CM1250-04QG

ESD Protection Diode

Low Capacitance

Features

- Low I/O Capacitance at 5 pF at 0 V
- In−System ESD Protection to ±8 kV Contact Discharge, per the IEC 61000−4−2 International Standard
- Compact SMT Package Saves Board Space and Facilitates Layout in Space−Critical Applications
- Each I/O Pin Can Withstand over 1000 ESD Strikes*
- These Devices are Pb−Free and are RoHS Compliant

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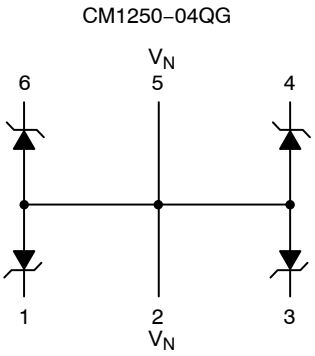
UDFN−6
QG SUFFIX
CASE 517BM

BLOCK DIAGRAM



MARKING DIAGRAM

LS = CM1250−04QG

ORDERING INFORMATION

Device	Package	Shipping†
CM1250−04QG	UDFN6 (Pb−Free)	3000/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.

*Standard test condition is IEC61000−4−2 level 4 test circuit with each pin subjected to ±8 kV contact discharge for 1000 pulses. Discharges are timed at 1 second intervals and all 1000 strikes are completed in one continuous test run. The part is then subjected to standard production test to verify that all of the tested parameters are within spec after the 1000 strikes.

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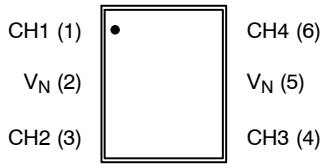
PACKAGE / PINOUT DIAGRAM

Top View



6−Lead uDFN (0.4mm)

Table 1. PIN DESCRIPTIONS

Pins	Name	Description
(Refer to package / pinout diagram)	CHx	The cathode of the respective surge protection diode, which should be connected to the node requiring transient voltage protection.
(Refer to package / pinout diagram)	V_N	The anode of the surge protection diodes.

SPECIFICATIONS

Table 2. ABSOLUTE MAXIMUM RATINGS

Parameter	Rating	Units
Storage Temperature Range	−65 to +150	°C

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.

Table 3. STANDARD OPERATING CONDITIONS

Parameter	Rating	Units
Operating Temperature	−40 to +85	°C

Table 4. ELECTRICAL OPERATING CHARACTERISTICS (Note 1)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
C_{IN}	Channel Input Capacitance	T_A = 25°C, 0 VDC, 1 MHz; (Note 2)		5	7	pF
		T_A = 25°C, 2.5 VDC, 1 MHz; (Note 2)		3		pF
ΔC_{IN}	Differential Channel I/O to GND Capacitance	T_A = 25°C, 2.5 VDC, 1 MHz; (Note 2)		0.14		pF
I_{LEAK}	Leakage Current	V_{IN} = 3.5 VDC, T_A = 25°C			0.10	μA
V_{SIG}	Small Signal Clamp Voltage Positive Clamp Negative Clamp	 I = 5 mA, T_A = 25°C I = −5 mA, T_A = 25°C	 6.1 −1.5		 8.5 −0.4	V
V_{ESD}	ESD Withstand Voltage Contact Discharge per IEC 61000−4−2 standard Human Body Model, MIL−STD−883, Method 3015	 T_A = 25°C; (Notes 2, 4 and 5) T_A = 25°C; (Notes 2, 3 and 5)	 ±8 ±15			kV
R_D	Diode Dynamic Resistance Forward Conduction Reverse Conduction	T_A = 25°C (Note 2)		 0.7 2.1		Ω

1. All parameters specified at T_A = −40°C to +85°C unless otherwise noted.
2. These parameters guaranteed by design and characterization.
3. Human Body Model per MIL−STD−883, Method 3015, $C_{Discharge}$ = 100 pF, $R_{Discharge}$ = 1.5 KΩ, V_N grounded.
4. Standard IEC 61000−4−2 with $C_{Discharge}$ = 150 pF, $R_{Discharge}$ = 330 Ω, V_N grounded.
5. These measurements performed with no external capacitor on CH_X.

PERFORMANCE INFORMATION

Diode Capacitance

Typical diode capacitance with respect to positive cathode voltage (reverse voltage across the diode) is given in Diode Capacitance vs. Reverse Voltage.

