



# Low Capacitance ESD Protection for High-Speed Serial Interfaces

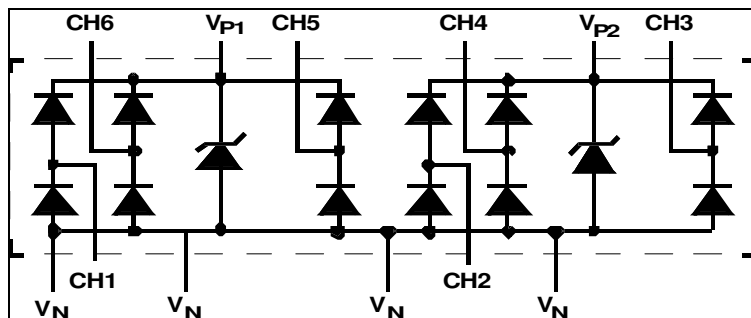
## CM1263-06DE

### Features

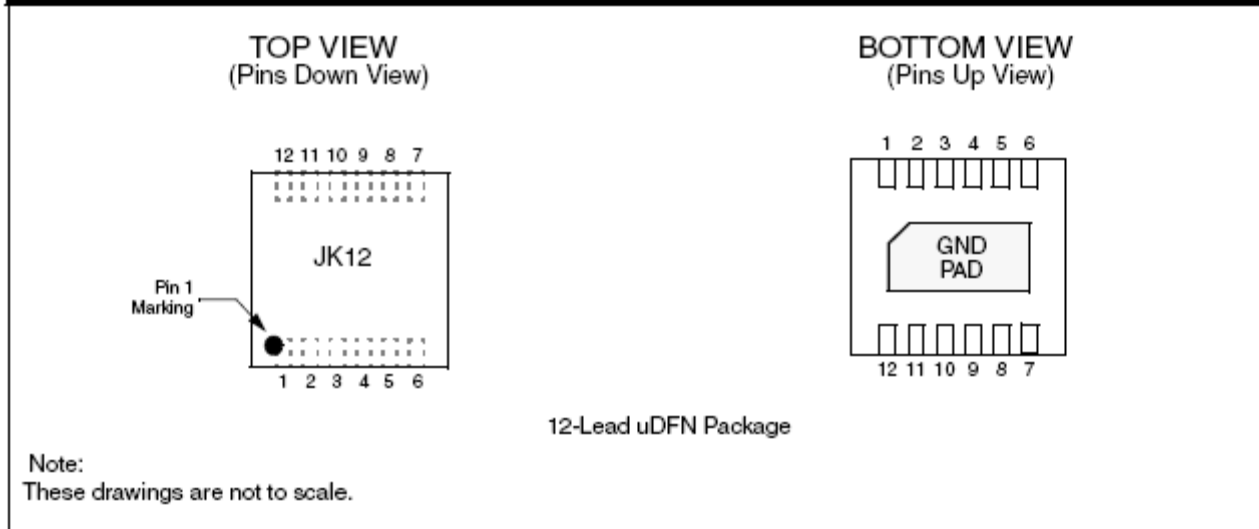
- 6 channels of ESD Protection
- 1pF loading capacitance per channel typical
- ±8kV ESD protection (IEC 61000-4-2, contact discharge)
- ±15kV ESD protection (IEC 61000-4-2, air discharge)
- RoHS-compliant uDFN-12 package

### 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	$\mu A$
$V_F$	Diode Forward Voltage Top Diode Bottom Diode	$T_A=25^\circ C; I_F=8mA; V_P=3.3V, V_N=0V$	0.60 0.60	0.80 0.80	0.95 0.95	V V
$I_{LEAK}$	Channel Leakage Current	$T_A=25^\circ C; V_P=3.3V, V_N=0V$ (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
$\Delta C_{IN}$	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; $T_A=25^\circ C$	$\pm 8$ $\pm 15$			kV 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 3		+9.96 -1.6		V V
$R_{DYN}$	Dynamic Resistance Positive Transients Negative Transients	$T_A=25^\circ C, I_{PP}=1A, t_p=8/20\mu S$ Any I/O pin to Ground; Note 3		0.96 0.5		$\Omega$ $\Omega$

