NUP1128, NUP2128

Product Preview

Single Line LIN & Dual Line CAN Bus Protector

The NUP1128/NUP2128 has been designed to protect both CAN and LIN transceivers from ESD and other harmful transient voltage events. These devices provide bidirectional protection for each data line with a single compact SC−70 (SOT−323) or SOD−323 package, giving the system designer a low cost option for improving system reliability and meeting stringent EMI requirements.

Features

- Low Reverse Leakage Current (< 100 nA)
- IEC Compatibility:
  - IEC 61000−4−2 (ESD): Level 4
  - IEC 61000−4−4 (EFT): 50 A (5/50 ns)
  - IEC 61000−4−5 (Lighting) 3.5 A (8/20 μs)
- ISO 7637−1, Nonrepetitive EMI Surge Pulse 2, 8.0 A (1/50 μs)
- ISO 7637−3, Repetitive Electrical Fast Transient (EFT) EMI Surge Pulses, 50 A (5/50 ns)
- Flammability Rating UL 94 V−0
- SZ Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC−Q101 Qualified and PPAP Capable
- These are Pb−Free Devices

Applications

- Automotive Networks
  - CAN / CAN−FD
  - Low and High−Speed CAN
  - Fault Tolerant CAN
  - LIN

This document contains information on a product under development. ON Semiconductor reserves the right to change or discontinue this product without notice.

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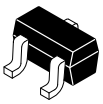
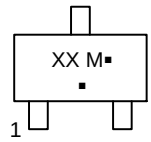
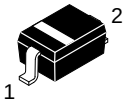
MARKING DIAGRAMS



SC−70
CASE 419

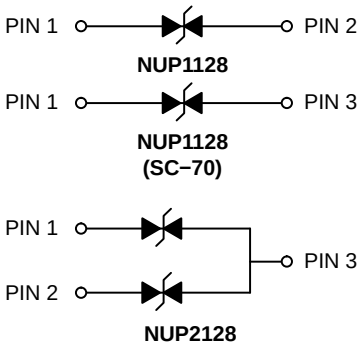


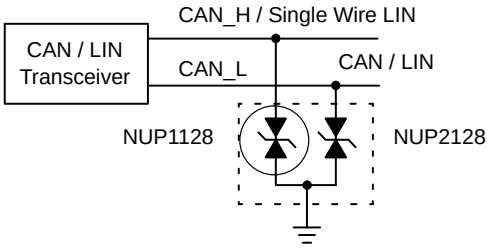


SOD−323
CASE 477

XX = Specific Device Code
M = Date Code
▪ = Pb−Free Package

(Note: Microdot may be in either location)





ORDERING INFORMATION

See detailed ordering and shipping information on page 2 of this data sheet.

MAXIMUM RATINGS (T_J = 25°C, unless otherwise specified)

Symbol	Rating	Value	Unit
PPK	Peak Power Dissipation, 8/20 μs Double Exponential Waveform (Note 1)	150	W
T_J	Operating Junction Temperature Range	−55 to 175	°C
T_J	Storage Temperature Range	−55 to 175	°C
T_L	Lead Solder Temperature (10 s)	260	°C
ESD	Human Body Model (HBM) IEC 61000−4−2 Contact IEC 61000−4−2 Air ISO 10605 Contact (330 pF / 330 Ω) ISO 10605 Contact (330 pF / 2 kΩ) ISO 10605 Contact (150 pF / 2 kΩ)	8.0 ±25 ±25 ±25 ±25 ±25	kV kV kV kV kV 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°C, unless otherwise specified)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V_{RWM}	Reverse Working Voltage	(Note 2)			26.5	V
V_{BR}	Breakdown Voltage	I_T = 1 mA (Note 3)	28	31	35	V
I_R	Reverse Leakage Current	V_{RWM} = 26.5 V T_A = 150°C		15	100 1000	nA
V_C	Clamping Voltage	I_{PP} = 1 A (8/20 μs Waveform) (Note 4) I_{PP} = 3 A I_{PP} = 3.5 A	 43	38 45	40 50	V
I_{PP}	Maximum Peak Pulse Current	8/20 μs Waveform (Note 4)			3.5	A
C_J	Capacitance	V_R = 0 V, f = 1 MHz (Line to GND)		11.5	15	pF
ΔC	Diode Capacitance Matching	V_R = 0 V, f = 1 MHz (Note 5)			2	%

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.
5. ΔC is the percentage difference between C_J of lines 1 and 2 measured according to the test conditions given in the electrical characteristics table.

