NZQA5V6AXV5 Series

Low Capacitance Quad Array for ESD Protection

This integrated transient voltage suppressor device (TVS) is designed for applications requiring transient overvoltage protection. It is intended for use in sensitive equipment such as computers, printers, business machines, communication systems, medical equipment, and other applications. Its integrated design provides very effective and reliable protection for four separate lines using only one package. These devices are ideal for situations where board space is at a premium.

Features

- ESD Protection: IEC61000−4−2: Level 4
  MILSTD 883C − Method 3015−6: Class 3
- Four Separate Unidirectional Configurations for Protection
- Low Leakage Current < 1 μA @ 3 Volts
- Power Dissipation: 380 mW
- Small SOT−553 SMT Package
- Low Capacitance
- Complies to USB 1.1 Low Speed & Full Speed Specifications
- These are Pb−Free Devices

Benefits

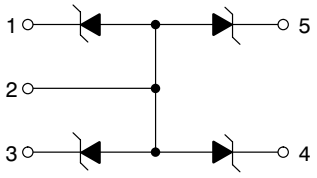
- Provides Protection for ESD Industry Standards: IEC 61000, HBM
- Protects Four Lines Against Transient Voltage Conditions
- Minimize Power Consumption of the System
- Minimize PCB Board Space

Typical Applications

- Instrumentation Equipment
- Serial and Parallel Ports
- Microprocessor Based Equipment
- Notebooks, Desktops, Servers
- Cellular and Portable Equipment

ON Semiconductor®

http://onsemi.com



SOT−553
CASE 463B
PLASTIC

MARKING DIAGRAM

xx = Device Code
M = Date Code*
▪ = Pb−Free Package
(Note: Microdot may be in either location)

ORDERING INFORMATION

Device	Package	Shipping†
NZQA5V6AXV5T1	SOT−553*	4000/Tape & Reel
NZQA5V6AXV5T1G	SOT−553*	4000/Tape & Reel
NZQA6V8AXV5T1	SOT−553*	4000/Tape & Reel
NZQA6V8AXV5T1G	SOT−553*	4000/Tape & Reel
NZQA6V8AXV5T3	SOT−553*	16000/Tape & Reel
NZQA6V8AXV5T3G	SOT−553*	16000/Tape & Reel

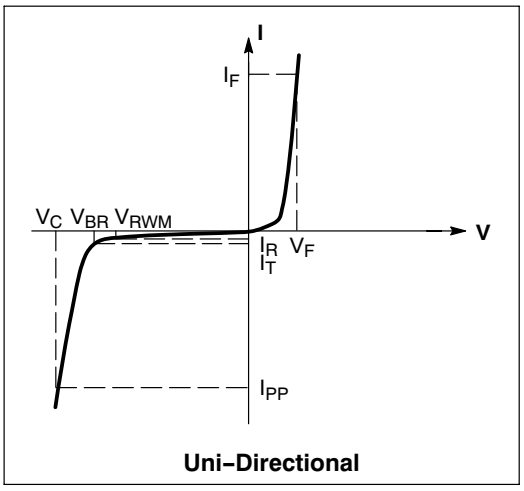
†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

*This package is inherently Pb−Free.

ELECTRICAL CHARACTERISTICS

(T_A = 25°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
ΘV_{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}



Uni−Directional

MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)

Characteristic	Symbol	Value	Unit
Peak Power Dissipation (8 X 20 μs @ T_A = 25°C) (Note 1)	P_{PK}	20	W
Steady State Power − 1 Diode (Note 2)	P_D	380	mW
Thermal Resistance, Junction−to−Ambient Above 25°C, Derate	$R_{\theta JA}$	327 3.05	°C/W mW/°C
Maximum Junction Temperature	T_{Jmax}	150	°C
Operating Junction and Storage Temperature Range	T_J T_{stg}	−55 to +150	°C
Lead Solder Temperature (10 seconds duration)	T_L	260	°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°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 (pF) (Note 3)		Typ Capacitance @ 3 V Bias (pF) (Note 3)	
		Min	Nom	Max	V_{RWM}	I_{RWM} (μA)	V_C (V)	I_{PP} (A)	Typ	Max	Typ	Max
NZQA5V6AXV5	5P	5.3	5.6	5.9	3.0	1.0	13	1.6	13	17	7.0	11.5
NZQA6V8AXV5	6H	6.47	6.8	7.14	4.3	1.0	13	1.6	12	15	6.7	9.5

