


# NP2600SA1, NP2600SB1, NP2600SC1

Preferred Devices

## Advance Information Thyristor Surge Protector High Voltage Bidirectional TSPD

This Thyristor Surge Protective device (TSPD) prevents overvoltage damage to sensitive circuits from lightning, induction and power line crossings. This is a breakover-triggered crowbar protector. Turn-off occurs when the surge current falls below the holding current value.

### Features

- High Surge Current Capability: 50 A, 80 A & 100 A, 10 x 1000  $\mu$ sec, for Controlled Temperature Environments
- The NP2600Sx is used to help equipment meet various regulatory requirements including: Bellcore 1089, ITU K.20 & K.21, IEC 950, UL 1459 & 1950 and FCC Part 68.
- Bidirectional Protection in a Single Device
- Little Change of Voltage Limit with Transient Amplitude or Rate
- Freedom from Wearout Mechanisms Present in Non-Semiconductor Devices
- Fail-Safe, Shorts When Overstressed, Preventing Continued Unprotected Operation
- Surface Mount Technology
-  Indicates UL Registered - File #E210057
- This is a Pb-Free Device

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

Rating	Value			Unit	
Off-State Voltage - Maximum	$\pm 220$			V	
NP2600Sx1	x = Series Ratings				
	A	B	C		
Maximum Pulse Surge Short Circuit Current Non-Repetitive Double Exponential Decay Waveform (Notes 1 and 2)				A(pk)	
	2 x 10 $\mu$ s	150	250		500
	10 x 160 $\mu$ s	90	150		200
	10 x 560 $\mu$ s	50	100		150
	5 x 310 $\mu$ s	75	100		200
	10 x 1000 $\mu$ s	50	80		100

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.


1. Allow cooling before testing second polarity.
2. Measured under pulse conditions to reduce heating.
3. Half-cycle test method.

This document contains information on a new product. Specifications and information herein are subject to change without notice.



ON Semiconductor®

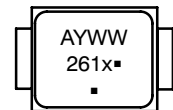
<http://onsemi.com>

**BIDIRECTIONAL TSPD (  )  
50, 80, AND 100 AMP SURGE  
260 VOLTS  
HIGH HOLD CURRENT  
270 mA MIN**



**SMB  
(No Polarity)  
(JEDEC DO-214AA)  
CASE 403C**

### MARKING DIAGRAM



261x = Device Code  
x = A, B or C  
A = Assembly Location  
Y = Year  
WW = Work Week  
▪ = Pb-Free Package

(Note: Microdot may be in either location)

### ORDERING INFORMATION

Device	Package	Shipping <sup>†</sup>
NP2600SA1T3G	SMB (Pb-Free)	2500/Tape & Reel
NP2600SB1T3G	SMB (Pb-Free)	2500/Tape & Reel
NP2600SC1T3G	SMB (Pb-Free)	2500/Tape & Reel

<sup>†</sup>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.

**Preferred** devices are recommended choices for future use and best overall value.

# NP2600SA1, NP2600SB1, NP2600SC1

## THEMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Operating Temperature Range Blocking or Conducting State	$T_{J1}$	-40 to +125	°C
Overload Junction Temperature - Maximum Conducting State Only	$T_{J2}$	+175	°C
Instantaneous Peak Power Dissipation ( $I_{pk} = 80$ A, $10 \times 1000 \mu\text{sec}$ @ $25^\circ\text{C}$ )	$P_{PK}$	4000	W
Maximum Lead Temperature for Soldering Purposes 1/8" from Case for 10 Seconds	$T_L$	260	°C

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

Devices are bidirectional. All electrical parameters apply to forward and reverse polarities.

Characteristics	Symbol	Min	Typ	Max	Unit
Breakover Voltage (Both Polarities) ( $dv/dt = 100$ V/ $\mu\text{s}$ , $I_{SC} = 1.0$ A, $V_{dc} = 1000$ V)	$V_{(BO)}$	-	-	300	V
Breakdown Voltage ( $I_{(BR)} = 1.0$ mA) Both Polarities	$V_{DRM}$	220	-	-	V
Off State Current ( $V_{D1} = 50$ V) Both Polarities ( $V_{D2} = V_{DRM}$ ) Both Polarities	$I_{D1}$ $I_{D2}$	-	-	2.0 5.0	$\mu\text{A}$
On-State Voltage ( $I_T = 2.2$ A) ( $PW \leq 300 \mu\text{s}$ , Duty Cycle $\leq 2\%$ ) (Note 4)	$V_T$	-	1.53	4.0	V
Breakover Current ( $f = 60$ Hz, $V_{DRM} = 1000$ V <sub>RMS</sub> , $R_S = 1.0$ k $\Omega$ ) Both polarities	$I_{(BO)}$	-	260	800	mA
Holding Current (Both Polarities) (Note 4) $V_S = 500$ V; $I_T$ (Initiating Current) = $\pm 1.0$ A	$I_H$	270	-	-	mA
Critical Rate of Rise of Off-State Voltage (Linear waveform, $V_D = \text{Rated } V_{(BO)}$ , $T_J = 25^\circ\text{C}$ )	$dv/dt$	2000	-	-	V/ $\mu\text{s}$
Capacitance ( $f = 1.0$ MHz, $2.0$ Vdc) (Note 5)	$C_0$	-	80 60 30	-	pF

