

# NZQA5V6XV5T1G Series

## Quad Array for ESD Protection

This quad monolithic silicon voltage suppressor is designed for applications requiring transient overvoltage protection capability. It is intended for use in voltage and ESD sensitive equipment such as computers, printers, business machines, communication systems, medical equipment, and other applications. Its quad junction common anode design protects four separate lines using only one package. These devices are ideal for situations where board space is at a premium.

### Specification Features

- SOT-553 Package Allows Four Separate Unidirectional Configurations
- Low Leakage < 1  $\mu$ A @ 3 V for NZQA5V6XV5T1G
- Breakdown Voltage: 5.6 V – 6.8 V @ 1 mA
- ESD Protection Meeting IEC61000-4-2 – Level 4
- 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

### Mechanical Characteristics

- Void Free, Transfer-Molded, Thermosetting Plastic Case
- Corrosion Resistant Finish, Easily Solderable
- Package Designed for Optimal Automated Board Assembly
- Small Package Size for High Density Applications
- 100% Lead Free, MSL1 @ 260°C Reflow Temperature



**ON Semiconductor®**

[www.onsemi.com](http://www.onsemi.com)

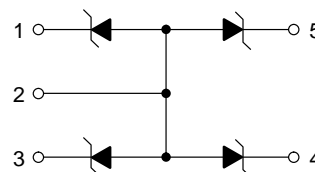


**SOT-553  
CASE 463B**

### MARKING DIAGRAM



xx = Specific Device Code  
 M = Date Code  
 ■ = Pb-Free Package  
 (Note: Microdot may be in either location)



### ORDERING INFORMATION

Device	Package	Shipping†
NZQA5V6XV5T1G	SOT-553 (Pb-Free)	4000 / Tape & Reel
NZQA5V6XV5T3G	SOT-553 (Pb-Free)	16000 / Tape & Reel
NZQA6V2XV5T1G	SOT-553 (Pb-Free)	4000 / Tape & Reel
NZQA6V8XV5T1G	SOT-553 (Pb-Free)	4000 / Tape & Reel
SZQA6V8XV5T1G	SOT-553 (Pb-Free)	4000 / Tape & Reel

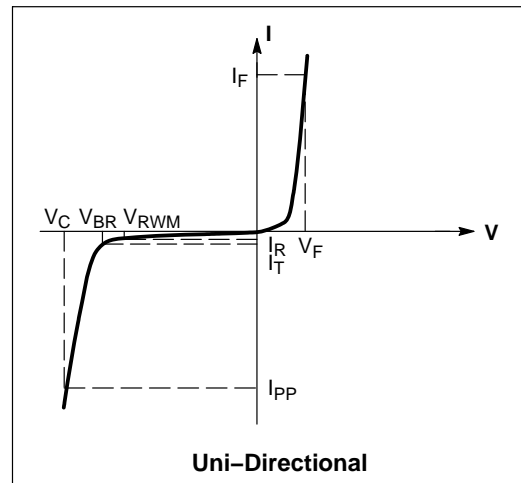
†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

## NZQA5V6XV5T1G Series

### ELECTRICAL CHARACTERISTICS

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

Symbol	Parameter
$I_{PP}$	Maximum Reverse Peak Pulse Current
$V_C$	Clamping Voltage @ $I_{PP}$
$V_{RWM}$	Working Peak Reverse Voltage
$I_R$	Maximum Reverse Leakage Current @ $V_{RWM}$
$V_{BR}$	Breakdown Voltage @ $I_T$
$I_T$	Test Current
$\Theta V_{BR}$	Maximum Temperature Coefficient of $V_{BR}$
$I_F$	Forward Current
$V_F$	Forward Voltage @ $I_F$
$Z_{ZT}$	Maximum Zener Impedance @ $I_{ZT}$
$I_{ZK}$	Reverse Current
$Z_{ZK}$	Maximum Zener Impedance @ $I_{ZK}$



