

OM SENI

NUP1105LT1G Single Line CAN/LIN Bus Protector

The NUP1105L has been designed to protect LIN and single line CAN transceivers from ESD and other harmful transient voltage events. This device provides bidirectional protection for the data line with a single SOT-23 package, giving the system designer a low cost option for improving system reliability and meeting stringent EMI requirements.

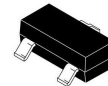
Features

- SOT-23 Package Allows One Separate Bidirectional Configuration
- 350 W Peak Power Dissipation per Line (8 x 20 μ sec Waveform)
- Low Reverse Leakage Current (< 100 nA)
- IEC Compatibility:
 - IEC 61000-4-2 (ESD): Level 4
 - IEC 61000-4-4 (EFT): 40 A – 5/50 ns
 - IEC 61000-4-5 (Lighting) 8.0 A (8/20 μ s)
- ISO 7637-1, Nonrepetitive EMI Surge Pulse TBD
- ISO 7637-3, Repetitive Electrical Fast Transient (EFT) TBD EMI Surge Pulses
- These Devices are Pb-Free and are RoHS Compliant

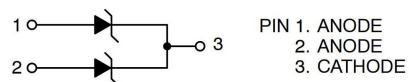
Applications

- Automotive Electronics
 - ♦ LIN Bus
 - ♦ Single Line CAN
- Industrial Control Networks
 - ♦ Smart Distribution Systems (SDS[®])
 - ♦ DeviceNet[™]

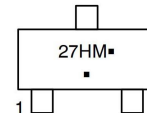
SOT-23 BIDIRECTIONAL VOLTAGE SUPPRESSOR 350 W PEAK POWER



SOT-23



MARKING DIAGRAM



27H = Device Code
M = Date Code
▪ = Pb-Free Package

(Note: Microdot may be in either location)

OM SENI

NUP1105LT1G

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

Symbol	Rating	Value	Unit
PPK	Peak Power Dissipation 8 x 20 μs Double Exponential Waveform (Note 1)	350	W
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$
T_J	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_L	Lead Solder Temperature (10 s)	260	$^\circ\text{C}$
ESD	Human Body model (HBM) Machine Model (MM) IEC 61000-4-2 Specification (Contact)	16 400 30	kV V kV

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. Non-repetitive current pulse per Figure 1.

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

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V_{RWM}	Reverse Working Voltage	(Note 2)	24			V
V_{BR}	Breakdown Voltage	$I_T = 1 \text{ mA}$ (Note 3)	25.7		28.4	V
I_R	Reverse Leakage Current	$V_{RWM} = 24 \text{ V}$		15	100	nA
V_C	Clamping Voltage	$I_{PP} = 5 \text{ A}$ (8 x 20 μs Waveform) (Note 4)			40	V
V_C	Clamping Voltage	$I_{PP} = 8 \text{ A}$ (8 x 20 μs Waveform) (Note 4)			44	V
I_{PP}	Maximum Peak Pulse Current	8 x 20 μs Waveform (Note 4)			8.0	A
CJ	Capacitance	$V_R = 0 \text{ V}$, $f = 1 \text{ MHz}$ (Anode to GND) $V_R = 0 \text{ V}$, $f = 1 \text{ MHz}$ (Anode to Anode)			60 30	pF