4. Measured under pulse conditions to reduce heating.
5. Signal level  $1.0$  V<sub>RMS</sub>.

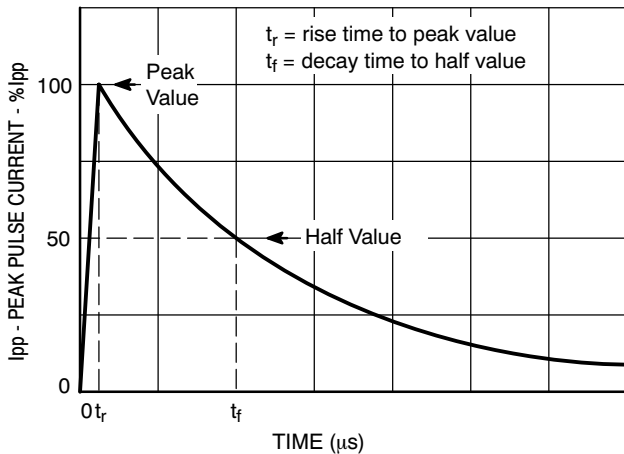


Figure 1. Exponential Decay Pulse Waveform

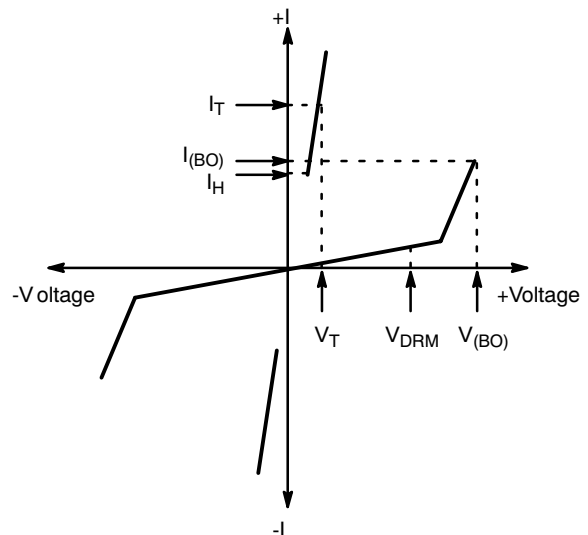


Figure 2. Voltage Current Characteristic of TSPD

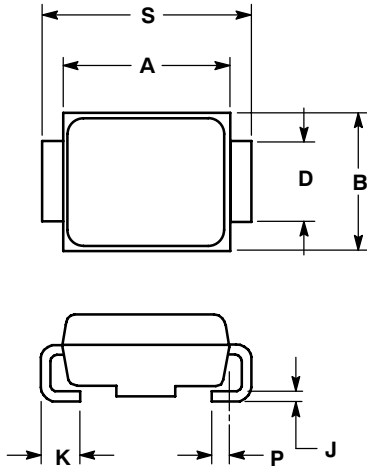
Symbol	Parameters
$V_{DRM}$	Peak Off State Voltage
$V_{(BO)}$	Breakover Voltage
$I_{(BO)}$	Breakover Current
$I_H$	Holding Current
$V_T$	On State Voltage
$I_T$	On State Current

# NP2600SA1, NP2600SB1, NP2600SC1

[查询"NP2600SC1T3G"供应商](#)

## PACKAGE DIMENSIONS

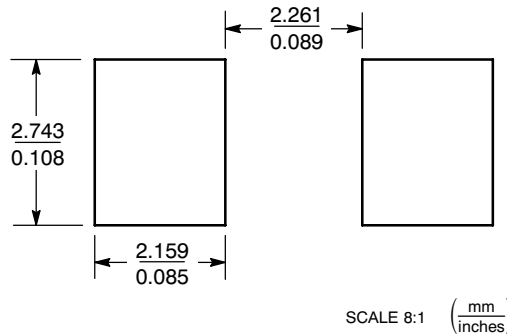
**SMB**  
CASE 403C-01  
ISSUE A



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  2. CONTROLLING DIMENSION: INCH.
  3. D DIMENSION SHALL BE MEASURED WITHIN DIMENSION P.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.160	0.180	4.06	4.57
B	0.130	0.150	3.30	3.81
C	0.075	0.095	1.90	2.41
D	0.077	0.083	1.96	2.11
H	0.0020	0.0060	0.051	0.152
J	0.006	0.012	0.15	0.30
K	0.030	0.050	0.76	1.27
P	0.020 REF		0.51 REF	
S	0.205	0.220	5.21	5.59

## SOLDERING FOOTPRINT\*



SCALE 8:1  $\left(\frac{\text{mm}}{\text{inches}}\right)$

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

ON Semiconductor and are registered trademarks of Semiconductor Components Industries, LLC (SCILLC). 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](mailto: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: 81-3-5773-3850

**ON Semiconductor Website:** [www.onsemi.com](http://www.onsemi.com)  
**Order Literature:** <http://www.onsemi.com/orderlit>

For additional information, please contact your local Sales Representative

**NP2600S/D**