ORDERING INFORMATION

Device	Package	Shipping†
NUP1128WTT1G	SC−70 (Pb−Free)	3000 / Tape & Reel
SZNUP1128WTT1G*		
NUP2128WTT1G		
SZNUP2128WTT1G*		
NUP1128HT1G	SOD−323 (Pb−Free)	3000 / Tape & Reel
SZNUP1128HT1G*		

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

*SZ Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC−Q101 Qualified and PPAP Capable.

TYPICAL PERFORMANCE CURVES

(T_J = 25°C unless otherwise noted)

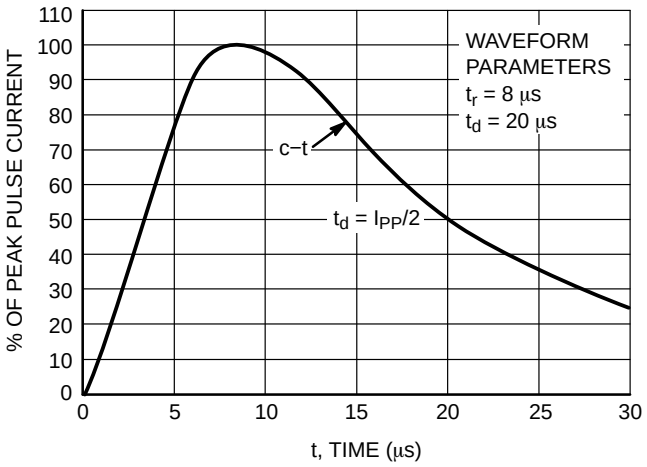