1. Non−repetitive current per Figure 1.
2. Only 1 diode under power. For all 4 diodes under power, P_D will be 25%. Mounted on FR−4 board with min pad.
3. Capacitance of one diode at f = 1 MHz, V_R = 0 V, T_A = 25°C

TYPICAL ELECTRICAL CHARACTERISTICS – NZQA6V8AXV5

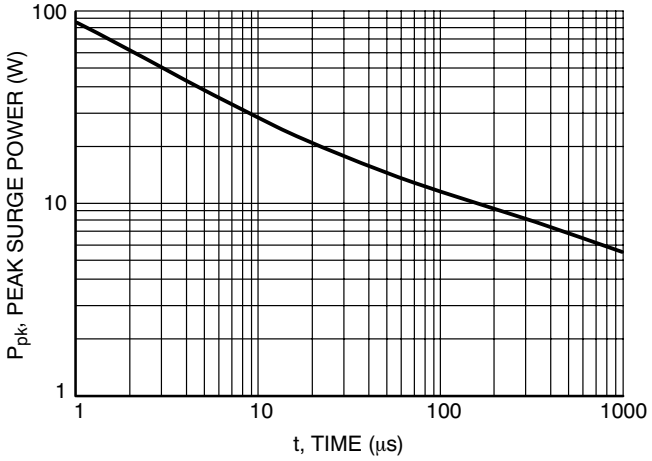


Figure 1. Pulse Width

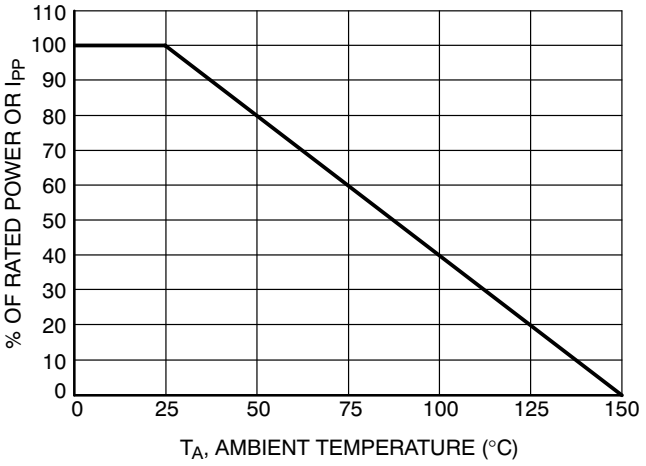


Figure 2. Power Derating Curve

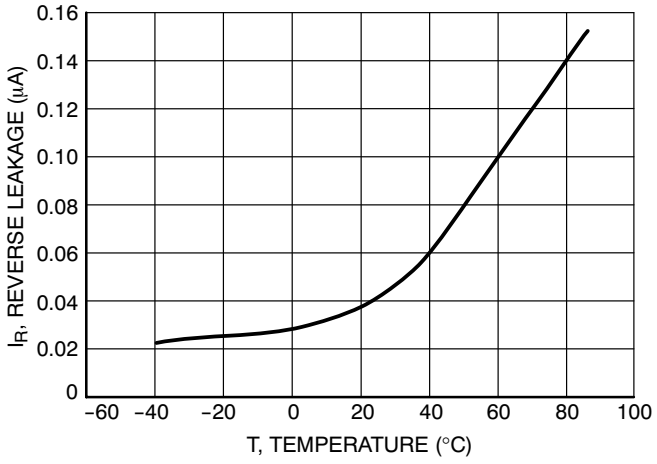


Figure 3. Reverse Leakage versus Temperature

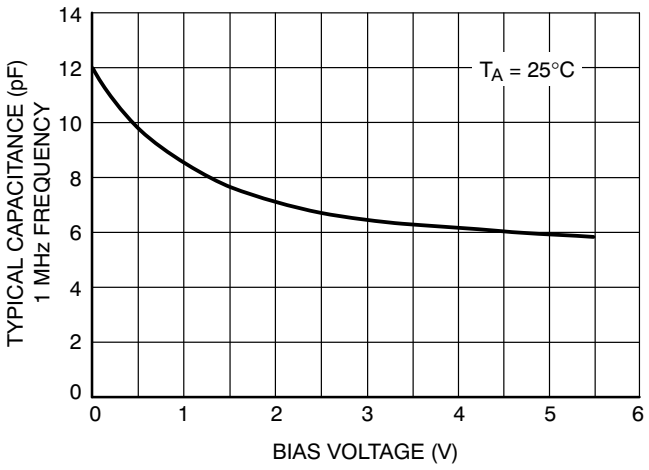


Figure 4. Capacitance

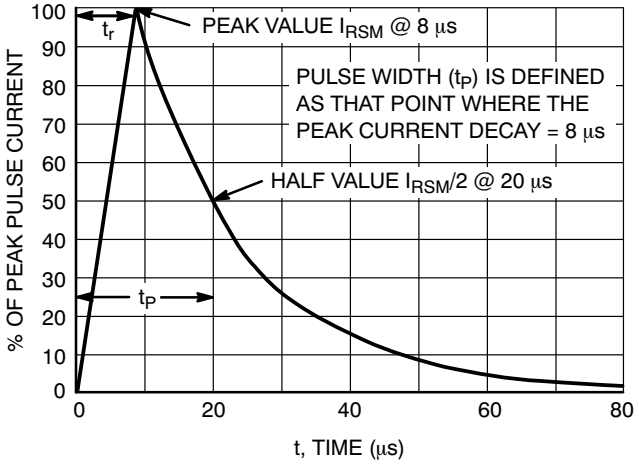


Figure 5. 8 × 20 μs Pulse Waveform

