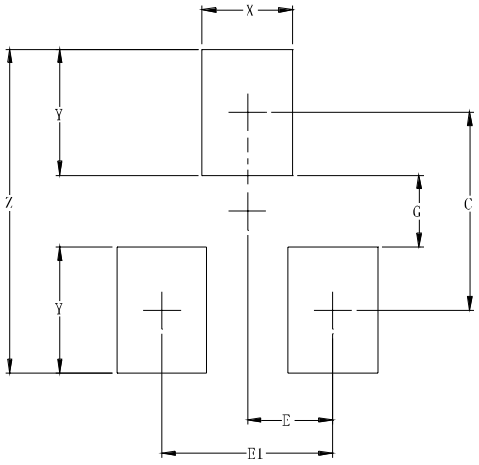






DIMENSIONS						
DIM	INCHES			MILLIMETERS		
	MIN	NOM	MAX	MIN	NOM	MAX
A	.035	–	.044	0.89	–	1.12
A1	.000	–	.004	0.01	–	0.10
A2	.035	.037	.040	0.88	0.95	1.02
b	.012	–	.020	0.30	–	0.51
c	.003	–	.007	0.08	–	0.18
D	.110	.114	.120	2.80	2.90	3.04
E	.082	.093	.104	2.10	2.37	2.64
E1	.047	.051	.055	1.20	1.30	1.40
e	.075			1.90 BSC		
e1	.037			0.95 BSC		
L	.015	.020	.024	0.40	0.50	0.60
L1	.022			(0.55)		
N	3			3		
θ	0°	–	8°	0°	–	8°
aaa	.001			0.10		
bbb	.008			0.20		

Suggested Land Pattern



DIMENSIONS		
DIM	INCHES	MILLIMETERS
C	.087	2.20
E	.037	0.95
E1	.075	1.90
G	.031	0.80
X	.039	1.00
Y	.055	1.40
Z	.141	3.60