



**THE DATASHEET OF  
NZQA5V6XV5T1**



# NZQA5V6XV5T1 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 Volt for NZQA5V6XV5T1
- Breakdown Voltage: 5.6 Volt – 6.8 Volt @ 1 mA
- ESD Protection Meeting IEC61000-4-2 – Level 4

### 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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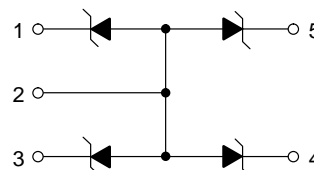


SOT-553  
CASE 463B  
PLASTIC

### MARKING DIAGRAM



xx = Device Marking  
D = One Digit Date Code



### ORDERING INFORMATION

Device	Package	Shipping†
NZQA5V6XV5T1	SOT-553	4000/Tape & Reel
NZQA5V6XV5T3	SOT-553	16000/Tape & Reel
NZQA6V2XV5T1	SOT-553	4000/Tape & Reel
NZQA6V8XV5T1	SOT-553	4000/Tape & Reel

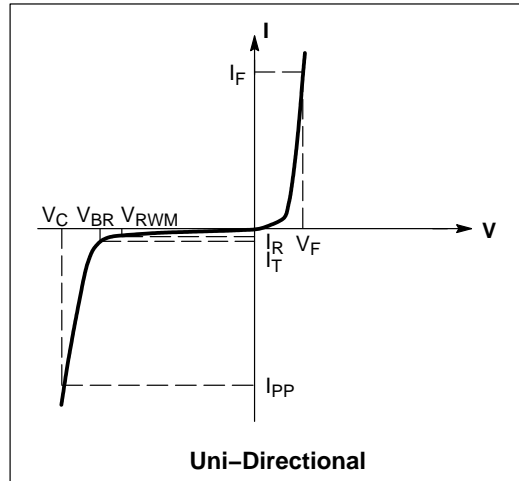
†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

# NZQA5V6XV5T1 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
$\Theta_{VBR}$	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	$^\circ\text{C}$

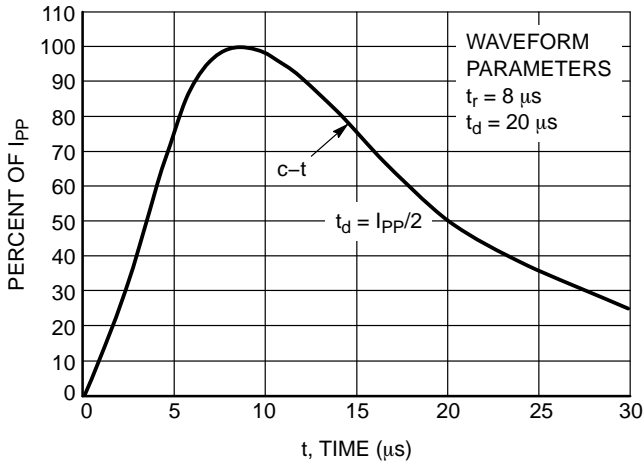
Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

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

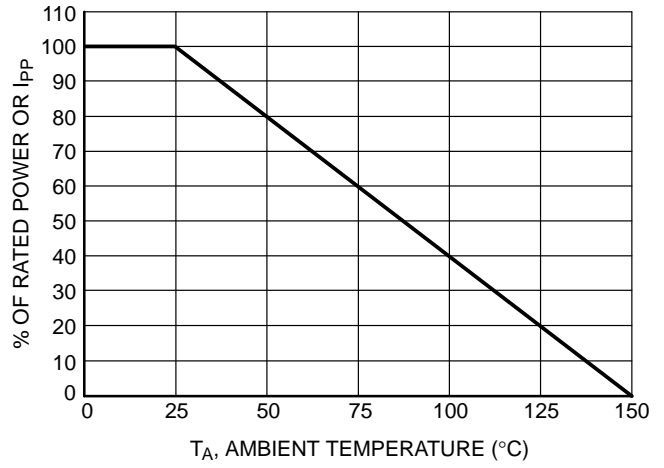
Device	Device Marking	Breakdown Voltage $V_{BR}$ @ 1 mA (Volts)			Leakage Current $I_{RM}$ @ $V_{RM}$		$V_C$ Max @ $I_{PP}$		Typ Capacitance @ 0 V Bias (Note 3) (pF)	Max $V_F$ @ $I_F = 200$ mA (V)
		Min	Nom	Max	$V_{RWM}$	$I_{RWM}$ ( $\mu\text{A}$ )	$V_C$ (V)	$I_{PP}$ (A)		
NZQA5V6XV5T1	56	5.32	5.6	5.88	3.0	1.0	10.5	10	90	1.3
NZQA6V2XV5T1	62	5.89	6.2	6.51	4.0	0.5	11.5	9.0	80	1.3
NZQA6V8XV5T1	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,  $T_A = 25^\circ\text{C}$

