

# 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
- 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



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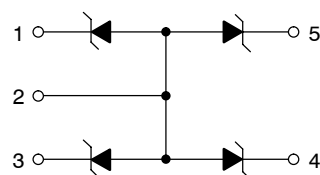


**SOT-553  
CASE 463B  
PLASTIC**

### 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

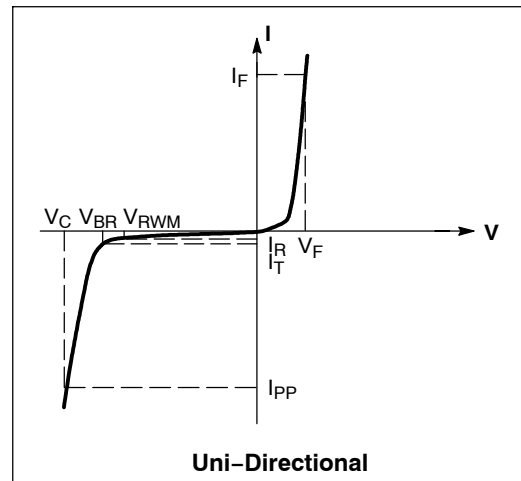
†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

## 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 16 9	kV
Lead Solder Temperature (10 seconds duration)	$T_L$	260	$^\circ\text{C}$

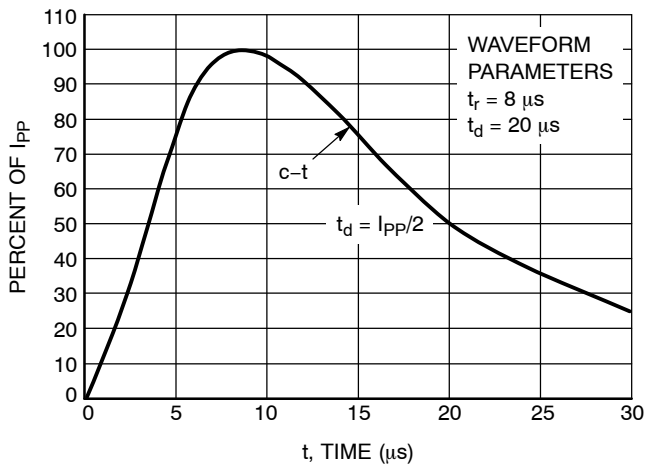
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

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

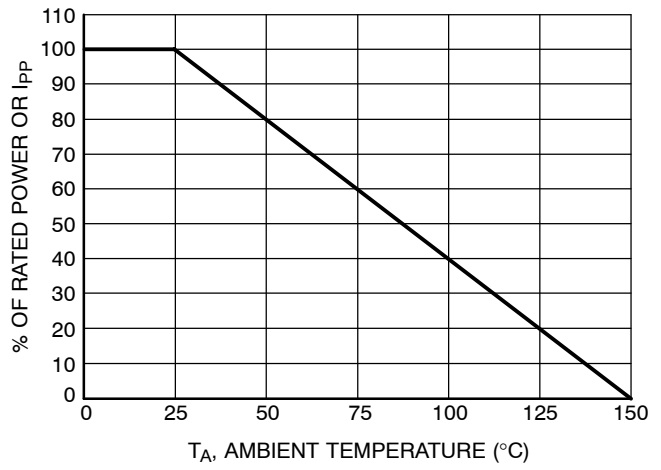
Device	Device Marking	Breakdown Voltage $V_{BR}$ @ 1 mA (Volts)			Leakage Current $I_{RM}$ @ $V_{RM}$		$V_C$ Max @ $I_{PP}$		Typ Capacitance @ 0 V Bias (Note 3) (pF)	Max $V_F$ @ $I_F = 200$ mA (V)
		Min	Nom	Max	$V_{RWM}$	$I_{RWM}$ ( $\mu\text{A}$ )	$V_C$ (V)	$I_{PP}$ (A)		
NZQA5V6XV5T1G	56	5.32	5.6	5.88	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

- 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,  $T_A = 25^\circ\text{C}$

