



Low Capacitance ESD Protection for High-Speed Serial Interfaces

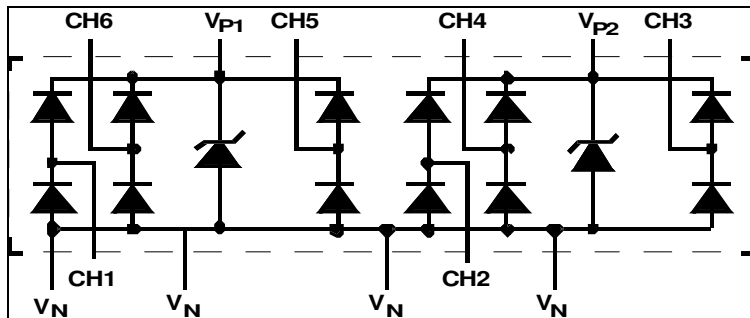
CM1263-06DE

Features

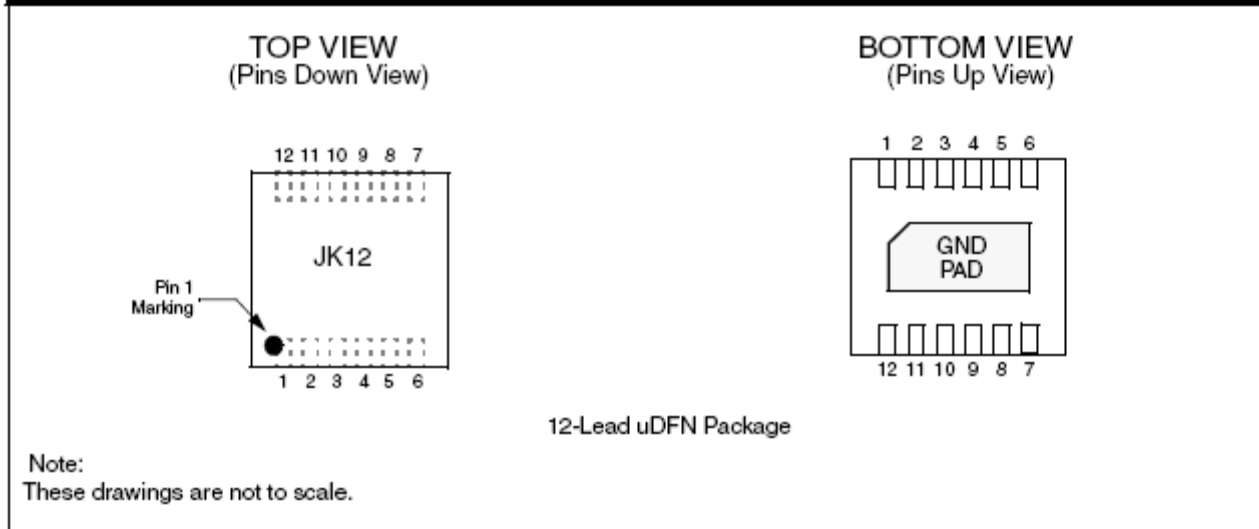
- 6 channels of ESD Protection
- 1pF loading capacitance per channel typical
- ±8kV ESD protection (IEC 61000-4-2, contact discharge)
- ±15kV ESD protection (IEC 61000-4-2, air discharge)
- RoHS-compliant uDFN-12 package

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



PACKAGE / PINOUT DIAGRAMS



PIN DESCRIPTIONS

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

Note 1: * To achieve best ESD performance, all V_N pins must be connected.

CM1263-06DE

Ordering Information

| PART NUMBERING INFORMATION | | | |
|----------------------------|---------|------------------|--------------|
| PIN | PACKAGE | LEAD-FREE FINISH | Part Marking |
| 12 | uDFN | CM1263-06DE | JK12 |

Note 1: Parts are shipped in Tape and Reel form unless otherwise specified.

