

SZNUP2242

Dual Line CAN Bus Protector

The SZNUP2242 has been designed to protect the CAN transceiver from ESD and other harmful transient voltage events. This device provides bidirectional protection for each data line with a single compact SC-70 (SOT-323) package, giving the system designer a low cost option for improving system reliability and meeting stringent EMI requirements.

Features

- 200 W Peak Power Dissipation per Line (8 x 20 μ sec Waveform)
- Diode Capacitance Matching
- 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) 3.0 A (8/20 μ s)
- ISO 7637-1, Nonrepetitive EMI Surge Pulse 2, 8.0 A (1 x 50 μ s)
- ISO 7637-3, Repetitive Electrical Fast Transient (EFT) EMI Surge Pulses, 50 A (5 x 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

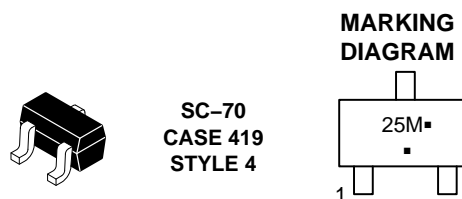
Applications

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



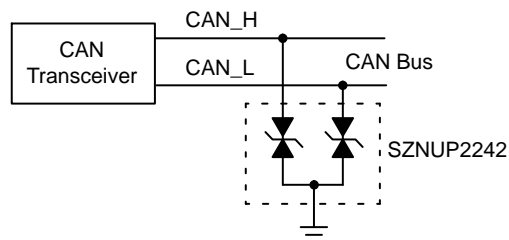
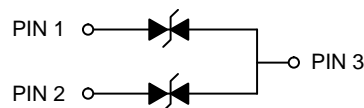
ON Semiconductor®

www.onsemi.com



25 = 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.

SZNUP2242

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

| Symbol | Rating | Value | Unit |
|----------------|---|------------------|----------------|
| PPK | Peak Power Dissipation, 8 x 20 μs Double Exponential Waveform (Note 1) | 200 | W |
| T _J | Operating Junction Temperature Range | –55 to 150 | °C |
| T _J | Storage Temperature Range | –55 to 150 | °C |
| T _L | Lead Solder Temperature (10 s) | 260 | °C |
| ESD | Human Body Model (HBM) Machine Model (MM) IEC 61000–4–2 Specification (Contact) | 8.0 1.6 30 | 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) | 24 | – | – | V |
| V _{BR} | Breakdown Voltage | I _T = 1 mA (Note 3) | 26.2 | – | 32 | V |
| I _R | Reverse Leakage Current | V _{RWM} = 24 V | – | 15 | 100 | nA |
| V _C | Clamping Voltage | I _{PP} = 1 A (8 x 20 μs Waveform) (Note 4) | – | 33.4 | 36.6 | V |
| V _C | Clamping Voltage | I _{PP} = 3 A (8 x 20 μs Waveform) (Note 4) | – | 44 | 50 | V |
| I _{PP} | Maximum Peak Pulse Current | 8 x 20 μs Waveform (Note 4) | – | – | 3.0 | A |
| C _J | Capacitance | V _R = 0 V, f = 1 MHz (Line to GND) | – | – | 10 | pF |
| ΔC | Diode Capacitance Matching | V _R = 0 V, 5 MHz (Note 5) | – | 0.26 | 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.

- 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.
- V_{BR} is measured at pulse test current I_T.
- Pulse waveform per Figure 1.
- 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 [†] |
|----------------|--------------------|-----------------------|
| SZNUP2242WTT1G | SC–70 (Pb–Free) | 3000 / Tape & Reel |
| SZNUP2242WTT3G | SC–70 (Pb–Free) | 10000 / Tape & Reel |

[†]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.

