

Low Capacitance ESD Protection for High-Speed Serial Interfaces

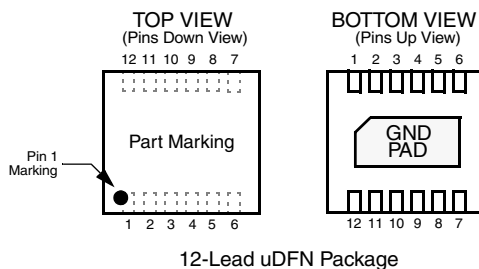
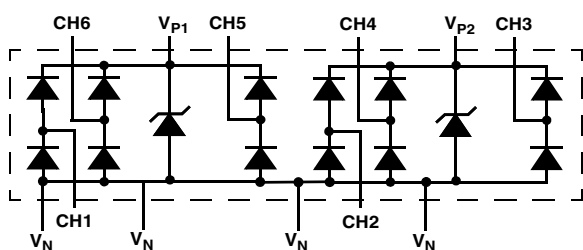
Features

- 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)

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

Electrical Schematics/Pin Description



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.

Ordering Information

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

Note 1: Parts are shipped in Tape & 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	$(V_P - V_N) = 3.3V$			8.0	μA
V_F	Diode Forward Voltage Top Diode Bottom Diode	$I_F = 8mA; T_A = 25^\circ C$	0.60	0.80	0.95	V
			0.60	0.80	0.95	V
I_{LEAK}	Channel Leakage Current	$T_A = 25^\circ C; V_P = 5V, V_N = 0V$		± 0.1	± 1.0	μA
C_{IN}	Channel Input Capacitance	At 1 MHz, $V_P = 3.3V, V_N = 0V, V_{IN} = 1.65V$; Note 2 applies		0.88	1.2	pF
ΔC_{IN}	Channel Input Capacitance Matching	At 1 MHz, $V_P = 3.3V, V_N = 0V, V_{IN} = 1.65V$; Note 2 applies		0.02		pF
C_{MUTUAL}	Mutual Capacitance between signal pin and adjacent signal pin	At 1 MHz, $V_P = 3.3V, V_N = 0V, V_{IN} = 1.65V$; Note 2 applies		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) Human Body Model, MIL-STD-883, Method 3015	$T_A = 25^\circ C$	± 8			kV
			± 15			kV
V_{CL}	Channel Clamp Voltage Positive Transients Negative Transients	$T_A = 25^\circ C, I_{PP} = 1A, t_P = 8/20\mu S$; Notes 2, & 5		+9.96		V
				-1.6		V
R_{DYN}	Dynamic Resistance Positive Transients Negative Transients	$I_{PP} = 1A, t_P = 8/20\mu S$ Any I/O pin to Ground; Note 2 and 5		0.96		Ω
				0.5		Ω

Note 1: All parameters specified at $T_A = -40^\circ C$ to $+85^\circ C$ unless otherwise noted.

Note 2: These parameters guaranteed by design and characterization.

Note 3: Human Body Model per MIL-STD-883, Method 3015, $C_{Discharge} = 100pF, R_{Discharge} = 1.5K\Omega, V_P = 3.3V, V_N$ grounded.

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

Note 5: These measurements performed with no external capacitor on V_P (V_P floating).

Mechanical Details

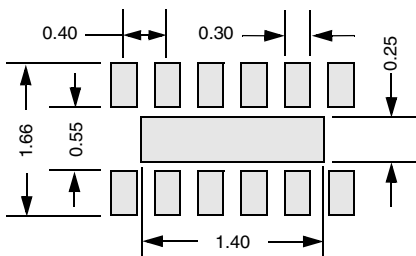
uDFN-12 Mechanical Specifications, 0.4mm

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

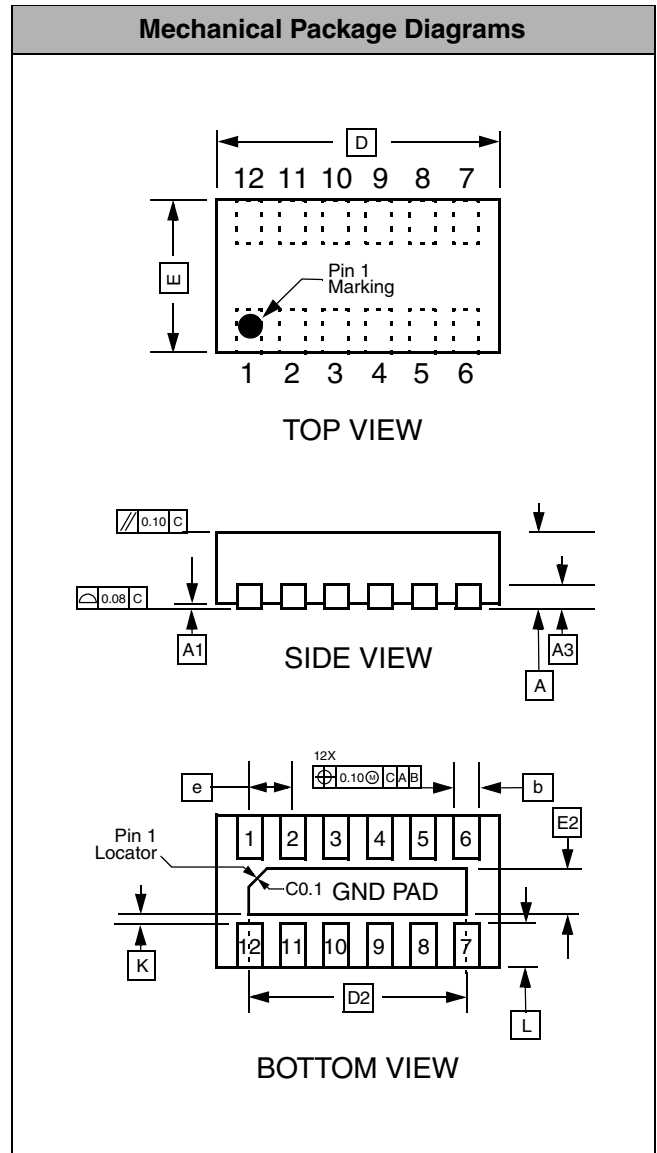
PACKAGE DIMENSIONS						
Package	uDFN					
JEDEC No.	MO-229C*					
Leads	12					
Dim.	Millimeters			Inches		
	Min	Nom	Max	Min	Nom	Max
A	0.45	0.50	0.55	0.018	0.020	0.022
A1	0.00	0.02	0.05	0.000	0.001	0.002
A3	0.127 REF			0.005 REF		
b	0.15	0.20	0.25	0.006	0.008	0.010
D	2.40	2.50	2.60	0.094	0.098	0.102
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	0.20			0.008		
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.

Recommend PCB Land Pattern



Note: Dimensions in millimeters. Drawing not to scale.



Dimensions for 12-Lead, 0.4mm Pitch uDFN Package