Figure 1. Pulse Waveform, 8/20 μs

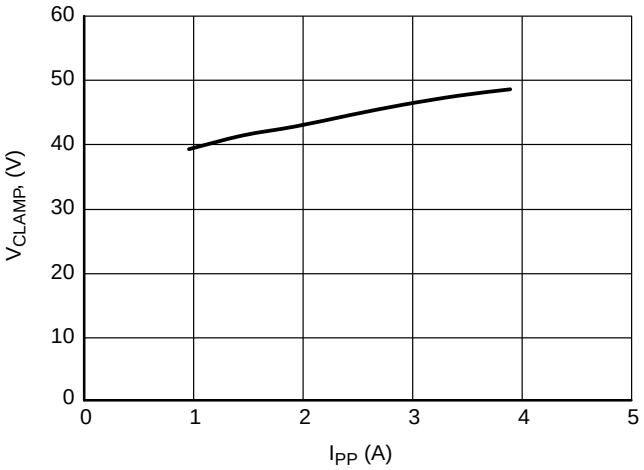


Figure 2. Clamping Voltage vs Peak Pulse Current

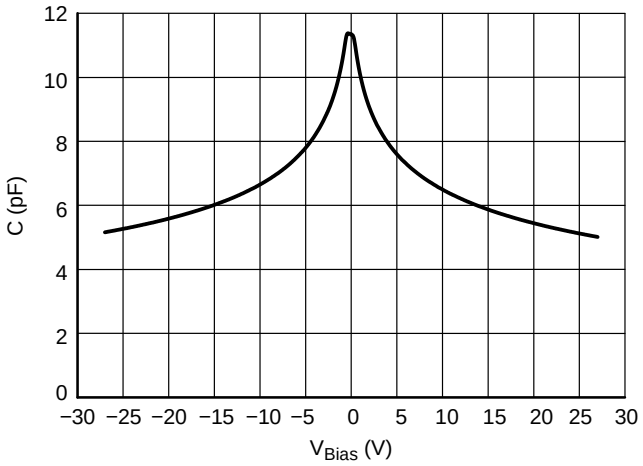


Figure 3. CV Characteristics

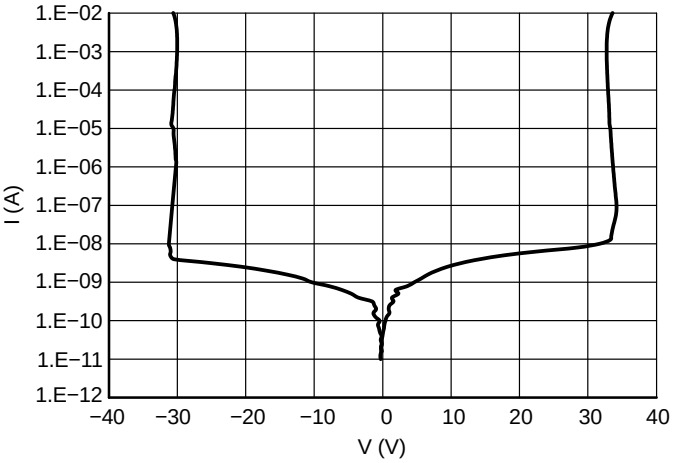


Figure 4. IV Characteristics

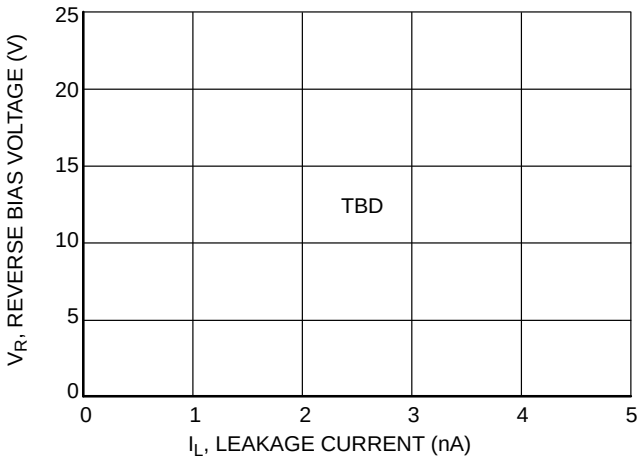


Figure 5. I_R versus Temperature Characteristics

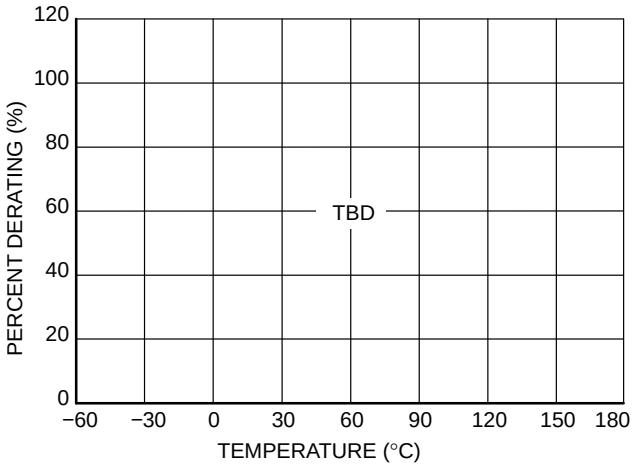
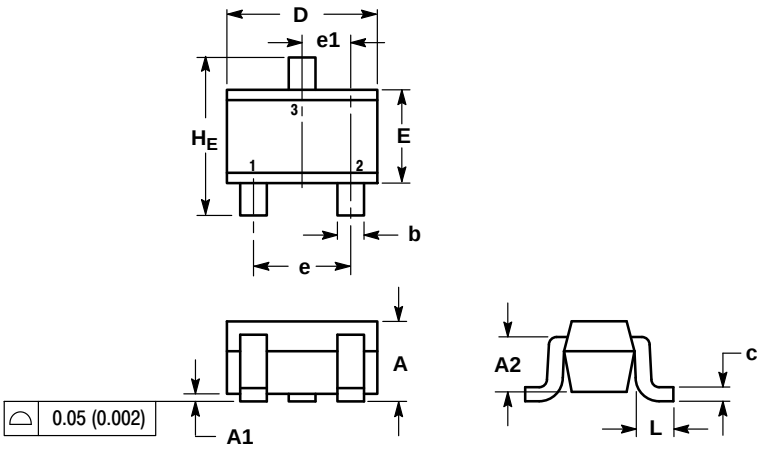


