CM6116

Single-Channel Transient Voltage Suppressor

ON Semiconductor®

http://onsemi.com

WLCSP4
XX SUFFIX
CASE 567CB

Product Description

ON Semiconductor's CM6116 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

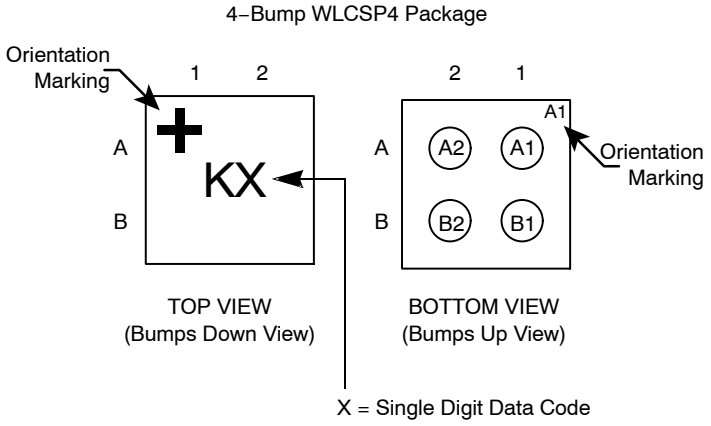
Features

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

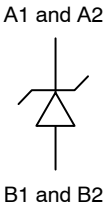
Table 1. PIN DESCRIPTIONS

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

PACKAGE / PINOUT DIAGRAMS



ELECTRICAL SCHEMATIC



MARKING DIAGRAM

K = CM6116
X = Single Digit Data Code

ORDERING INFORMATION

Device	Package	Shipping†
CM6116	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.

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ELECTRICAL SPECIFICATIONS AND CONDITIONS

Table 2. ABSOLUTE RATINGS

Parameter	Rating	Units
Failing to Nonconductive, I^2t (Maximum Ipp Value Using 10/1000 μs 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. STANDARD OPERATING CONDITIONS

Parameter	Rating	Units
Storage Temperature Range	−55 to +150	°C
Operating Temperature Range	−30 to +85	°C

Table 4. ELECTRICAL OPERATING CHARACTERISTICS (Note 1)

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 3)			20	V
V_F	Forward Voltage	Forward Current I_F = 850 mA			1.3	V
C_{L1}	Line Capacitance	V_{BIAS} = 0 V		190		pF
C_{L2}		V_{BIAS} = 5 V, T_A = 25°C;	73	92		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°C (Note 2)	 ±30 ±30			kV
	Minimum Attenuation Freq = 80 MHz − 1 Ghz Freq = 1 − 4 GHz	R_{SOURCE} = R_{LOAD} = 50 Ω T_A = 25°C		 8 20		dB

1. All parameters specified for T_A = −30°C to 85°C unless otherwise noted.
2. Standard IEC 61000−4−2 with $C_{Discharge}$ = 150 pF, $R_{Discharge}$ = 330 Ω.
3. Transient: 8 x 20 μs current pulse.