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

Characteristic	Symbol	Value	Unit
Peak Power Dissipation (8 X 20 $\mu\text{s}$ @ $T_A = 25^\circ\text{C}$ ) (Note 1)	$P_{PK}$	100	W
Steady State Power – 1 Diode (Note 2)	$P_D$	300	mW
Thermal Resistance Junction to Ambient Above $25^\circ\text{C}$ , Derate	$R_{\theta JA}$	370 2.7	$^\circ\text{C/W}$ mW/ $^\circ\text{C}$
Maximum Junction Temperature	$T_{Jmax}$	150	$^\circ\text{C}$
Operating Junction and Storage Temperature Range	$T_J T_{stg}$	-55 to +150	$^\circ\text{C}$
ESD Discharge MIL STD 883C – Method 3015-6 IEC1000-4-2, Air Discharge IEC1000-4-2, Contact Discharge	$V_{PP}$	16 30 30	kV
Lead Solder Temperature (10 seconds duration)	$T_L$	260	$^\circ\text{C}$

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.

### ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ )

Device*	Device Marking	Breakdown Voltage $V_{BR}$ @ 1 mA (Volts)			Leakage Current $I_{RM}$ @ $V_{RM}$		$V_C$ Max @ $I_{PP}$		Typ Capacitance @ 0 V Bias (Note 3)	Max $V_F$ @ $I_F = 200$ mA
		Min	Nom	Max	$V_{RWM}$	$I_{RWM}$ ( $\mu\text{A}$ )	$V_C$ (V)	$I_{PP}$ (A)	(pF)	(V)
NZQA5V6XV5T1G	56	5.32	5.6	5.88	3.0	1.0	10.5	10	90	1.3
NZQA6V2XV5T1G	62	5.89	6.2	6.51	4.0	0.5	11.5	9.0	80	1.3
NZQA6V8XV5T1G	68	6.46	6.8	7.14	4.3	0.1	12.5	8.0	70	1.3

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.

\*Includes SZ-prefix devices where applicable.

- Non-repetitive current per Figure 1.
- Only 1 diode under power. For all 4 diodes under power,  $P_D$  will be 25%. Mounted on FR-4 board with min pad.
- Capacitance of one diode at  $f = 1$  MHz,  $V_R = 0$  V,  $T_A = 25^\circ\text{C}$