Figure 6. Temperature Power Dissipation Derating

PACKAGE DIMENSIONS

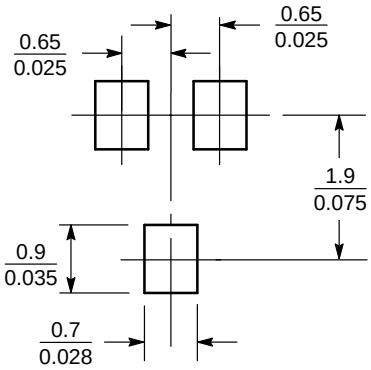
SC−70 (SOT−323)
CASE 419−04
ISSUE N



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

	MILLIMETERS			INCHES		
DIM	MIN	NOM	MAX	MIN	NOM	MAX
A	0.80	0.90	1.00	0.032	0.035	0.040
A1	0.00	0.05	0.10	0.000	0.002	0.004
A2		0.70 REF			0.028 REF	
b	0.30	0.35	0.40	0.012	0.014	0.016
c	0.10	0.18	0.25	0.004	0.007	0.010
D	1.80	2.10	2.20	0.071	0.083	0.087
E	1.15	1.24	1.35	0.045	0.049	0.053
e	1.20	1.30	1.40	0.047	0.051	0.055
e1		0.65 BSC			0.026 BSC	
L	0.20	0.38	0.56	0.008	0.015	0.022
H_E	2.00	2.10	2.40	0.079	0.083	0.095

SOLDERING FOOTPRINT*

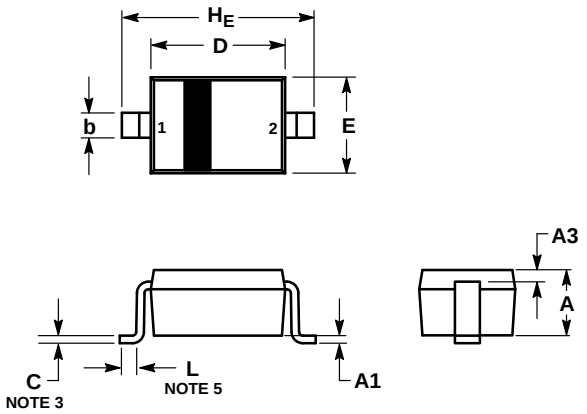


SCALE 10:1 $\left(\frac{\text{mm}}{\text{inches}}\right)$

*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

PACKAGE DIMENSIONS

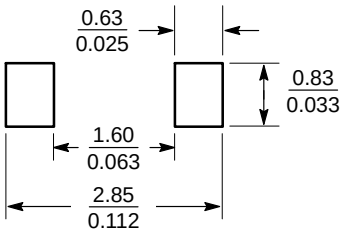
SOD−323
CASE 477−02
ISSUE H



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. LEAD THICKNESS SPECIFIED PER L/F DRAWING WITH SOLDER PLATING.
4. DIMENSIONS A AND B DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.
5. DIMENSION L IS MEASURED FROM END OF RADIUS.

	MILLIMETERS			INCHES		
DIM	MIN	NOM	MAX	MIN	NOM	MAX
A	0.80	0.90	1.00	0.031	0.035	0.040
A1	0.00	0.05	0.10	0.000	0.002	0.004
A3	0.15 REF			0.006 REF		
b	0.25	0.32	0.4	0.010	0.012	0.016
C	0.089	0.12	0.177	0.003	0.005	0.007
D	1.60	1.70	1.80	0.062	0.066	0.070
E	1.15	1.25	1.35	0.045	0.049	0.053
L	0.08			0.003		
H_E	2.30	2.50	2.70	0.090	0.098	0.105

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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Email: orderlit@onsemi.com

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ON Semiconductor Website: **www.onsemi.com**

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- Поставка сложных, дефицитных, либо снятых с производства позиций;
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- Экспресс доставка в любую точку России;
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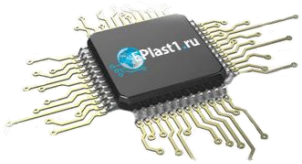
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

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