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

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

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

# CM1263-06DE

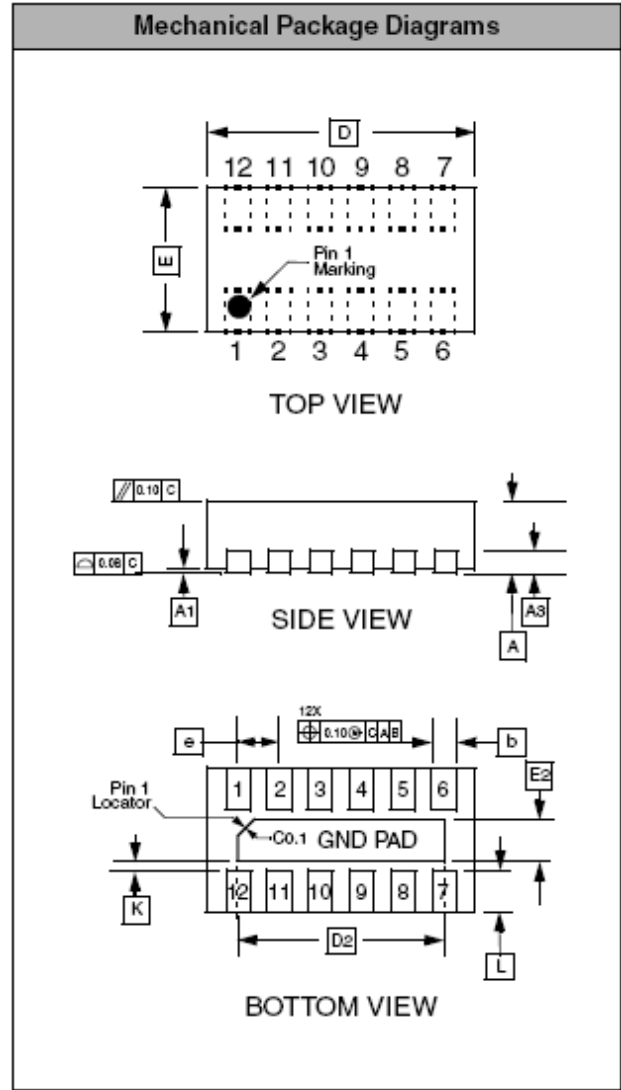
## Mechanical Details

### 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						

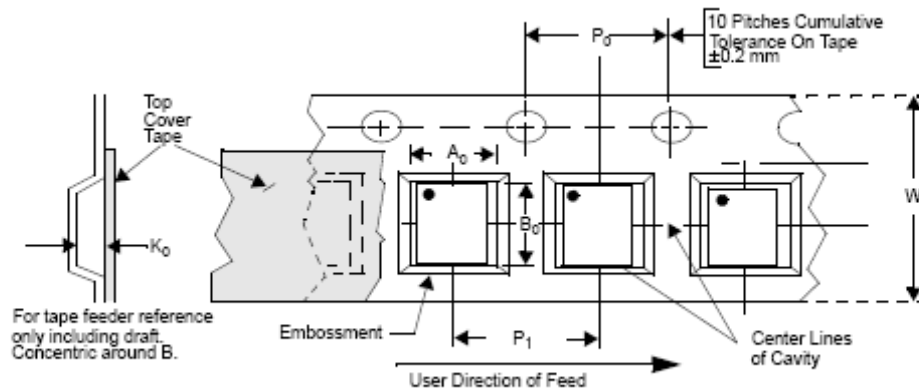
\*This package is compliant with JEDEC standard MO-229C with the exception of the D, D2, E, E2, K and L dimensions as called out in the table above.




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



ON Semiconductor and  are registered trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

## PUBLICATION ORDERING INFORMATION

### LITERATURE FULFILLMENT:

Literature Distribution Center for ON Semiconductor  
P.O. Box 5163, Denver, Colorado 80217 USA  
**Phone:** 303-675-2175 or 800-344-3860 Toll Free USA/Canada  
**Fax:** 303-675-2176 or 800-344-3867 Toll Free USA/Canada  
**Email:** [orderlit@onsemi.com](mailto:orderlit@onsemi.com)

**N. American Technical Support:** 800-282-9855  
Toll Free USA/Canada  
**Europe, Middle East and Africa Technical Support:**  
Phone: 421 33 790 2910  
**Japan Customer Focus Center**  
Phone: 81-3-5773-3850

ON Semiconductor website: [www.onsemi.com](http://www.onsemi.com)  
Order Literature: <http://www.onsemi.com/orderlit>  
For additional information, please contact your local Sales Representative