

# CM1263-02SE

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

### Features

- 2 Channels of ESD Protection
- 0.85 pF Loading Capacitance per Channel Typical
- Provides ESD Protection to IEC61000-4-2 Level 4:
  - $\pm 8$  kV Contact Discharge
  - $\pm 15$  kV Air Discharge
- 5-Pin SOT-553 Package
- 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



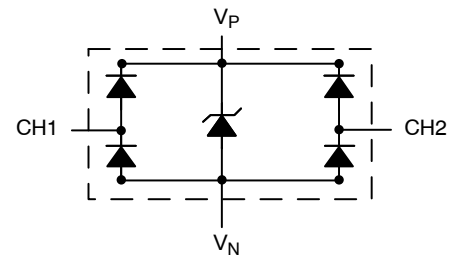
ON Semiconductor®

<http://onsemi.com>



SOT-553  
SE SUFFIX  
CASE 463B

### BLOCK DIAGRAM



### MARKING DIAGRAM



L63 = Specific Device Code  
M = Date Code

### ORDERING INFORMATION

Device	Package	Shipping†
CM1263-02SE	SOT-553 (Pb-Free)	5000/Tape & Reel

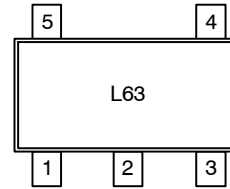
†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

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**Table 1. PIN DESCRIPTIONS**

5-Pin, SOT-553 Package	
Pin	Description
1	$V_P$
2	$V_N$
3	NC
4	(CH1) ESD Channel #1
5	(CH2) ESD Channel #2

**PACKAGE / PINOUT DIAGRAM**



## 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.

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**Table 3. ELECTRICAL OPERATING CHARACTERISTICS** (Note 1)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
V <sub>P</sub>	Operating Supply Voltage (V <sub>P</sub> - V <sub>N</sub> )			3.3	5.5	V
I <sub>P</sub>	Operating Supply Current	(V <sub>P</sub> - V <sub>N</sub> ) = 3.3 V			8.0	μA
V <sub>F</sub>	Diode Forward Voltage Top Diode Bottom Diode	I <sub>F</sub> = 8 mA; T <sub>A</sub> = 25°C	0.60 0.60	0.80 0.80	0.95 0.95	V
I <sub>LEAK</sub>	Channel Leakage Current	T <sub>A</sub> = 25°C; V <sub>P</sub> = 5 V, V <sub>N</sub> = 0 V, V <sub>TEST</sub> = 0 to 5 V		0.1	1.0	μA
C <sub>IN</sub>	Channel Input Capacitance	At 1 MHz, V <sub>P</sub> = 3.3 V, V <sub>N</sub> = 0 V, V <sub>IN</sub> = 1.65 V		0.85	1.2	pF
ΔC <sub>IN</sub>	Channel Input Capacitance Matching	At 1 MHz, V <sub>P</sub> = 3.3 V, V <sub>N</sub> = 0 V, V <sub>IN</sub> = 1.65 V		0.02		pF
V <sub>ESD</sub>	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	T <sub>A</sub> = 25°C; (Notes 2 and 3) T <sub>A</sub> = 25°C; (Note 3)		±8 ±15		kV
V <sub>CL</sub>	Channel Clamp Voltage Positive Transients Negative Transients	T <sub>A</sub> = 25°C, I <sub>PP</sub> = 1 A, t <sub>P</sub> = 8/20 μS (Note 3)		+9.96 -1.6		V
R <sub>DYN</sub>	Dynamic Resistance Positive Transients Negative Transients	I <sub>PP</sub> = 1 A, t <sub>P</sub> = 8/20 μS Any I/O pin to Ground; (Note 3)		0.96 0.5		Ω

1. All parameters specified at T<sub>A</sub> = -40°C to +85°C unless otherwise noted.
2. Standard IEC 61000-4-2 with C<sub>Discharge</sub> = 150pF, R<sub>Discharge</sub> = 330 Ω, V<sub>P</sub> = 3.3 V, V<sub>N</sub> grounded.
3. These measurements performed with no external capacitor on V<sub>P</sub> (V<sub>P</sub> floating).

