

NUP4060AXV6

ESD Protection Diode Array, 4-Line

This 4-line surge protection array is designed for application requiring transient voltage protection capability. It is intended for use in over-transient voltage and ESD sensitive equipment such as cell phones, portables, computers, printers and other applications. This device features a common cathode design which protects four independent lines in a single SOT-563 package.

Features

- Protects up to 4 Lines in a Single SOT-563 Package
- ESD Rating: IEC61000-4-2: Level 4
Contact (8 kV), Air (15 kV)
- V_{CC} Pin = 16 V Protection
D1, D2, and D3 Pins = 6.8 V Protection
- Low Capacitance (< 7 pF @ 3 V) for D1, D2, and D3
- This is a Pb-Free Device

Applications

- Hand Held Portable Applications
- USB Interface
- Notebooks, Desktops, Servers
- SIM Card Protection

MAXIMUM RATINGS ($T_J = 25^\circ\text{C}$, unless otherwise specified)

Symbol	Rating	Value	Unit
P_{PK} 1	Peak Power Dissipation	200	W
	V_{CC} Diode 8x20 μsec double exponential waveform, (Note 1) D1, D2, and D3	20	W
T_J	Operating Junction Temperature Range	-40 to 125	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_L	Lead Solder Temperature – Maximum (10 seconds)	260	$^\circ\text{C}$
ESD	IEC 61000-4-2 Air IEC 61000-4-2 Contact	15000 8000	V

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.

1. Nonrepetitive current pulse per Figure 1.

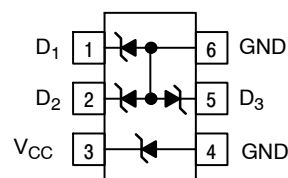


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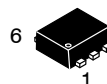
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SOT-563 4-LINE SURGE PROTECTION

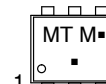
PIN ASSIGNMENT



MARKING DIAGRAM



SOT-563
CASE 463A
STYLE 6



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

ORDERING INFORMATION

Device	Package	Shipping†
NUP4060AXV6T1G	SOT-563 (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.

NUP4060AXV6

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

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Reverse Working Voltage (D_1 , D_2 , and D_3)	(Note 2)	V_{RWM}	-	-	5.0	V
Breakdown Voltage (D_1 , D_2 , and D_3)	$I_T = 1 \text{ mA}$, (Note 3)	V_{BR}	6.2	6.8	7.2	V
Breakdown Voltage (V_{CC})	$I_T = 5 \text{ mA}$, (Note 3)	V_{BR2}	15.3	16	17.1	V
Reverse Leakage Current (D_1 , D_2 , and D_3)	$V_{RWM} = 3 \text{ V}$	I_R	-	0.01	0.5	μA
Reverse Leakage Current (V_{CC})	$V_{BR} = 11 \text{ V}$	I_R	-	-	0.05	μA
Capacitance (D_1 , D_2 , and D_3)	$V_R = 3 \text{ V}$, $f = 1 \text{ MHz}$ (Line to GND)	C_J	-	7	10	pF

- Surge protection devices are normally selected according to the working peak reverse voltage (V_{RWM}), which should be equal or greater than the DC or continuous peak operating voltage level.
- V_{BR} is measured at pulse test current I_T .

NUP4060AXV6

TYPICAL ELECTRICAL CHARACTERISTICS

(Diode D₁, D₂, and D₃ only)