OM SENI

NUP1105LT1G

TYPICAL PERFORMANCE CURVES

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

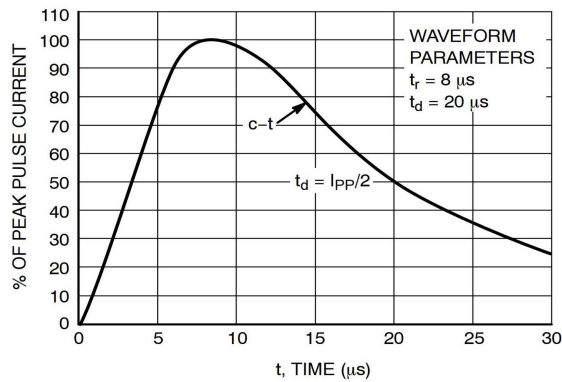


Figure 1. Pulse Waveform, $8 \times 20 \mu\text{s}$

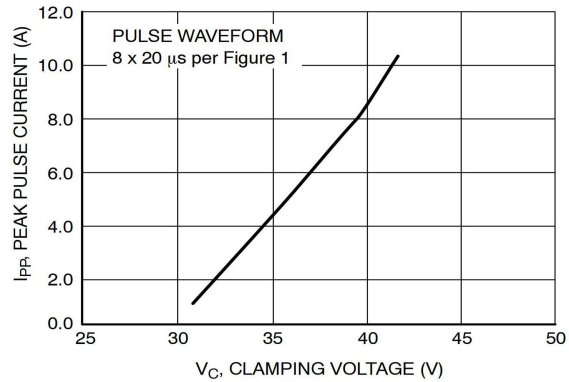


Figure 2. Clamping Voltage vs Peak Pulse Current

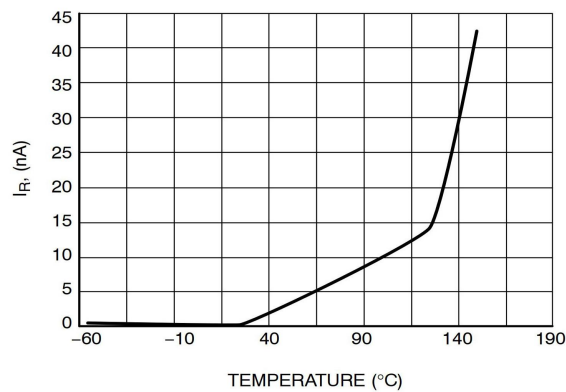


Figure 3. Typical Leakage vs. Temperature

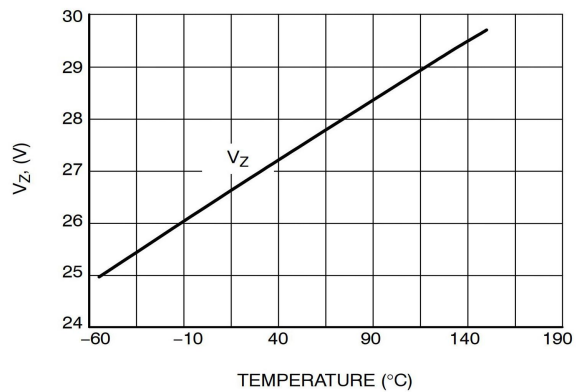


Figure 4. Typical V_Z @ 1.0 mA vs. Temperature

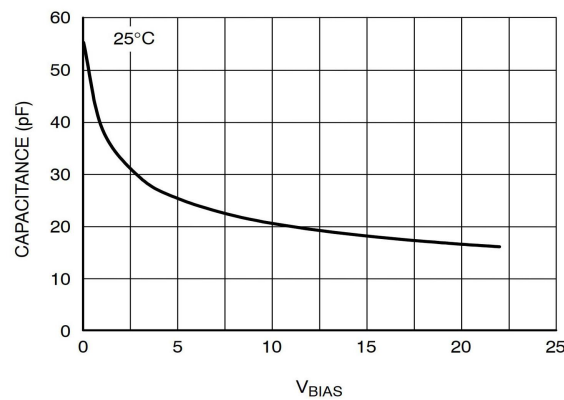


Figure 5. Capacitance vs. V_{BIAS}

OM SENI

Ordering Information

PACKAGE	PACKAGE CODE	UNIT WEIGHT(g)	REEL(pcs)	BOX(pcs)	CARTON(pcs)	DELIVERY MODE
SOT-23	R1	0.008	3000	30000	240000	7"

Package Outline Dimensions (SOT-23)

Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.90	1.15	0.035	0.045
A1	-	0.10	-	0.004
A2	0.90	1.05	0.035	0.041
b	0.30	0.50	0.012	0.020
c	0.10	0.20	0.004	0.008
D	2.80	3.00	0.110	0.118
E	1.20	1.40	0.047	0.055
E1	2.25	2.55	0.089	0.100
e	0.950TYP		0.037TYP	
e1	1.80	2.00	0.071	0.079
L	0.550REF		0.022REF	
L1	0.30	0.50	0.012	0.020
θ	-	8°	-	8°

Suggested Pad Layout

Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
J	0.75	0.85	0.030	0.033
K	0.85	0.95	0.033	0.037
M	1.95	2.05	0.077	0.081
N	1.85	1.95	0.073	0.077