1.Description

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 .

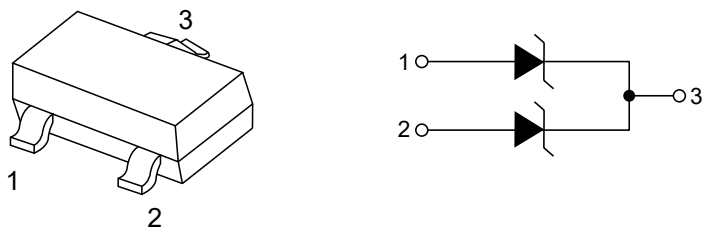
2.Applications

- Industrial Control Networks
- DeviceNet™

3.Features

- SOT-23 Package Allows One Separate Bidirectional Configuration
- 350 W Peak Power Dissipation per Line (8 x 20 sec Waveform)
- Low Reverse Leakage Current (< 100 nA)
- ISO 7637-1, Nonrepetitive EMI Surge Pulse TBD
- 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 μs)
- ISO 7637-3, Repetitive Electrical Fast Transient (EFT) TBDEMI Surge Pulses

4.Pinning information



SOT-23

5.Absolute Maximum Ratings (T_J=25°C, unless otherwise specified)

Parameter	Symbol	Value	Units
Peak Power Dissipation,8x20μs Double Exponential Waveform (Note 1)	P_{PK}	350	W
Junction Temperature Range	T_J	-55 to 150	°C
Storage Temperature Range	T_J	-55 to 150	°C
Lead Solder Temperature (10 s)	T_L	260	°C
Human Body Model (HBM)	ESD	16	kV
Machine Model (MM)		400	V
IEC 61000−4−2 Specification (Contact)		30	kV

Notes:

1. Non-repetitive current pulse per Figure 1.

6.Electrical Characteristic (T_J=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Reverse Working Voltage	V_{RWM}	(Note 2)	24			V
Breakdown Voltage	V_{BR}	I_T=1mA (Note 3)	25.7		28.4	V
Reverse Leakage Current	I_R	V_{RWM}=24V		15	100	nA
Clamping Voltage	V_C	I_{PP}=5A(8x20μs Waveform) (Note 4)			40	V
Clamping Voltage	V_C	I_{PP}=8A(8x20μs Waveform) (Note 4)			44	V
Maximum Peak Pulse Current	I_{PP}	8x20μs Waveform (Note 4)			8	A
Capacitance	C_J	V_R=0V, f=1MHz (Line to GND)			60	pF
		V_R=0V, f=1MHz (Anode to Anode)			30	pF

Notes:

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

2. 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.

