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-of f 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 μsec, 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_{.I} = 25°C unless otherwise noted)

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

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.
- Measured under pulse conditions to reduce heating.
- 3. Haefely test method.

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



ON Semiconductor®

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BIDIRECTIONAL TSPD (9\) 50, 80, AND 100 AMP SURGE 260 VOLTS HIGH HOLD CURRENT 270 mA MIN





MARKING DIAGRAM

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



261x = Device Code x = A, B or C

A = Assembly Location

Y = Year WW = Work Week

(Note: Microdot may be in either location)

= Pb-Free Package

ORDERING INFORMATION

Device	Package	Shipping [†]
NP2600SA1T3G	SMB (Pb-Free)	2500/Tape & Reel
NP2600SB1T3G	SMB (Pb-Free)	2500/Tape & Reel
NP2600SC1T3G	SMB (Pb-Free)	2500/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.

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

NP2600SA1, NP2600SB1, NP2600SC1

THERMAL 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, 10x1000 μsec @ 25°C)	P _{PK}	4000	W
Maximum Lead Temperature for Soldering Purposes 1/8" from Case for 10 Seconds	TL	260	°C

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

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

Characteristics	Symbol	Min	Тур	Max	Unit
Breakover Voltage (Both Polarities) (dv/dt = 100 V/μs, I _{SC} = 1.0 A, Vdc = 1000 V)	V _(BO)	-	-	300	V
Breakdown Voltage (I _(BR) = 1.0 mA) Both Polarities	V_{DRM}	220	-	-	V
Off State Current ($V_{D1} = 50 \text{ V}$) Both Polarities ($V_{D2} = V_{DRM}$) Both Polarities	I _{D1} I _{D2}	-	-	2.0 5.0	μΑ
On-State Voltage (I _T = 2.2 A) (PW \leq 300 μ s, Duty Cycle \leq 2%) (Note 4)	V _T	-	1.53	4.0	V
Breakover Current (f = 60 Hz, V_{DRM} = 1000 V_{RMS} , R_S = 1.0 k Ω) Both polarities	I _(BO)	-	260	800	mA
Holding Current (Both Polarities) (Note 4) $V_S = 500 \text{ V}$; I_T (Initiating Current) = $\pm 1.0 \text{ A}$	lн	270	-	-	mA
Critical Rate of Rise of Off-State Voltage (Linear waveform, V_D = Rated $V_{(BO)}$, T_J = 25°C)	dv/dt	2000	-	-	V/μs
Capacitance (f = 1.0 MHz, 2.0 Vdc) (Note 5) NP260 NP260 NP260	0SB1	- - -	80 60 30	- - -	pF

- 4. Measured under pulse conditions to reduce heating.
- 5. Signal level 1.0 V_{RMS}.

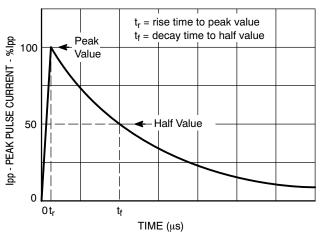


Figure 1. Exponential Decay Pulse Waveform

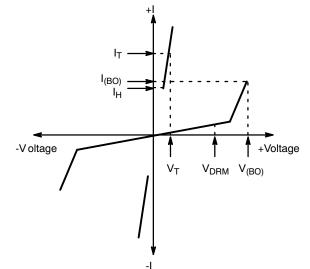


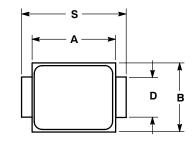
Figure 2. Voltage Current Characteristic of TSPD

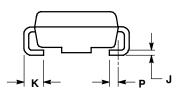
Symbol	Parameters	
V_{DRM}	Peak Off State Voltage	
V _(BO)	Breakover Voltage	
I _(BO)	Breakover Current	
I _H	Holding Current	
V _T	On State Voltage	
I _T	On State Current	

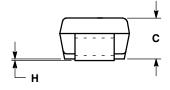
NP2600SA1, NP2600SB1, NP2600SC1

PACKAGE DIMENSIONS

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





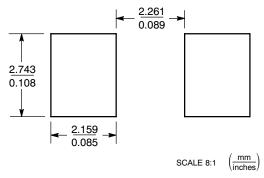


NOTES:

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

	INC	INCHES MILL		LIMETERS	
DIM	MIN	MAX	MIN	MAX	
Α	0.160	0.180	4.06	4.57	
В	0.130	0.150	3.30	3.81	
С	0.075	0.095	1.90	2.41	
D	0.077	0.083	1.96	2.11	
Н	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	0.020 REF		REF	
S	0.205	0.220	5.21	5.59	

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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