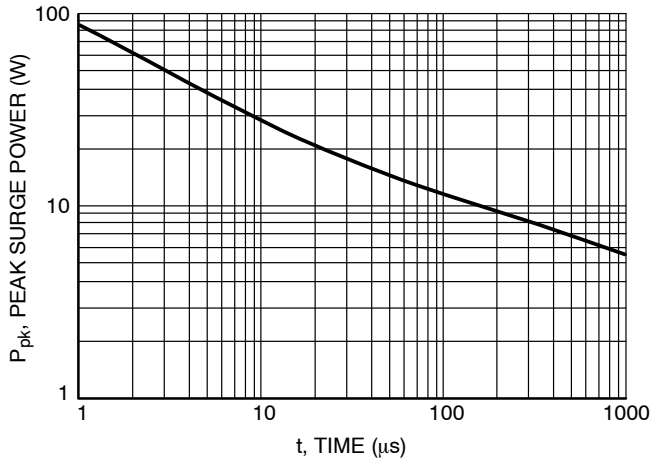


Figure 1. Pulse Width

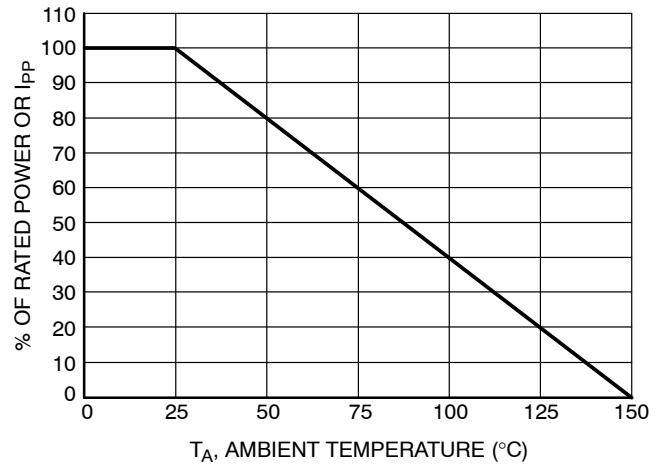


Figure 2. Power Derating Curve

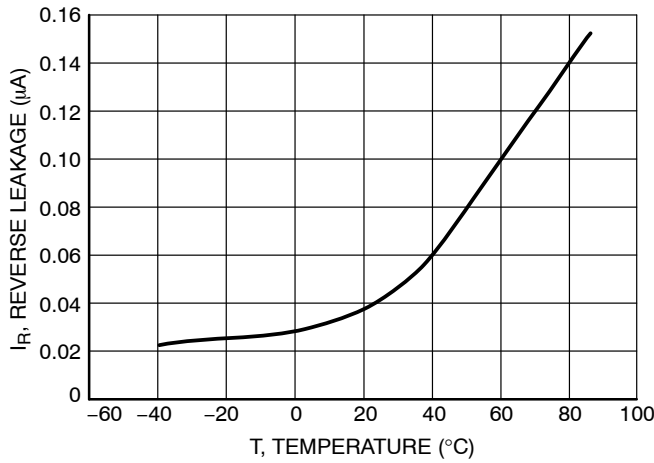


Figure 3. Reverse Leakage versus Temperature

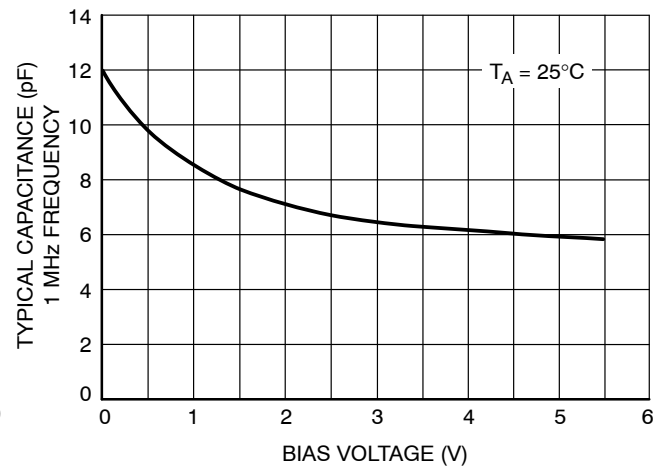


Figure 4. Capacitance

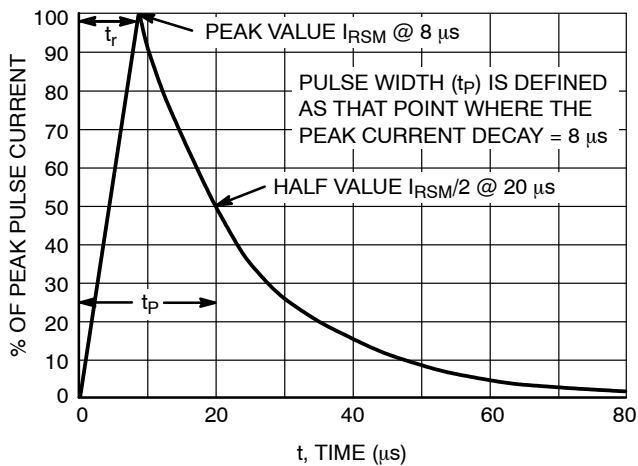


Figure 5. $8 \times 20 \mu\text{s}$ Pulse Waveform

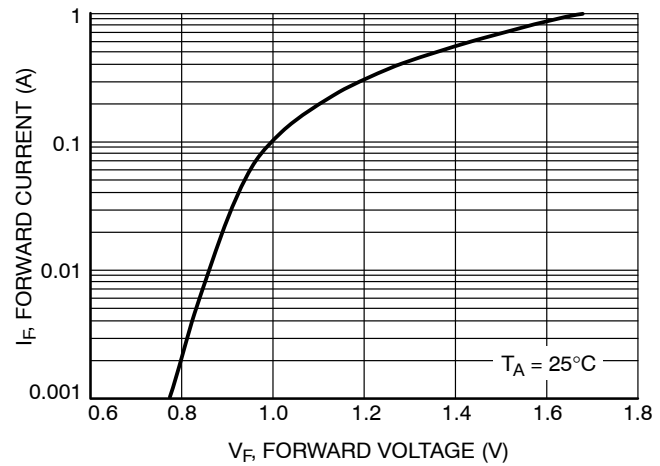


Figure 6. Forward Voltage

MECHANICAL CASE OUTLINE

PACKAGE DIMENSIONS

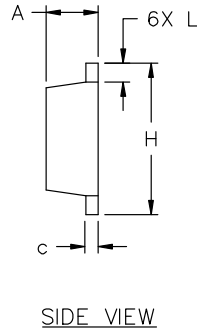
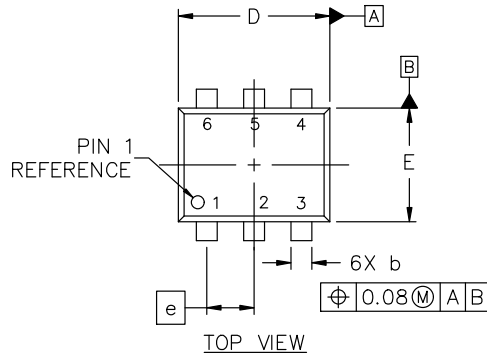


SOT-563-6 1.60x1.20x0.55, 0.50P
CASE 463A
ISSUE J

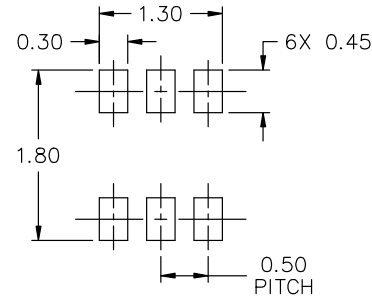
DATE 15 FEB 2024

NOTES:

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



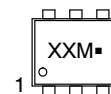
DIM	MILLIMETERS		
	MIN.	NOM.	MAX.
A	0.50	0.55	0.60
b	0.17	0.22	0.27
c	0.08	0.13	0.18
D	1.50	1.60	1.70
E	1.10	1.20	1.30
e	0.50 BSC		
H	1.50	1.60	1.70
L	0.10	0.20	0.30



- | | | |
|--|---|--|
| <p>STYLE 1:
 PIN 1. EMITTER 1
 2. BASE 1
 3. COLLECTOR 2
 4. EMITTER 2
 5. BASE 2
 6. COLLECTOR 1</p> | <p>STYLE 2:
 PIN 1. EMITTER 1
 2. EMITTER 2
 3. BASE 2
 4. COLLECTOR 2
 5. BASE 1
 6. COLLECTOR 1</p> | <p>STYLE 3:
 PIN 1. CATHODE 1
 2. CATHODE 1
 3. ANODE/ANODE 2
 4. CATHODE 2
