

# CM1263-06DE

## Low Capacitance ESD Protection for High-Speed Serial Interfaces

### Features

- 6 Channels of ESD Protection
- 1 pF Loading Capacitance per Channel Typical
- $\pm 8$  kV ESD Protection (IEC 61000-4-2, Contact Discharge)
- $\pm 15$  kV ESD Protection (IEC 61000-4-2, Air Discharge)
- These Devices are Pb-Free and are RoHS Compliant

### Applications

- LCD and Camera Data Lines in Wireless Handsets that Use High-Speed Serial Interfaces such as MDDI, MIPI, MVI and MPL
- I/O Port Protection for Mobile Handsets, Notebook Computers, PDAs, etc.
- Wireless Handsets
- Handheld PCs/PDAs
- LCD and Camera Modules



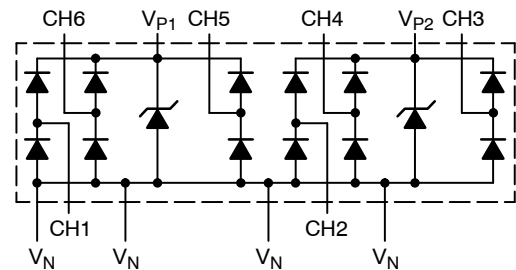
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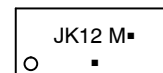


UDFN12  
DE SUFFIX  
CASE 517BD

### BLOCK DIAGRAM



### MARKING DIAGRAM



1

JK12 = Specific Device Code  
M = Month Code  
■ = Pb-Free Package

### ORDERING INFORMATION

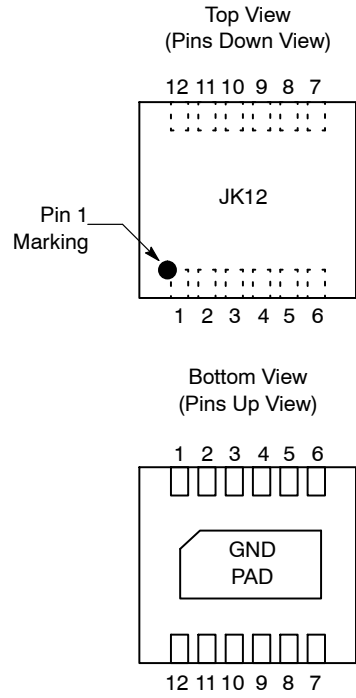
| Device      | Package           | Shipping†        |
|-------------|-------------------|------------------|
| CM1263-06DE | UDFN<br>(Pb-Free) | 3000/Tape & Reel |

†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.

Table 1. PIN DESCRIPTIONS

| Pin  | Description                       |
|------|-----------------------------------|
| 1    | $V_N^*$                           |
| 2    | (CH1) ESD Channel #1              |
| 3    | $V_N^*$                           |
| 4    | $V_N^*$                           |
| 5    | (CH2) ESD Channel #2              |
| 6    | $V_N^*$                           |
| 7    | (CH3) ESD Channel #3              |
| 8    | $V_{P2}$ for Channels 2, 3, and 4 |
| 9    | (CH4) ESD Channel #4              |
| 10   | (CH5) ESD Channel #5              |
| 11   | $V_{P1}$ for Channels 1, 5, and 6 |
| 12   | (CH6) ESD Channel #6              |
| DAP* | Backside, GND Pad, $V_N^*$        |

PACKAGE / PINOUT DIAGRAM



12-Lead UDFN Package

# CM1263-06DE

## SPECIFICATIONS

**Table 2. ABSOLUTE MAXIMUM RATINGS**

| Parameter                                | Rating                         | Units |
|--|--------------------------------|-------|
| Operating Supply Voltage ( $V_P - V_N$ ) | 6.0                            | V     |
| Operating Temperature Range              | -40 to +85                     | °C    |
| Storage Temperature Range                | -65 to +150                    | °C    |
| DC Voltage at any channel input          | $(V_N - 0.5)$ to $(V_P + 0.5)$ | V     |

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. ELECTRICAL OPERATING CHARACTERISTICS** (Note 1)