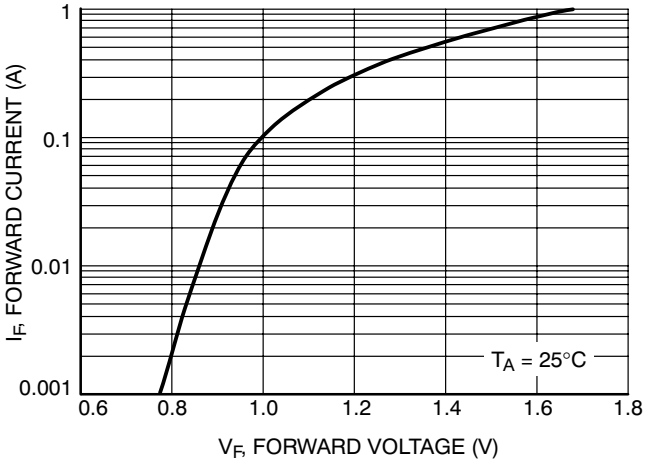
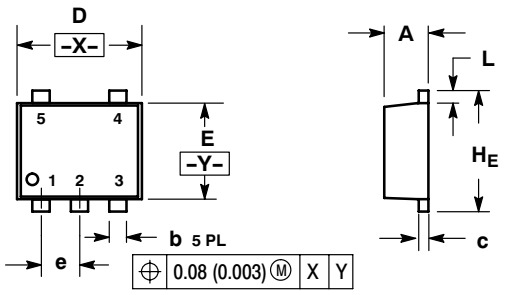


Figure 6. Forward Voltage

PACKAGE DIMENSIONS

SOT−553, 5 LEAD
CASE 463B−01
ISSUE B

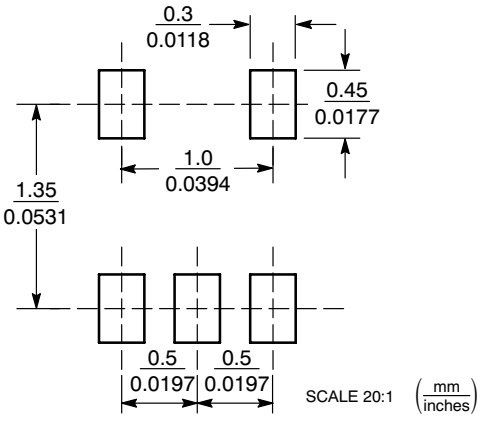


NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.

	MILLIMETERS			INCHES		
DIM	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
H_E	1.50	1.60	1.70	0.059	0.063	0.067

STYLE 2:
PIN 1. CATHODE
2. COMMON ANODE
3. CATHODE 2
4. CATHODE 3
5. CATHODE 4

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.

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
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