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RF CHARACTERISTICS

T_A = 25°C, 50 Ω Environment

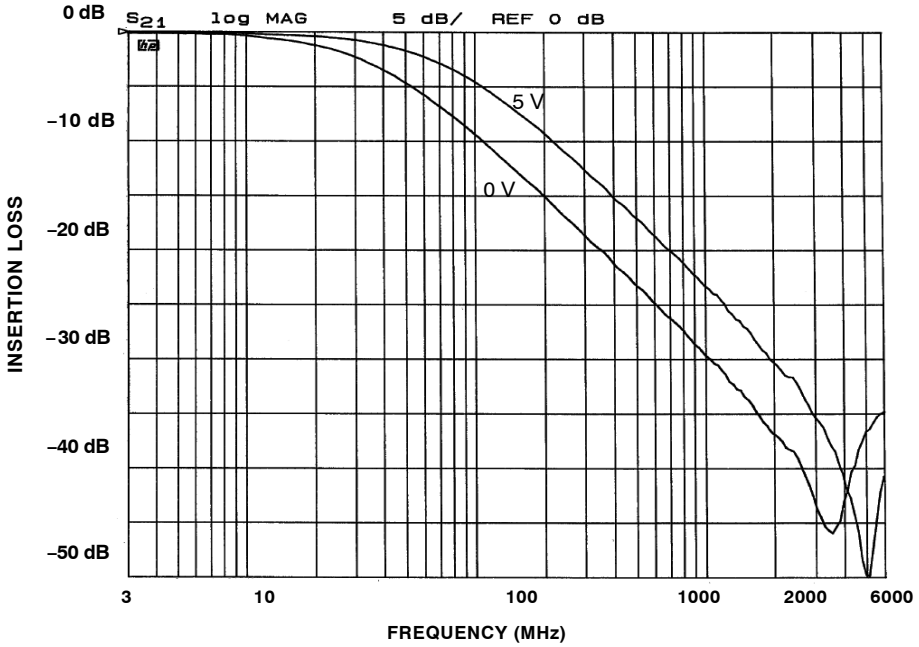

Figure 1. Insertion Loss (0 V and 5 V Bias)

MECHANICAL SPECIFICATION

Table 5. VERTICAL STRUCTURE DIMENSIONS (nominal)

Ref.	Parameter	Material	Dimension
a	Die Thickness	Silicon	406 μm
b	Bump Standoff		194 μm
d	UBM−(Ti/Cu)	Plated Cu	7 μm
		Sputtered Cu	0.4 μm
		Sputtered Ti	0.1 μm
e	UBM Wetting Area Diameter		240 μm
f	Solder Bump Diameter after Bump Reflow		270 μm
c	Metal Pad Height	AlSiCu	1.5 μm
g	Metal Pad Diameter		284 μm
D2			0.406 mm
D1	Finished Thickness		0.600 mm

Vertical Structure Specification*

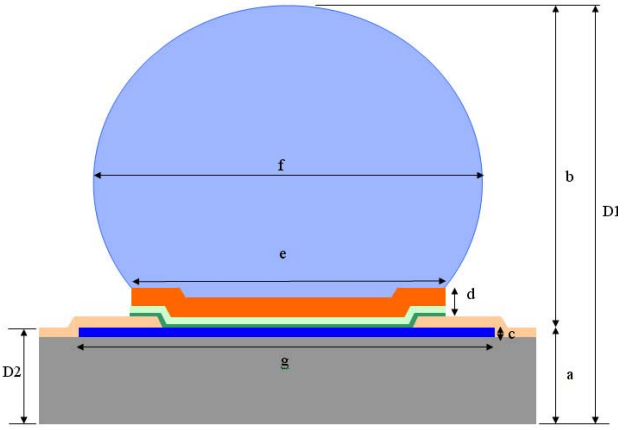

Figure 2. Sectional View

* Daisy Chain CM6008

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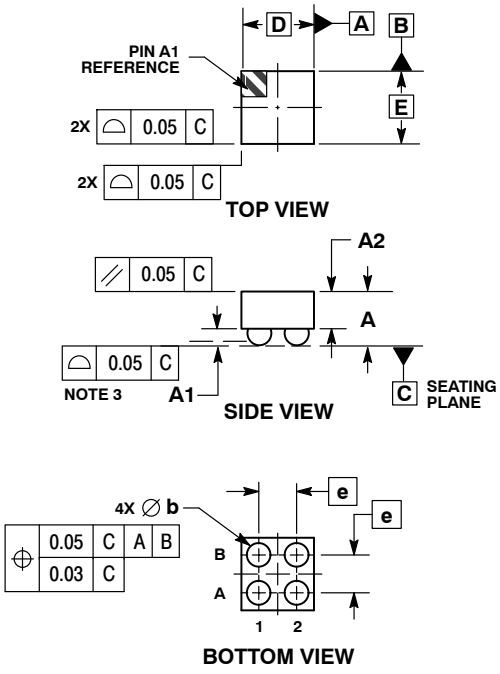
CM6116

PACKAGE DIMENSIONS

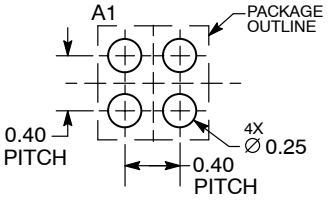
WLCSP4, 0.8x0.8
CASE 567CB−01
ISSUE O



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*



DIMENSIONS: MILLIMETERS

*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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