| Symbol          | Parameter   | Conditions  | Min                 | Typ           | Max          | Units    |
|-----------------|---|---|---------------------|---------------|--------------|----------|
| $V_P$           | Operating Supply Voltage ( $V_P - V_N$ )  |   |                     | 3.3           | 5.5          | V        |
| $I_P$           | Operating Supply Current  | $V_P = 3.3$ V, $V_N = 0$ V (per $V_P$ pin)  |                     |               | 8.0          | $\mu$ A  |
| $V_F$           | Diode Forward Voltage<br>Top Diode<br>Bottom Diode  | $T_A = 25^\circ\text{C}$ , $I_F = 8$ mA, $V_P = 3.3$ V,<br>$V_N = 0$ V                            | 0.60<br>0.60        | 0.80<br>0.80  | 0.95<br>0.95 | V        |
| $I_{LEAK}$      | Channel Leakage Current   | $T_A = 25^\circ\text{C}$ ; $V_P = 3.3$ V, $V_N = 0$ V<br>(Channel 1)                              |                     |               | 250          | nA       |
|                 |   | $V_P = 3.3$ V, $V_N = 0$ V<br>(Channels 1-6)  |                     |               | 1000         | nA       |
| $I_R$           | Reverse (Leakage Current)   | $V_P = \text{floating}$ ; $V_N = 0$ V<br>(per channel)  |                     |               | 1000         | nA       |
| $C_{IN}$        | Channel Input Capacitance   | At 1 MHz, $V_P = 3.3$ V, $V_N = 0$ V,<br>$V_{IN} = 0$ V   |                     | 0.88          | 1.2          | pF       |
| $\Delta C_{IN}$ | Channel Input Capacitance Matching  | At 1 MHz, $V_P = 3.3$ V, $V_N = 0$ V,<br>$V_{IN} = 0$ V   |                     | 0.02          |              | pF       |
| $C_{MUTUAL}$    | Mutual Capacitance between signal pin<br>and adjacent signal pin  | At 1 MHz, $V_P = 3.3$ V, $V_N = 0$ V,<br>$V_{IN} = 0$ V   |                     | 0.11          |              | pF       |
| $V_{ESD}$       | ESD Protection<br>Peak Discharge Voltage at any channel<br>input, in system<br>a) Contact discharge per<br>IEC 61000-4-2 standard<br>b) Air discharge per<br>IEC 61000-4-2 standard | $T_A = 25^\circ\text{C}$ (Notes 2 and 3)  | $\pm 8$<br>$\pm 15$ |               |              | kV       |
| $V_{CL}$        | Channel Clamp Voltage<br>Positive Transients<br>Negative Transients   | $T_A = 25^\circ\text{C}$ , $I_{PP} = 1$ A, $t_p = 8/20$ $\mu$ S<br>(Note 3)                       |                     | +9.96<br>-1.6 |              | V        |
| $R_{DYN}$       | Dynamic Resistance<br>Positive Transients<br>Negative Transients  | $T_A = 25^\circ\text{C}$ , $I_{PP} = 1$ A, $t_p = 8/20$ $\mu$ S<br>Any I/O pin to Ground (Note 3) |                     | 0.96<br>0.5   |              | $\Omega$ |

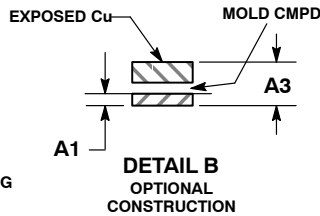
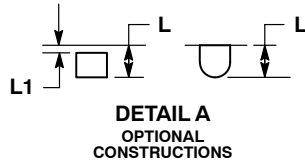
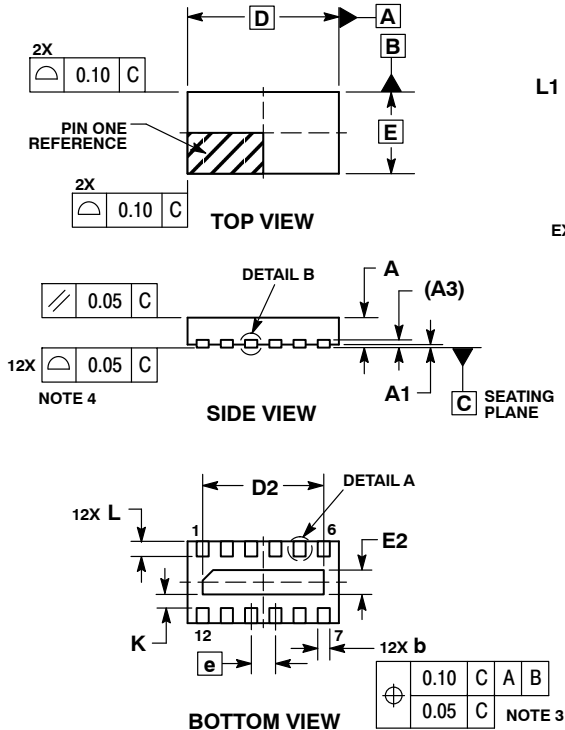
1. All parameters specified at  $T_A = -40^\circ\text{C}$  to  $+85^\circ\text{C}$  unless otherwise noted.
2. Standard IEC 61000-4-2 with  $C_{Discharge} = 150$  pF,  $R_{Discharge} = 330$   $\Omega$ ,  $V_P = 3.3$  V,  $V_N$  grounded.
3. These measurements performed with no external capacitor on  $V_P$  ( $V_P$  floating).

# CM1263-06DE

## PACKAGE DIMENSIONS

UDFN12, 2.5x1.35, 0.4P  
CASE 517BD-01  
ISSUE O

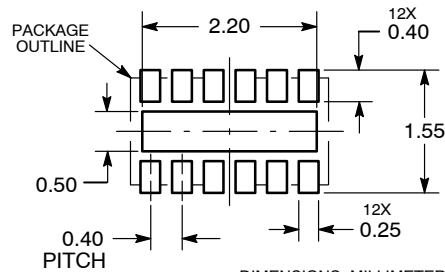
SCALE 4:1



- 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 0.25 mm FROM THE TERMINAL TIP.
  4. COPLANARITY APPLIES TO THE EXPOSED PAD AS WELL AS THE TERMINALS.

| DIM | MILLIMETERS |      |
|-----|-------------|------|
|     | MIN         | MAX  |
| A   | 0.45        | 0.55 |
| A1  | 0.00        | 0.05 |
| A3  | 0.13        | REF  |
| b   | 0.15        | 0.25 |
| D   | 2.50        | BSC  |
| D2  | 1.90        | 2.10 |
| E   | 1.35        | BSC  |
| E2  | 0.30        | 0.50 |
| e   | 0.40        | BSC  |
| K   | 0.15        | ---  |
| L   | 0.20        | 0.30 |
| L1  | ---         | 0.05 |

### 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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