 5. CATHODE 2
 6. ANODE/ANODE 1</p> |
| <p>STYLE 4:
 PIN 1. COLLECTOR
 2. COLLECTOR
 3. BASE
 4. EMITTER
 5. COLLECTOR
 6. COLLECTOR</p> | <p>STYLE 5:
 PIN 1. CATHODE
 2. CATHODE
 3. ANODE
 4. ANODE
 5. CATHODE
 6. CATHODE</p> | <p>STYLE 6:
 PIN 1. CATHODE
 2. ANODE
 3. CATHODE
 4. CATHODE
 5. CATHODE
 6. CATHODE</p> |
| <p>STYLE 7:
 PIN 1. CATHODE
 2. ANODE
 3. CATHODE
 4. CATHODE
 5. ANODE
 6. CATHODE</p> | <p>STYLE 8:
 PIN 1. DRAIN
 2. DRAIN
 3. GATE
 4. SOURCE
 5. DRAIN
 6. DRAIN</p> | <p>STYLE 9:
 PIN 1. SOURCE 1
 2. GATE 1
 3. DRAIN 2
 4. SOURCE 2
 5. GATE 2
 6. DRAIN 1</p> |
| <p>STYLE 10:
 PIN 1. CATHODE 1
 2. N/C
 3. CATHODE 2
 4. ANODE 2
 5. N/C
 6. ANODE 1</p> | <p>STYLE 11:
 PIN 1. EMITTER 2
 2. BASE 2
 3. COLLECTOR 1
 4. EMITTER 1
 5. BASE 1
 6. COLLECTOR 2</p> | |

* FOR ADDITIONAL INFORMATION ON OUR Pb-FREE STRATEGY AND SOLDERING DETAILS, PLEASE DOWNLOAD THE ON SEMICONDUCTOR SOLDERING AND MOUNTING TECHNIQUES REFERENCE MANUAL, SOLDERRM/D.

GENERIC MARKING DIAGRAM*



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

*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.

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DESCRIPTION:	SOT-563-6 1.60x1.20x0.55, 0.50P	PAGE 1 OF 1

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