# MECHANICAL CASE OUTLINE

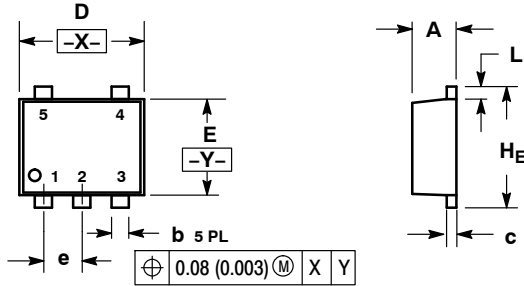
## PACKAGE DIMENSIONS



SCALE 4:1

SOT-553, 5 LEAD  
CASE 463B  
ISSUE C

DATE 20 MAR 2013

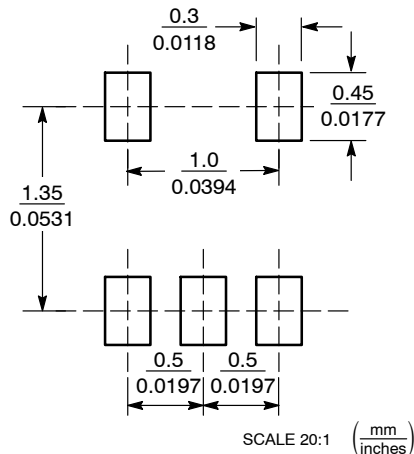


NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.

DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.50	0.55	0.60	0.020	0.022	0.024
b	0.17	0.22	0.27	0.007	0.009	0.011
c	0.08	0.13	0.18	0.003	0.005	0.007
D	1.55	1.60	1.65	0.061	0.063	0.065
E	1.15	1.20	1.25	0.045	0.047	0.049
e	0.50 BSC			0.020 BSC		
L	0.10	0.20	0.30	0.004	0.008	0.012
H <sub>E</sub>	1.55	1.60	1.65	0.061	0.063	0.065

### RECOMMENDED SOLDERING FOOTPRINT\*



### GENERIC MARKING DIAGRAM\*



- XX = Specific Device Code
- M = Date Code
- = Pb-Free Package

(Note: Microdot may be in either location)

\*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present. Some products may not follow the Generic Marking.

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

- STYLE 1:  
PIN 1. BASE  
2. EMITTER  
3. BASE  
4. COLLECTOR  
5. COLLECTOR

- STYLE 2:  
PIN 1. CATHODE  
2. COMMON ANODE  
3. CATHODE 2  
4. CATHODE 3  
5. CATHODE 4

- STYLE 3:  
PIN 1. ANODE 1  
2. N/C  
3. ANODE 2  
4. CATHODE 2  
5. CATHODE 1

- STYLE 4:  
PIN 1. SOURCE 1  
2. DRAIN 1/2  
3. SOURCE 1  
4. GATE 1  
5. GATE 2

- STYLE 5:  
PIN 1. ANODE  
2. EMITTER  
3. BASE  
4. COLLECTOR  
5. CATHODE

- STYLE 6:  
PIN 1. EMITTER 2  
2. BASE 2  
3. EMITTER 1  
4. COLLECTOR 1  
5. COLLECTOR 2/BASE 1

- STYLE 7:  
PIN 1. BASE  
2. EMITTER  
3. BASE  
4. COLLECTOR  
5. COLLECTOR

- STYLE 8:  
PIN 1. CATHODE  
2. COLLECTOR  
3. N/C  
4. BASE  
5. EMITTER

- STYLE 9:  
PIN 1. ANODE  
2. CATHODE  
3. ANODE  
4. ANODE  
5. ANODE

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