

# CM1244

## 4-Channel ESD Array in CSP

### Features

- Four Channels of ESD Protection
- $\pm 15$  kV ESD Protection on Each Channel (IEC 61000-4-2 Level 4, Contact Discharge)
- $\pm 30$  kV ESD Protection on Each Channel (HBM)
- Chip Scale Package Features Extremely Low Lead Inductance for Optimum ESD Protection
- 5-bump, 0.760 mm x 1.053 mm Footprint, 0.4 mm Pitch, Chip Scale Package (CSP)
- *OptiGuard™* Coating for Improved Reliability at Assembly
- These Devices are Pb-Free and are RoHS Compliant

### Applications

- ESD Protection for Sensitive Electronic Equipment
- I/O Port and Keypad and Button Circuitry Protection for Portable Devices
- Can be Used for EMI Filtering when Combined with External Series Resistance
- Wireless Handsets
- Handheld PCs/PDAs
- MP3 Players
- Digital Camcorders
- Notebooks
- Desktop PCs



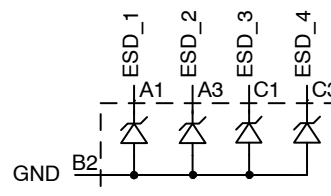
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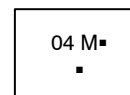


**WLCSP5  
CP SUFFIX  
CASE 567AX**

### BLOCK DIAGRAM



### MARKING DIAGRAM



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

### ORDERING INFORMATION

Device	Package	Shipping†
CM1244-04CP	CSP-5 (Pb-Free)	3500/Tape & Reel

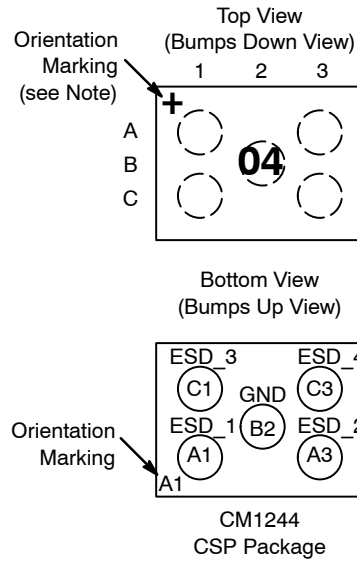
†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

# CM1244

**Table 1. PIN DESCRIPTIONS**

5-bump CSP Package		
Pin	Name	Description
A1	ESD_1	ESD Channel 1
A3	ESD_2	ESD Channel 2
B2	GND	Device Ground
C1	ESD_3	ESD Channel 3
C3	ESD_4	ESD Channel 4

**PACKAGE / PINOUT DIAGRAMS**



Note: The "+" orientation marking indicates that the package is lead-free.

## SPECIFICATIONS

**Table 2. ABSOLUTE MAXIMUM RATINGS**

Parameter	Rating	Units
Storage Temperature Range	-65 to +150	°C
DC Package Power Rating	200	mW

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.

**Table 3. STANDARD OPERATING CONDITIONS**

Parameter	Rating	Units
Operating Temperature Range	-40 to +85	°C

**Table 4. ELECTRICAL OPERATING CHARACTERISTICS** (Note 1)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
$V_{DIODE}$	Diode Reverse Breakdown Voltage	$I_{DIODE} = 10 \mu A$	5.5			V
$I_{LEAK}$	Diode Leakage Current	$T_A = 25^\circ C$ ; $V_{IN} = 3.3 V$			100	nA
$V_{SIG}$	Signal Voltage Positive Clamp Negative Clamp	$I_{DIODE} = 10 mA$	5.6 -1.5	6.8 -0.8	9.0 -0.4	V
$V_{ESD}$	In-system ESD Withstand Voltage a) Human Body Model, MIL-STD-883, Method 3015 b) Contact Discharge per IEC 61000-4-2	(Note 2)	$\pm 30$ $\pm 15$			kV
$V_{CL}$	Clamping Voltage during ESD Discharge MIL-STD-883 (Method 3015), 8 kV Positive Transients Negative Transients	(Note 2)		+15 -8		V
$C_{DIODE}$	Diode Capacitance	At 2.5 VDC Reverse Bias, 1 MHz, 30 mVAC	22	27	32	pF

- $T_A = -40^\circ C$  to  $+85^\circ C$  unless otherwise specified.
- ESD applied to input and output pins with respect to GND, one at a time.

## APPLICATION INFORMATION

Refer to Application Note “The Chip Scale Package,” for a detailed description of Chip Scale Packages offered by ON Semiconductor.

