

LOW CAPACITANCE UNIDIRECTIONAL TVS DIODE
Product Summary

V_{BR} Min	I_{PP} Max	C_{IN} Typ
6V	6.5A	0.8pF

Description

This new generation TVS is designed to protect sensitive electronics from the damage due to ESD. The combination of small size and high ESD surge capability makes it ideal for use in portable applications such as cellular phones, digital cameras and MP3 players.

Applications

- Cellular Handsets
- Portable Electronics
- Computers and Peripheral

Features

- Provides ESD Protection per IEC 61000-4-2 Standard: Air ±20kV, Contact ±20kV
- Provides ESD Protection per IEC 61000-4-4 Standard: 40A (t_p = 5/50ns)
- 1 Channel of ESD Protection
- Low Channel Input Capacitance
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

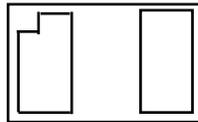
Mechanical Data

- Case: X3-DSN1006-2 (Type B)
- Case Material: Chip Scale Package
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: NiAu Bump. Solderable per MIL-STD-202, Method 208 ^(e4)
- Weight: 0.001 grams (Approximate)

X3-DSN1006-2 (Type B)



Top View



Bottom View

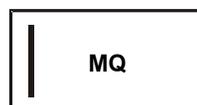


Device Schematic

Ordering Information (Note 4)

Part Number	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
DT2042-01CSP-7B	Standard	MQ	7	8	10,000/Tape & Reel

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
 2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 4. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information


MQ = Product Type Marking Code
Line Denotes Pin 1

Maximum Ratings (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Power Dissipation	P_{PP}	50	W	8/20 μs (See Figure 1)
Peak Pulse Current	I_{PP}	6.5	A	8/20 μs (See Figure 1)
ESD Protection – Air Discharge	V_{ESD_AIR}	20	kV	IEC 61000-4-2 Standard
ESD Protection – Contact Discharge	$V_{ESD_CONTACT}$	20	kV	IEC 61000-4-2 Standard

Thermal Characteristics

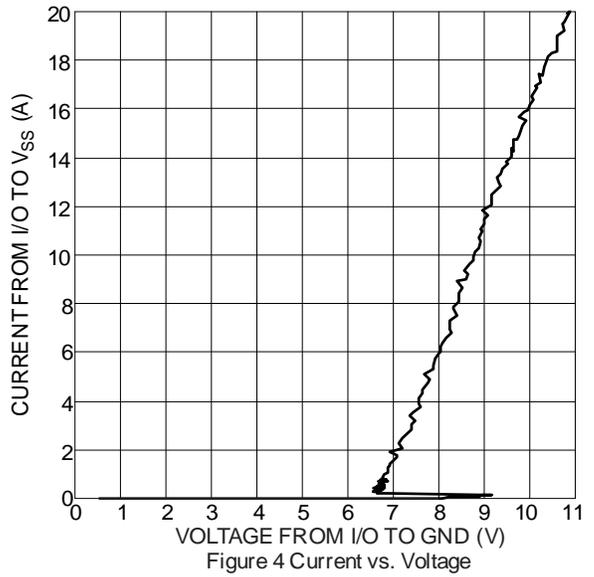
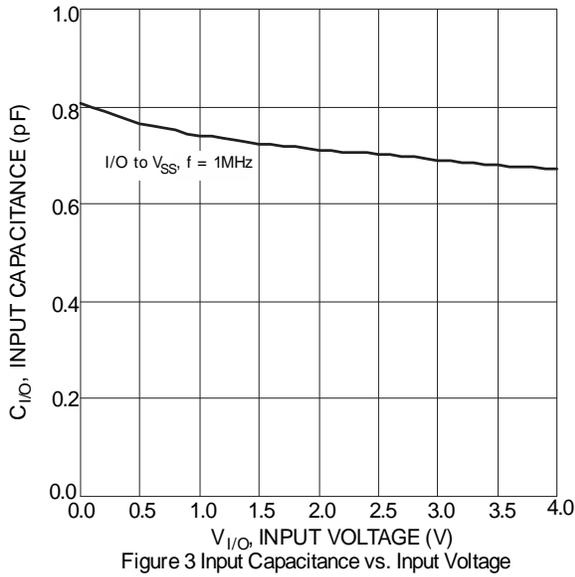
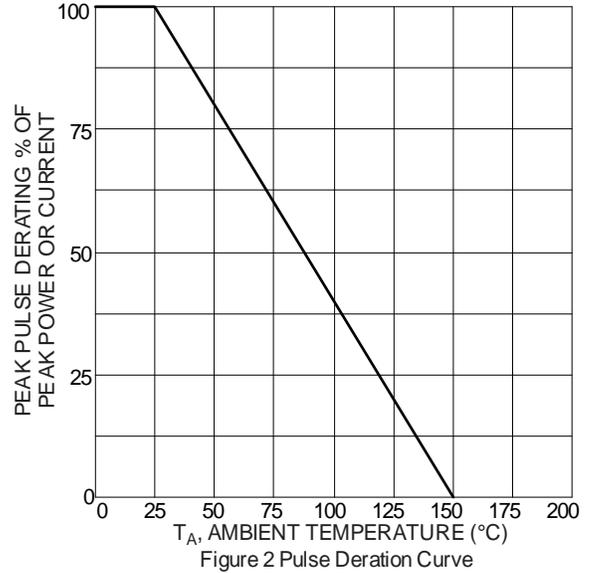
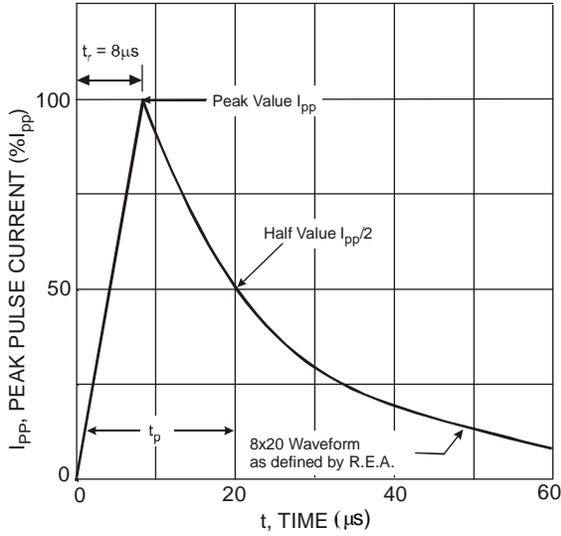
Characteristic	Symbol	Value	Unit
Package Power Dissipation (Note 5)	P_D	250	mW
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	500	$^\circ\text{C/W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-65 to +150	$^\circ\text{C}$

Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
Reverse Standoff Voltage	V_{RWM}	—	—	5	V	—
Channel Leakage Current (Note 6)	I_{RM}	—	—	0.5	μA	$V_{RWM} = 5\text{V}$
Breakdown Voltage	V_{BR}	6	—	10	V	$I_R = 10\text{mA}$
Clamping Voltage, Positive Transients	V_{CL}	—	7.0	—	V	$I_{PP} = 1\text{A}, t_p = 8/20\mu\text{s}$
		—	7.4	—	V	$I_{PP} = 2\text{A}, t_p = 8/20\mu\text{s}$
Differential Resistance	R_{DYN}	—	0.2	—	Ω	ITLP = 1A to 10A, $t_p = 100\text{ns}$, I/O to GND
Channel Input Capacitance	C_{IN}	—	0.8	—	pF	$V_R = 0\text{V}, f = 1\text{MHz}$

Notes: 5. Device mounted on FR-4 PCB pad layout (2oz copper) per Diodes Incorporated's recommended pad layout, refer to <http://www.diodes.com/package-outlines.html>.

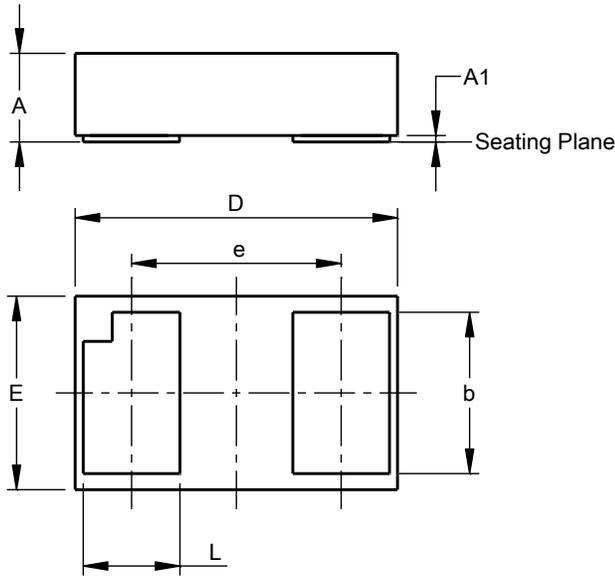
6. Short duration pulse test used to minimize self-heating effect.



Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

X3-DSN1006-2 (Type B)

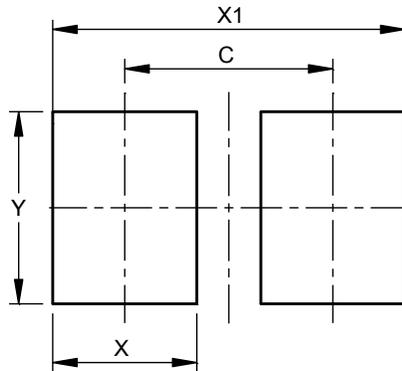


X3-DSN1006-2 (Type B)			
Dim	Min	Max	Typ
A	0.250	0.300	0.275
A1	0.00	0.02	0.01
b	0.490	0.510	0.500
D	0.975	1.025	1.00
E	0.575	0.625	0.600
e	--	--	0.650
L	0.290	0.310	0.300
All Dimensions in mm			

Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

X3-DSN1006-2 (Type B)



Dimensions	Value (in mm)
C	0.65
X	0.45
X1	1.10
Y	0.60

Note 7: Device side walls are electrically active bare silicon. Avoid contact of solder or flux on the side walls during the PCB assembly process.

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