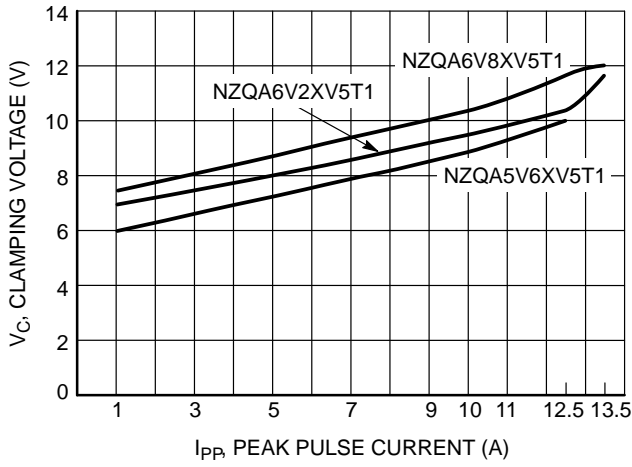
# NZQA5V6XV5T1 Series



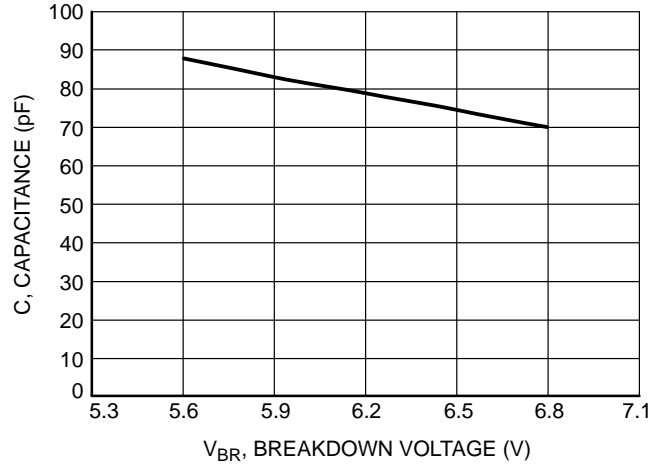
**Figure 1. Pulse Waveform**



**Figure 2. Power Derating Curve**



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

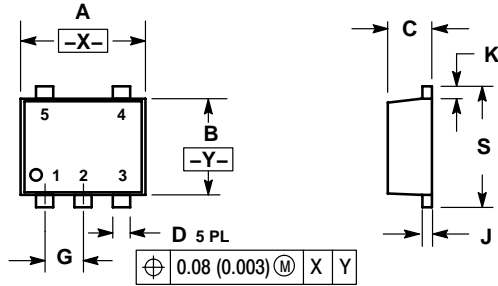


**Figure 4. Typical Capacitance**

# NZQA5V6XV5T1 Series

## PACKAGE DIMENSIONS

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



### 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	MAX	MIN	MAX
A	1.50	1.70	0.059	0.067
B	1.10	1.30	0.043	0.051
C	0.50	0.60	0.020	0.024
D	0.17	0.27	0.007	0.011
G	0.50 BSC		0.020 BSC	
J	0.08	0.18	0.003	0.007
K	0.10	0.30	0.004	0.012
S	1.50	1.70	0.059	0.067

### STYLE 1:

1. BASE 1
2. EMITTER 1/2
3. BASE 2
4. COLLECTOR 2
5. COLLECTOR 1

### STYLE 2:

1. CATHODE
2. ANODE
3. CATHODE
4. CATHODE
5. CATHODE

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