## PERFORMANCE INFORMATION

### Diode Characteristics (nominal conditions unless specified otherwise)

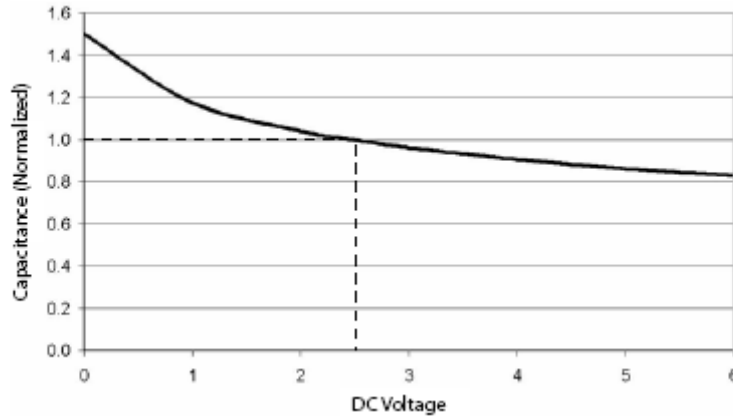


Figure 1. Typical Diode Capacitance vs. Input Voltage (normalized to 2.5 VDC)

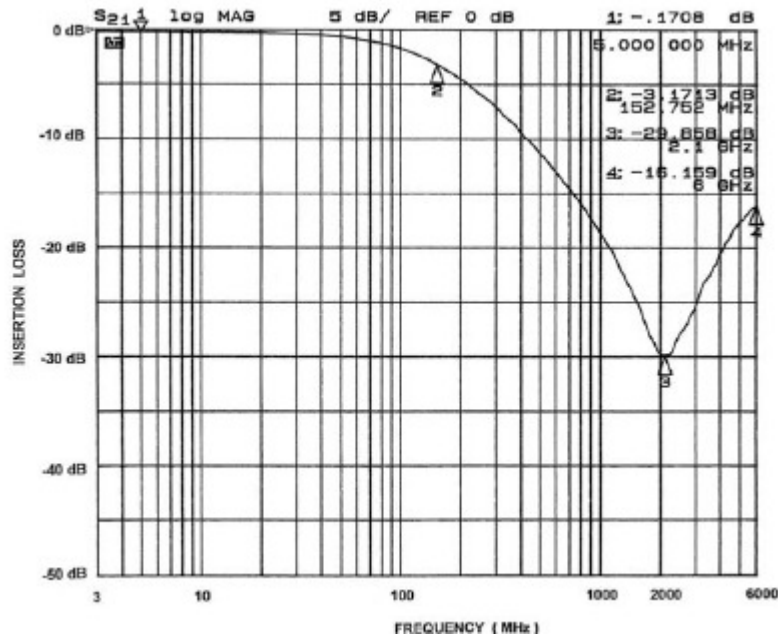


Figure 2. Frequency Response (single channel vs. GND, in 50  $\Omega$  system)

# MECHANICAL CASE OUTLINE

## PACKAGE DIMENSIONS

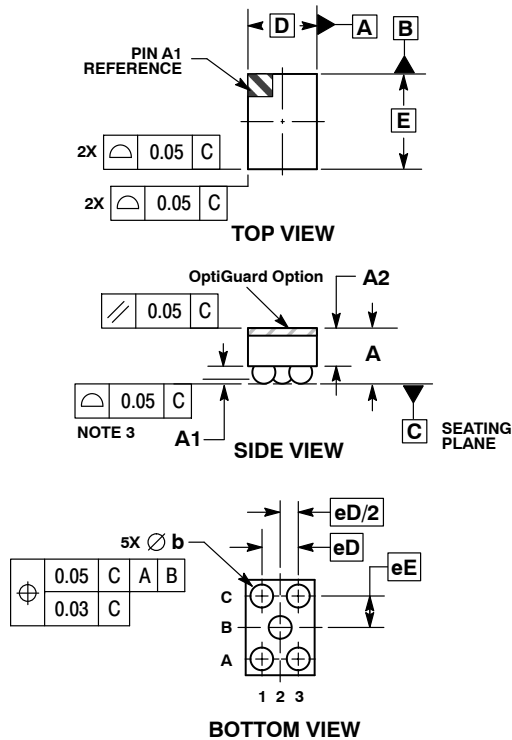
ON Semiconductor®



SCALE 4:1

WLCSP5, 0.76x1.05  
CASE 567AX-01  
ISSUE O

DATE 26 JUL 2010

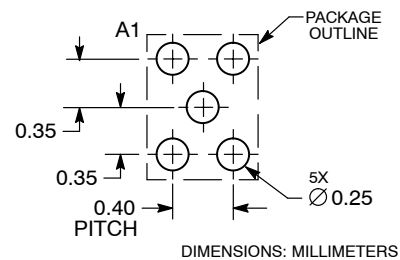


### NOTES:

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

MILLIMETERS		
DIM	MIN	MAX
A	0.54	0.69
A1	0.17	0.24
A2	0.42	REF
b	0.24	0.29
D	0.76	BSC
E	1.05	BSC
eD	0.400	BSC
eE	0.347	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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DESCRIPTION:	WLCSP5, 0.76X1.05	PAGE 1 OF 1

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