3. V_{BR} is measured at pulse test current I_T.

4. Pulse waveform per Figure 1.

8.Typical characteristic

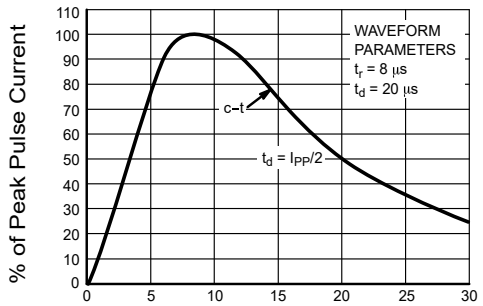


Figure 1: Pulse Waveform, 8 × 20 μs

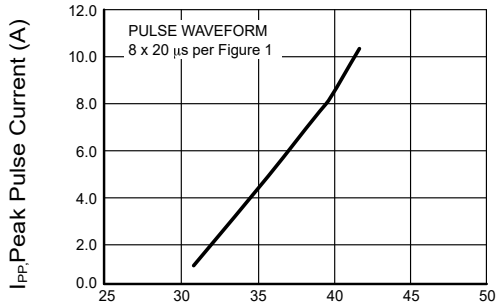


Figure 2: Clamping Voltage vs Peak Pulse Current

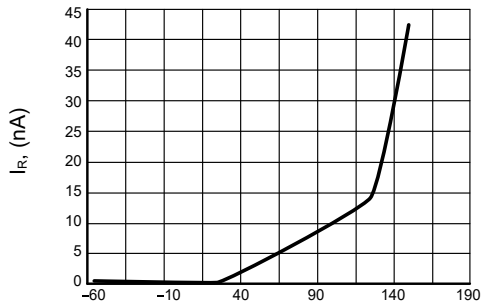


Figure 3: Typical Leakage vs. Temperature

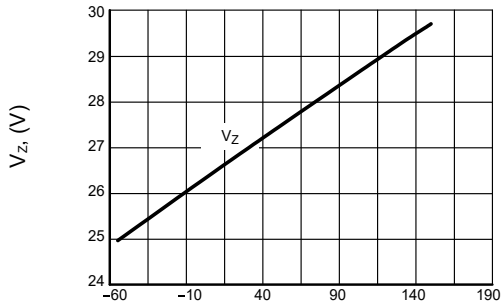


Figure 4: Typical V_Z @ 1.0 mA vs. Temperature

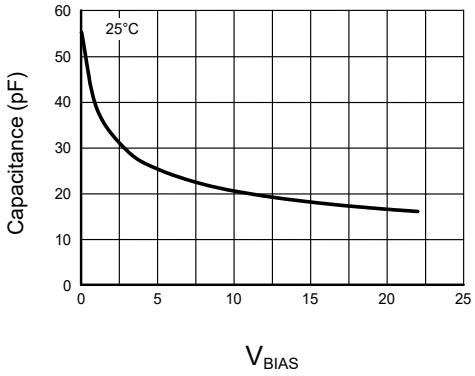
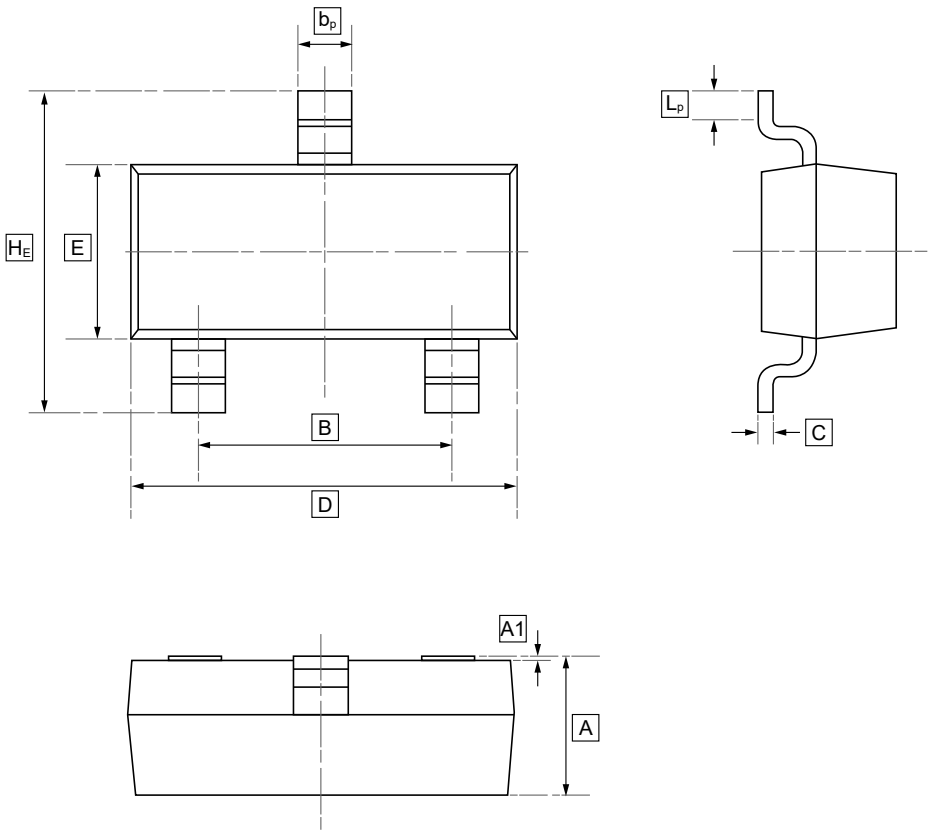


Figure 5: Capacitance vs. V_{BIAS}

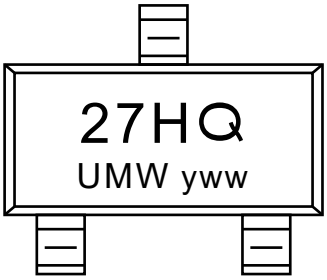
9.SOT-23 Package Outline Dimensions



DIMENSIONS (mm are the original dimensions)

Symbol	A	B	b_p	C	D	E	H_E	A1	L_p
Min	0.95	1.78	0.35	0.08	2.70	1.20	2.20	0.013	0.20
Max	1.40	2.04	0.50	0.19	3.10	1.65	3.00	0.100	0.50

10.Ordering information



yww: Batch Code

Order Code	Package	Base QTY	Delivery Mode
UMW NUP1105LT1G	SOT-23	3000	Tape and reel

11.Disclaimer

UMW reserves the right to make changes to all products, specifications. Customers should obtain the latest version of product documentation and verify the completeness and currency of the information before placing an order.

When applying our products, please do not exceed the maximum rated values, as this may affect the reliability of the entire system. Under certain conditions, any semiconductor product may experience faults or failures. Buyers are responsible for adhering to safety standards and implementing safety measures during system design, prototyping, and manufacturing when using our products to prevent potential failure risks that could lead to personal injury or property damage.

Unless explicitly stated in writing, UMW products are not intended for use in medical, life-saving, or life-sustaining applications, nor for any other applications where product failure could result in personal injury or death. If customers use or sell the product for such applications without explicit authorization, they assume all associated risks.

When reselling, applying, or exporting, please comply with export control laws and regulations of China, the United States, the United Kingdom, the European Union, and other relevant countries, regions, and international organizations.

This document and any actions by UMW do not grant any intellectual property rights, whether express or implied, by estoppel or otherwise. The product names and marks mentioned herein may be trademarks of their respective owners.