Specifications

| 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 |

ELECTRICAL OPERATING CHARACTERISTICS (SEE 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 =3.3V, V _N =0V (per V _P pin) | | | 8.0 | μA |
| V _F | Diode Forward Voltage Top Diode Bottom Diode | T _A =25°C; I _F = 8mA; V _P =3.3V, V _N =0V | 0.60 0.60 | 0.80 0.80 | 0.95 0.95 | V V |
| I _{LEAK} | Channel Leakage Current | T _A =25°C; V _P =3.3V, V _N =0V (Channel 1) | | | 250 | nA |
| | | V _P =3.3V, V _N =0V (Channels 1-6); | | | 1000 | nA |
| I _R | Reverse (Leakage Current) | V _P =floating; V _N =0V (per channel) | | | 1000 | nA |
| C _{IN} | Channel Input Capacitance | At 1 MHz, V _P =3.3V, V _N =0V, V _{IN} =0V | | 0.88 | 1.2 | pF |
| ΔC _{IN} | Channel Input Capacitance Matching | At 1 MHz, V _P =3.3V, V _N =0V, V _{IN} =0V | | 0.02 | | pF |
| C _{MUTUAL} | Mutual Capacitance between signal pin and adjacent signal pin | At 1 MHz, V _P =3.3V, V _N =0V, V _{IN} =0V | | 0.11 | | pF |
| V _{ESD} | ESD Protection Peak Discharge Voltage at any channel input, in system a) Contact discharge per IEC 61000-4-2 standard b) Air discharge per IEC 61000-4-2 standard | Notes 2 and 3; T _A =25°C | | ±8 ±15 | | kV kV |
| V _{CL} | Channel Clamp Voltage Positive Transients Negative Transients | T _A =25°C, I _{PP} = 1A, t _p = 8/20μS; Notes 3 | | +9.96 -1.6 | | V V |
| R _{DYN} | Dynamic Resistance Positive Transients Negative Transients | T _A =25°C, I _{PP} = 1A, t _p = 8/20μS Any I/O pin to Ground; Note 3 | | 0.96 0.5 | | Ω Ω |

Note 1: All parameters specified at T_A = -40°C to +85°C unless otherwise noted.

Note 2: Standard IEC 61000-4-2 with C_{Discharge} = 150pF, R_{Discharge} = 330Ω, V_P = 3.3V, V_N grounded.

Note 3: These measurements performed with no external capacitor on V_P (V_P floating).

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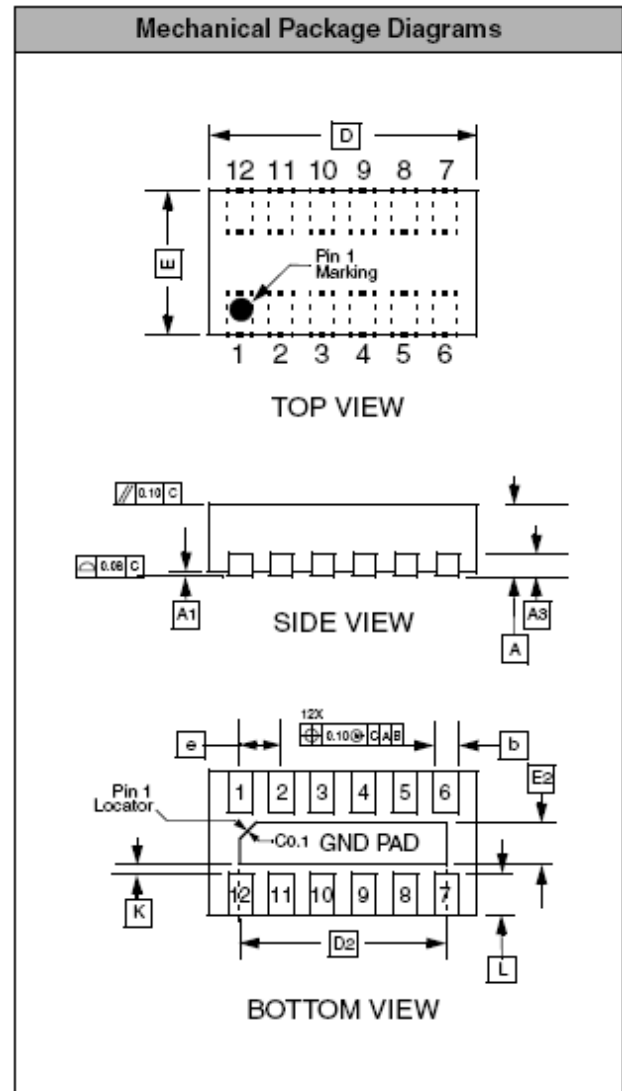
Mechanical Details