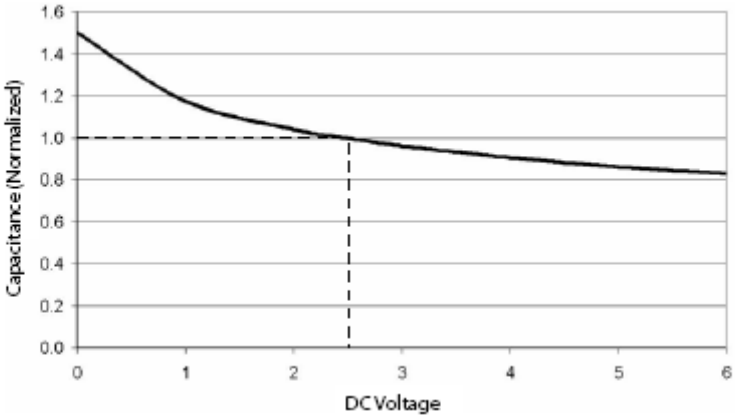


Figure 1. Diode Capacitance vs. Reverse Voltage

Typical High Current Diode Characteristics

Measurements are made in pulsed mode with a nominal pulse width of 0.7 ms.

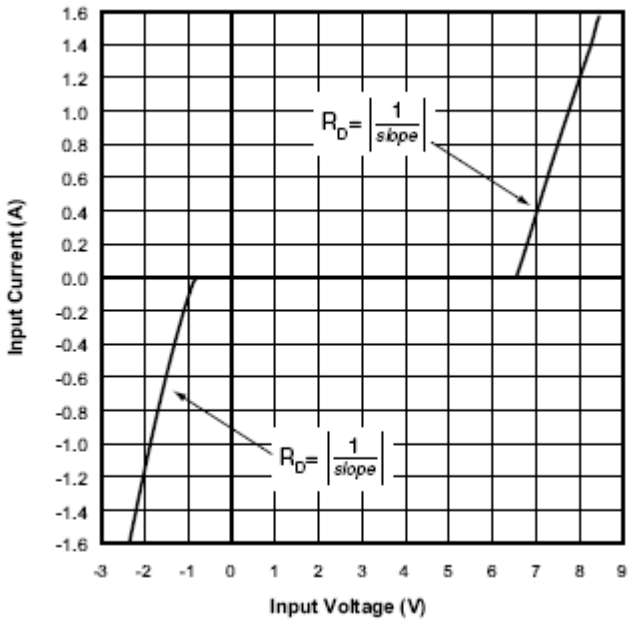
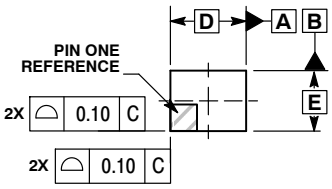


Figure 2. Typical Input VI Characteristics
(Pulse−mode Measurements, Pulse Width = 0.7 ms nominal)

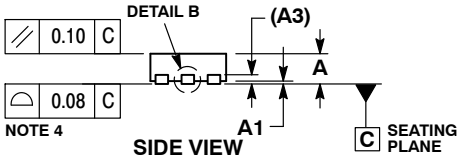
UDFN6, 1.25x1, 0.4P
CASE 517BM
ISSUE O

DATE 20 JUL 2010

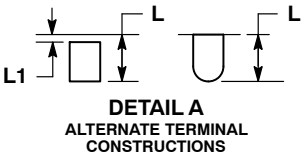
SCALE 4:1



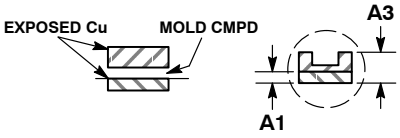
TOP VIEW



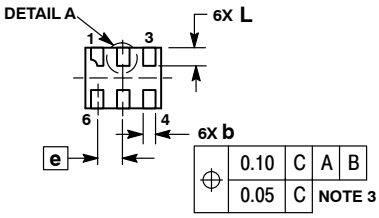
SIDE VIEW



DETAIL A
ALTERNATE TERMINAL CONSTRUCTIONS

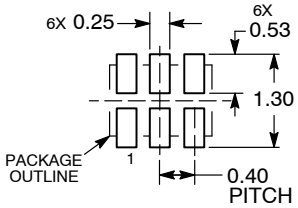


DETAIL B
ALTERNATE CONSTRUCTIONS



BOTTOM VIEW

RECOMMENDED SOLDERING FOOTPRINT*



DIMENSION: MILLIMETERS

*For additional information on our Pb−Free strategy and soldering details, please download the **onsemi** Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. DIMENSION b APPLIES TO PLATED TERMINAL AND IS MEASURED BETWEEN 0.15 AND 0.30 MM FROM TERMINAL TIP.
4. COPLANARITY APPLIES TO THE EXPOSED PAD AS WELL AS THE TERMINALS.

	MILLIMETERS	
DIM	MIN	MAX
A	0.45	0.55
A1	0.00	0.05
A3	0.15 REF	
b	0.15	0.25
D	1.25 BSC	
E	1.00 BSC	
e	0.40 BSC	
L	0.20	0.40
L1	−−−	0.15

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