TYPICAL PERFORMANCE CURVES

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

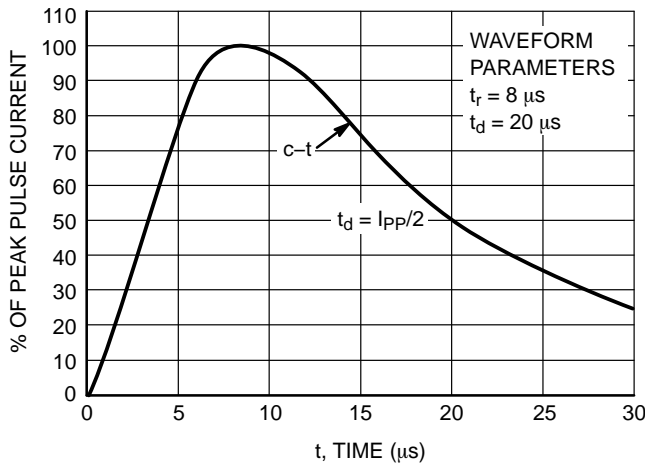


Figure 1. Pulse Waveform, $8 \times 20 \mu\text{s}$

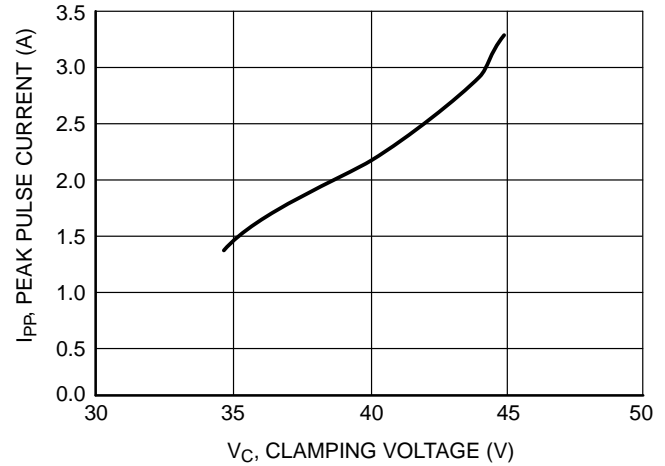


Figure 2. Clamping Voltage vs Peak Pulse Current

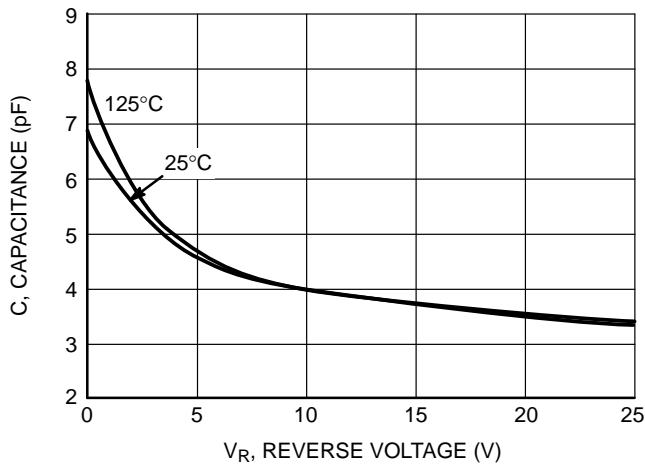


Figure 3. Typical Junction Capacitance vs Reverse Voltage

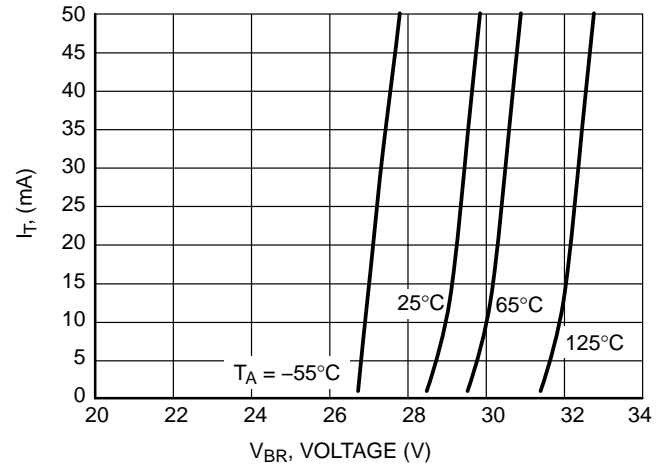


Figure 4. V_{BR} versus I_T Characteristics

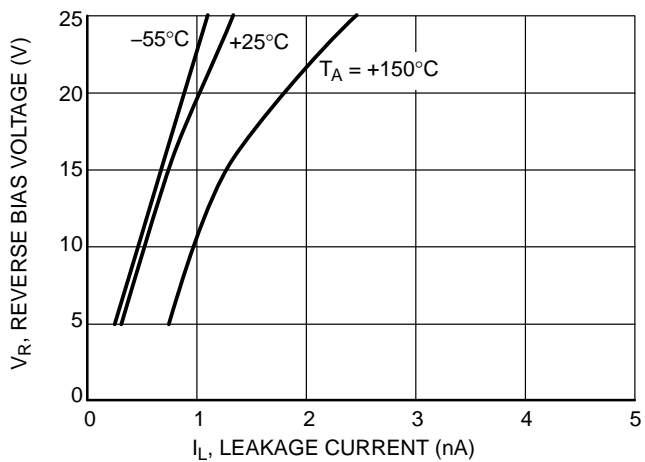


Figure 5. I_R versus Temperature Characteristics

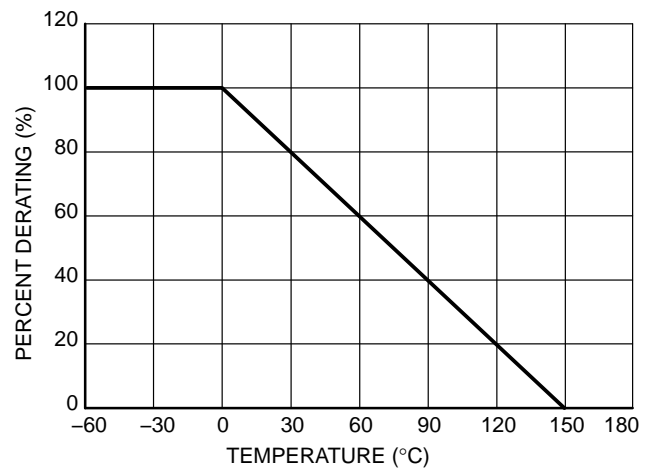
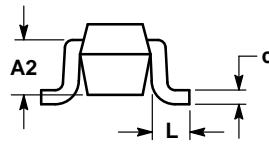
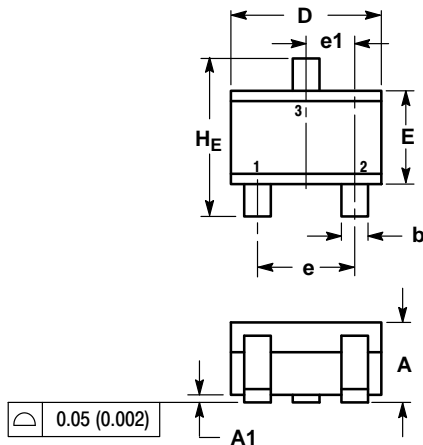


Figure 6. Temperature Power Dissipation Derating

SZNUP2242

PACKAGE DIMENSIONS

SC-70 (SOT-323) CASE 419-04 ISSUE N



NOTES:

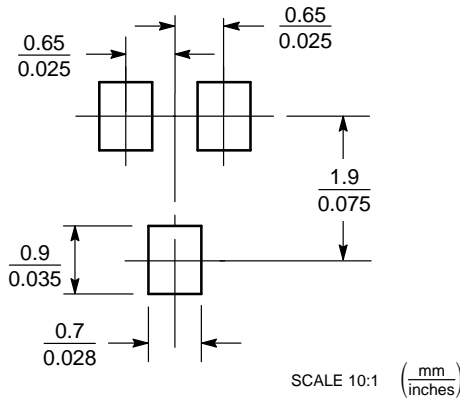
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

| DIM | MILLIMETERS | | | INCHES | | |
|-----|-------------|------|------|-----------|-------|-------|
| | 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 |
| HE | 2.00 | 2.10 | 2.40 | 0.079 | 0.083 | 0.095 |

STYLE 4:


- PIN 1: CATHODE
- CATHODE
- ANODE

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.

Honeywell and SDS are registered trademarks of Honeywell International Inc.
DeviceNet is a trademark of Rockwell Automation.

ON Semiconductor and the  are registered trademarks of Semiconductor Components Industries, LLC (SCILLC) or its subsidiaries in the United States and/or other countries. SCILLC owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of SCILLC's product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:

Literature Distribution Center for ON Semiconductor
P.O. Box 5163, Denver, Colorado 80217 USA
Phone: 303-675-2175 or 800-344-3860 Toll Free USA/Canada
Fax: 303-675-2176 or 800-344-3867 Toll Free USA/Canada
Email: orderlit@onsemi.com

N. American Technical Support: 800-282-9855 Toll Free
USA/Canada
Europe, Middle East and Africa Technical Support:
Phone: 421 33 790 2910
Japan Customer Focus Center
Phone: 81-3-5817-1050

ON Semiconductor Website: www.onsemi.com

Order Literature: <http://www.onsemi.com/orderlit>

For additional information, please contact your local Sales Representative

SZNUP2242/D