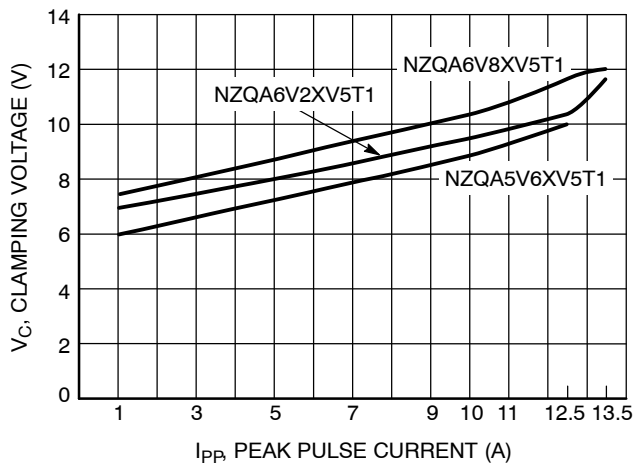
# NZQA5V6XV5T1G Series



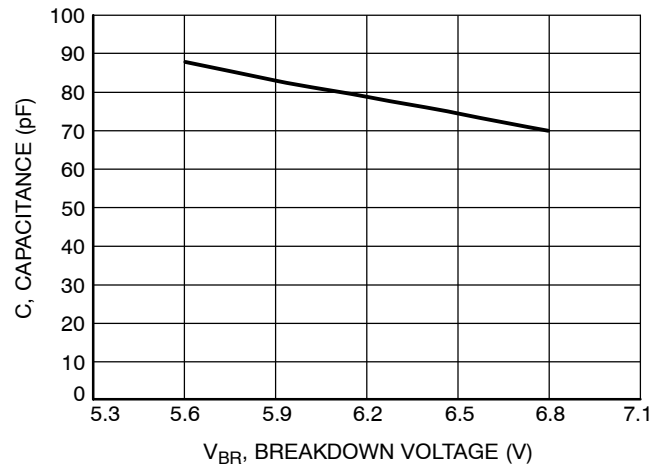
**Figure 1. Pulse Waveform**



**Figure 2. Power Derating Curve**



**Figure 3. Clamping Voltage versus Peak Pulse Current**

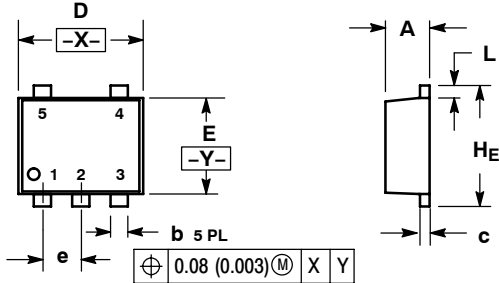


**Figure 4. Typical Capacitance**

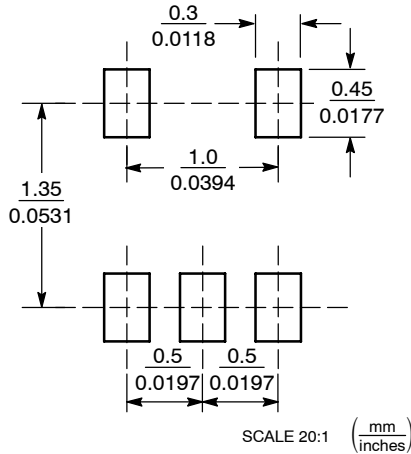
# NZQA5V6XV5T1G Series

## PACKAGE DIMENSIONS

SOT-553, 5 LEAD  
CASE 463B-01  
ISSUE B



### SOLDERING FOOTPRINT\*



#### NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.

DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.50	0.55	0.60	0.020	0.022	0.024
b	0.17	0.22	0.27	0.007	0.009	0.011
c	0.08	0.13	0.18	0.003	0.005	0.007
D	1.50	1.60	1.70	0.059	0.063	0.067
E	1.10	1.20	1.30	0.043	0.047	0.051
e	0.50 BSC			0.020 BSC		
L	0.10	0.20	0.30	0.004	0.008	0.012
HE	1.50	1.60	1.70	0.059	0.063	0.067


#### STYLE 1:

- PIN 1. BASE
- EMITTER
- BASE
- COLLECTOR
- COLLECTOR

#### STYLE 2:

- PIN 1. CATHODE
- COMMON ANODE
- CATHODE 2
- CATHODE 3
- CATHODE 4

\*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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