# NZQA5V6XV5T1G Series

## TYPICAL CHARACTERISTICS

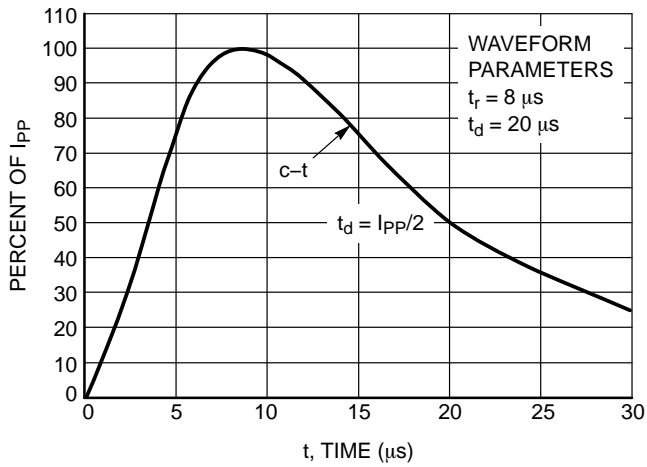


Figure 1. Pulse Waveform

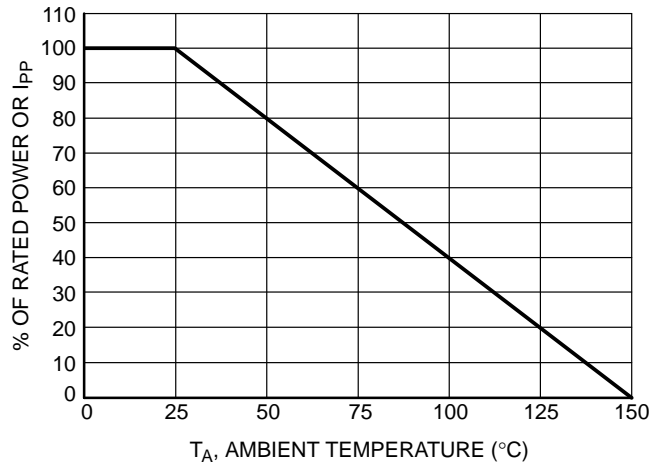


Figure 2. Power Derating Curve

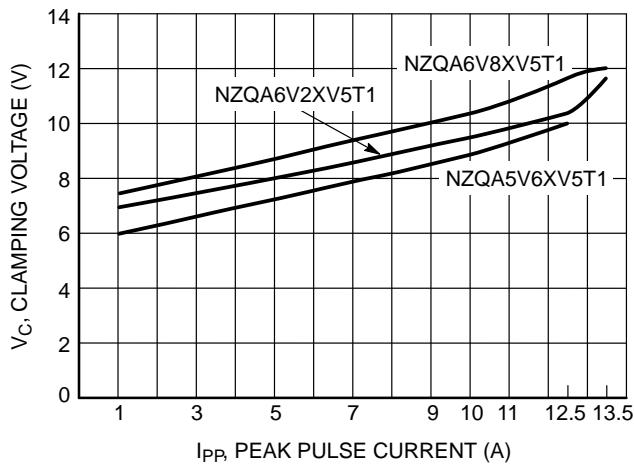


Figure 3. Clamping Voltage versus Peak Pulse Current

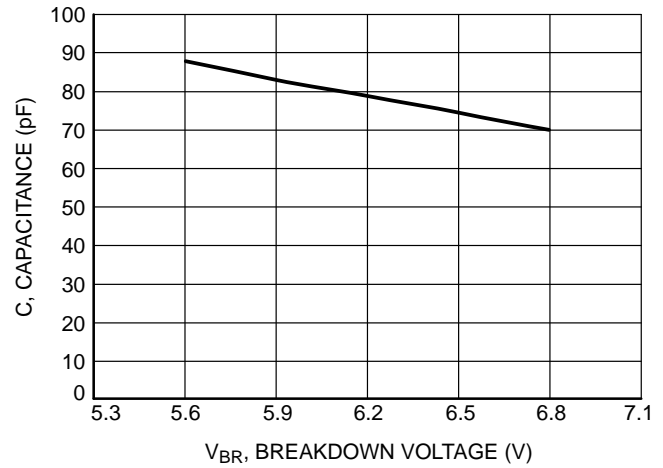
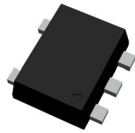


Figure 4. Typical Capacitance

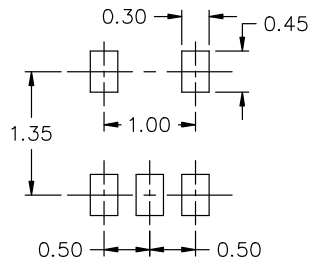
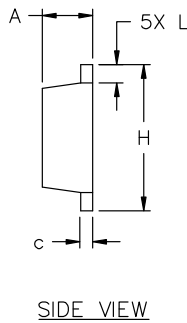
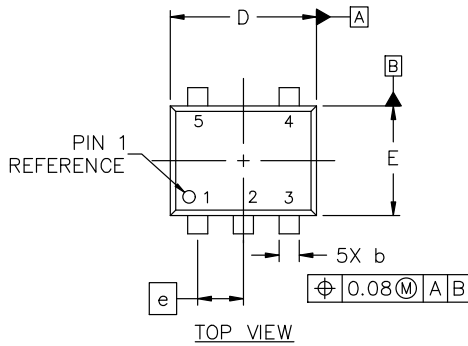
# MECHANICAL CASE OUTLINE

## PACKAGE DIMENSIONS



**SOT-553-5 1.60x1.20x0.55, 0.50P**  
**CASE 463B**  
**ISSUE D**

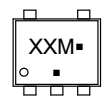
DATE 21 FEB 2024



- NOTES:
1. DIMENSIONING AND TOLERANCING CONFORM TO ASME Y14.5-2018.
  2. ALL DIMENSIONS ARE IN MILLIMETERS.
  3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.

DIM	MILLIMETERS		
	MIN.	NOM.	MAX.
A	0.50	0.55	0.60
b	0.17	0.22	0.27
c	0.08	0.13	0.18
D	1.55	1.60	1.65
E	1.15	1.20	1.25
e	0.50 BSC		
H	1.55	1.60	1.65
L	0.10	0.20	0.30

### GENERIC MARKING DIAGRAM\*



- XX = Specific Device Code
- M = Date Code
- = Pb-Free Package

(Note: Microdot may be in either location)

\*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present. Some products may not follow the Generic Marking.

