

# ESD6116

## Single-Channel Transient Voltage Suppressor

### Product Description

ON Semiconductor's ESD6116 is an *Application Specific Integrated Passive™* (ASIP™) component in a 2 x 2, 4-bump, 0.4 mm pitch, CSP form factor. This device is designed for:

- Transient Voltage Suppression
- Electrostatic Discharge Protection
- Electrical Overstress Protection

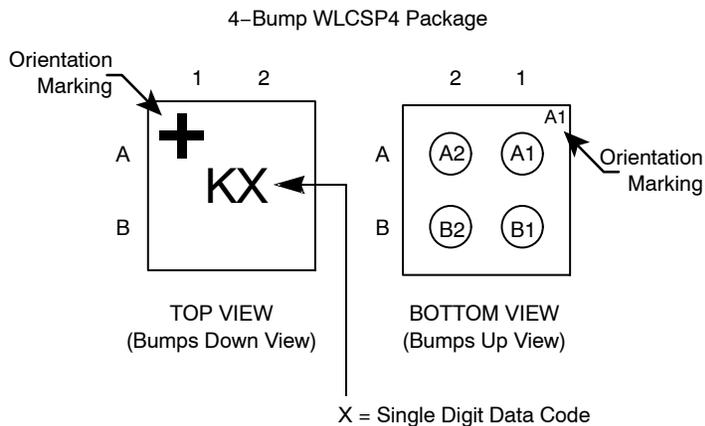
### Features

- 4-Bump, 0.80 mm X 0.80 mm Footprint Chip Scale Package (CSP)
- These Devices are Pb-Free and are RoHS Compliant

**Table 1. PIN DESCRIPTIONS**

Pins	Description
A1 and A2	TVS Channel
B1 and B2	Device Ground

### PACKAGE / PINOUT DIAGRAMS



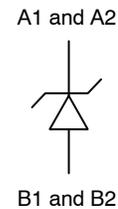
**ON Semiconductor®**

<http://onsemi.com>



**WLCSP4  
CASE 567CB**

### ELECTRICAL SCHEMATIC



### MARKING DIAGRAM



K = ESD6116  
X = Single Digit Data Code

### ORDERING INFORMATION

Device	Package	Shipping†
ESD6116	WLCSP4 (Pb-Free)	10,000/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.

# ESD6116

## ELECTRICAL SPECIFICATIONS AND CONDITIONS

**Table 2. PARAMETERS AND MAXIMUM ABSOLUTE OPERATING CONDITIONS**

Parameter	Rating	Units
Storage Temperature Range	-55 to +150	°C
Operating Temperature Range	-30 to +85	°C
Failing to Nonconductive, $I^2t$ (Maximum $I_{pp}$ Value Using 10/1000 $\mu$ s Pulse). (Notes 1 and 2)	100	A

1. The device must not burn to open-circuit, when the value is below maximum  $I_{pp}$ .
2. This parameter is characterized at 25°C using an ON Semiconductor-specific test board.

**Table 3. ELECTRICAL OPERATING CHARACTERISTICS** (Note 3)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
$I_{OFF}$	Stand-Off Quiescent Current	Stand-Off Voltage $V_{OFF} = 10$ V			500	nA
$V_{BR}$	Break Down Voltage	Break Down Current $I_{BR} = 15$ mA	16			V
$V_{CL}$	Clamping Voltage during Transient	Clamping Current $I_{CL} = 1$ A (Note 5)			20	V
$V_F$	Forward Voltage	Forward Current $I_F = 850$ mA			1.3	V
$C_{L1}$	Line Capacitance	$V_{BIAS} = 0$ V		172		pF
$C_{L2}$		$V_{BIAS} = 5$ V, $T_A = 25^\circ$ C;	66	83	100	pF
$V_{ESD}$	ESD Protection Peak Discharge Voltage at any Channel Input a) Contact Discharge per IEC 61000-4-2 Standard b) Air Discharge per IEC 61000-4-2 Standard	$T_A = 25^\circ$ C (Note 4)	$\pm 30$ $\pm 30$			kV
	Minimum Attenuation Freq = 80 MHz – 1 Ghz Freq = 1 – 4 GHz	$R_{SOURCE} = R_{LOAD} = 50 \Omega$ $T_A = 25^\circ$ C		8 20		dB

3. All parameters specified for  $T_A = -30^\circ$ C to  $85^\circ$ C unless otherwise noted.
4. Standard IEC 61000-4-2 with  $C_{Discharge} = 150$  pF,  $R_{Discharge} = 330 \Omega$ .
5. Transient:  $8 \times 20 \mu$ s current pulse.