uDFN-12 Mechanical Specifications, 0.4mm

Dimensions for the 12-lead, 0.4mm pitch uDFN package are presented below.

| PACKAGE DIMENSIONS | | | | | | |
|------------------------------------|-------------|------|------|------------|-------|-------|
| Package | uDFN | | | | | |
| JEDEC No. | MO-229C* | | | | | |
| Leads | 12 | | | | | |
| Dim. | Millimeters | | | Inches | | |
| | Min | Nom | Max | Min | Nom | Max |
| A | 0.45 | 0.50 | 0.55 | 0.018 | 0.020 | 0.022 |
| A1 | 0.00 | 0.02 | 0.05 | 0.000 | 0.001 | 0.002 |
| A3 | 0.127 REF | | | 0.005 REF | | |
| b | 0.15 | 0.20 | 0.25 | 0.006 | 0.008 | 0.010 |
| D | 2.40 | 2.50 | 2.60 | 0.094 | 0.098 | 0.102 |
| D2 | 1.90 | 2.00 | 2.10 | 0.075 | 0.079 | 0.083 |
| E | 1.25 | 1.35 | 1.45 | 0.049 | 0.053 | 0.057 |
| E2 | 0.30 | 0.40 | 0.50 | 0.012 | 0.016 | 0.020 |
| e | 0.40 BSC | | | 0.016 BSC | | |
| K | 0.22 REF | | | 0.0087 REF | | |
| L | 0.15 | 0.25 | 0.35 | 0.006 | 0.010 | 0.014 |
| # per tape and reel | 3000 pieces | | | | | |
| Controlling dimension: millimeters | | | | | | |

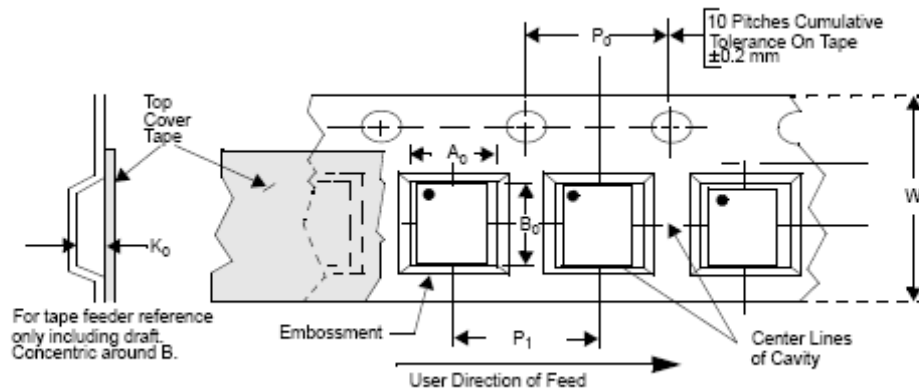
*This package is compliant with JEDEC standard MO-229C with the exception of the D, D2, E, E2, K and L dimensions as called out in the table above.




Dimensions for 12-Lead, 0.4mm Pitch uDFN Package

Tape and Reel Specifications

| PART NUMBER | PACKAGE SIZE (mm) | POCKET SIZE (mm) $B_0 \times A_0 \times K_0$ | TAPE WIDTH W | REEL DIAMETER | QTY PER REEL | P_0 | P_1 |
|-------------|--------------------|---|-----------------|---------------|--------------|-------|-------|
| CM1263-06DE | 2.50 X 1.35 X 0.50 | 2.75 X 1.60 X 0.60 | 8mm | 178mm (7") | 3000 | 4mm | 4mm |



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