- |   |  |   |   |  |
|---|--|---|---|--|
| <p>STYLE 1:<br/>         PIN 1. BASE<br/>         2. EMITTER<br/>         3. BASE<br/>         4. COLLECTOR<br/>         5. COLLECTOR</p>                     | <p>STYLE 2:<br/>         PIN 1. CATHODE<br/>         2. COMMON ANODE<br/>         3. CATHODE 2<br/>         4. CATHODE 3<br/>         5. CATHODE 4</p> | <p>STYLE 3:<br/>         PIN 1. ANODE 1<br/>         2. N/C<br/>         3. ANODE 2<br/>         4. CATHODE 2<br/>         5. CATHODE 1</p> | <p>STYLE 4:<br/>         PIN 1. SOURCE 1<br/>         2. DRAIN 1/2<br/>         3. SOURCE 1<br/>         4. GATE 1<br/>         5. GATE 2</p> | <p>STYLE 5:<br/>         PIN 1. ANODE<br/>         2. EMITTER<br/>         3. BASE<br/>         4. COLLECTOR<br/>         5. CATHODE</p> |
| <p>STYLE 6:<br/>         PIN 1. EMITTER 2<br/>         2. BASE 2<br/>         3. EMITTER 1<br/>         4. COLLECTOR 1<br/>         5. COLLECTOR 2/BASE 1</p> | <p>STYLE 7:<br/>         PIN 1. BASE<br/>         2. EMITTER<br/>         3. BASE<br/>         4. COLLECTOR<br/>         5. COLLECTOR</p>              | <p>STYLE 8:<br/>         PIN 1. CATHODE<br/>         2. COLLECTOR<br/>         3. N/C<br/>         4. BASE<br/>         5. EMITTER</p>      | <p>STYLE 9:<br/>         PIN 1. ANODE<br/>         2. CATHODE<br/>         3. ANODE<br/>         4. ANODE<br/>         5. ANODE</p>           |  |

<b>DOCUMENT NUMBER:</b>	<b>98AON11127D</b>	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.
<b>DESCRIPTION:</b>	<b>SOT-553-5 1.60x1.20x0.55, 0.50P</b>	<b>PAGE 1 OF 1</b>

onsemi and ONSEMI are trademarks of Semiconductor Components Industries, LLC dba onsemi or its subsidiaries in the United States and/or other countries. onsemi reserves the right to make changes without further notice to any products herein. onsemi makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does onsemi 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. onsemi does not convey any license under its patent rights nor the rights of others.

**onsemi**, **Onsemi**, and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "**onsemi**" or its affiliates and/or subsidiaries in the United States and/or other countries. **onsemi** owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of **onsemi**'s product/patent coverage may be accessed at [www.onsemi.com/site/pdf/Patent-Marking.pdf](http://www.onsemi.com/site/pdf/Patent-Marking.pdf). **onsemi** reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided "as-is" and **onsemi** makes no warranty, representation or guarantee regarding the accuracy of the information, product features, availability, functionality, or suitability of its products for any particular purpose, nor does **onsemi** 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. Buyer is responsible for its products and applications using **onsemi** products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by **onsemi**. "Typical" parameters which may be provided in **onsemi** 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. **onsemi** does not convey any license under any of its intellectual property rights nor the rights of others. **onsemi** products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use **onsemi** products for any such unintended or unauthorized application, Buyer shall indemnify and hold **onsemi** 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 **onsemi** was negligent regarding the design or manufacture of the part. **onsemi** is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

---

## ADDITIONAL INFORMATION

### TECHNICAL PUBLICATIONS:

Technical Library: [www.onsemi.com/design/resources/technical-documentation](http://www.onsemi.com/design/resources/technical-documentation)  
onsemi Website: [www.onsemi.com](http://www.onsemi.com)

### ONLINE SUPPORT: [www.onsemi.com/support](http://www.onsemi.com/support)

For additional information, please contact your local Sales Representative at [www.onsemi.com/support/sales](http://www.onsemi.com/support/sales)