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## RF CHARACTERISTICS

$T_A = 25^\circ\text{C}$ , 50  $\Omega$  Environment

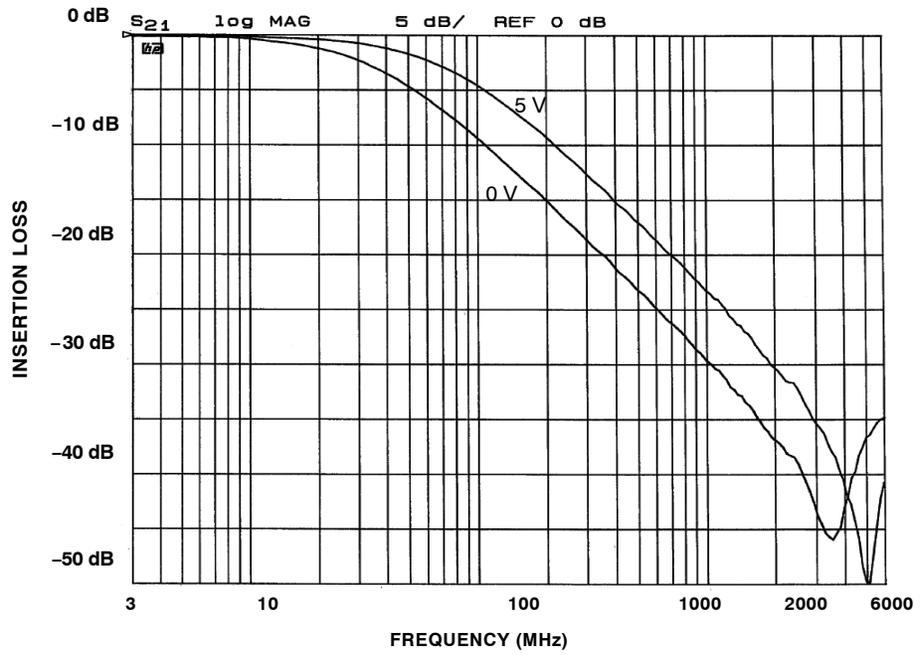
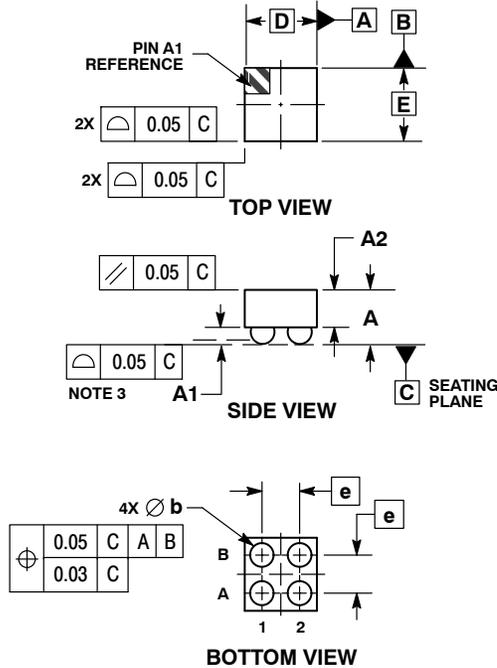


Figure 1. Insertion Loss (0 V and 5 V Bias)

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## PACKAGE DIMENSIONS

WLCSP4, 0.8x0.8  
CASE 567CB  
ISSUE O

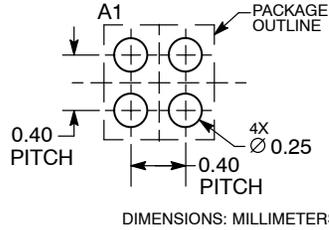


**NOTES:**

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. COPLANARITY APPLIES TO SPHERICAL CROWNS OF SOLDER BALLS.

DIM	MILLIMETERS	
	MIN	MAX
A	0.57	0.63
A1	0.17	0.24
A2	0.41	REF
b	0.24	0.29
D	0.80	BSC
E	0.80	BSC
e	0.40	BSC

**RECOMMENDED 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.

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