

# Configurable Multifunction Gate NL7SZ57

The NL7SZ57 is an advanced high-speed CMOS multifunction gate. The device allows the user to choose logic functions AND, OR, NAND, NOR, XNOR, INVERT and BUFFER. The device has Schmitt-trigger inputs, thereby enhancing noise immunity.

#### **Features**

- Designed for 1.65 V to 5.5 V V<sub>CC</sub> Operation
- 3.3 ns  $t_{PD}$  at  $V_{CC} = 5 \text{ V (Typ)}$
- Inputs/Outputs Overvoltage Tolerant up to 5.5 V
- IOFF Supports Partial Power Down Protection
- Sink 24 mA at 3.0 V
- Chip Complexity < 100 FETs
- –Q Suffix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC–Q100 Qualified and PPAP Capable
- These Devices are Pb–Free, Halogen Free/BFR Free and are RoHS Compliant

#### MARKING DIAGRAMS



SC-88/SC70-6/ SOT-363 CASE 419B-02





SC-74 CASE 318F-05





UDFN6, 1.45x1.0, 0.5P CASE 517AQ





UDFN6, 1x1, 0.35P CASE 517BX



XXX = Specific Device Code

M = Date Code\*= Pb-Free Package

(Note: Microdot may be in either location or may not be present)

\*Date Code orientation and/or position may vary depending upon manufacturing location.

#### **ORDERING INFORMATION**

See detailed ordering and shipping information in the package dimensions section on page 8 of this data sheet.

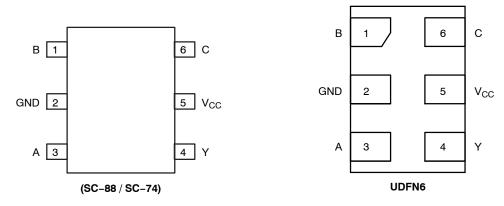


Figure 1. Pinout (Top View)

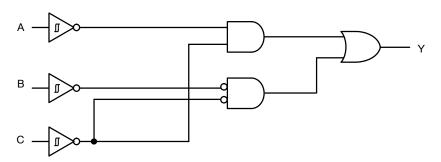


Figure 2. Function Diagram

#### **PIN ASSIGNMENT**

Pin	Function
1	В
2	GND
3	A
4	Y
5	V <sub>CC</sub>
6	С

#### **FUNCTION TABLE\***

	Input					
Α	В	С	Υ			
L	L	L	Н			
L	L	Н	L			
L	Н	L	Н			
L	Н	Н	Н			
Н	L	L	L			
Н	L	Н	L			
Н	Н	L	L			
Н	Н	Н	Н			

<sup>\*</sup>To select a logic function, please refer to "Logic Configurations section".

#### **LOGIC CONFIGURATIONS**

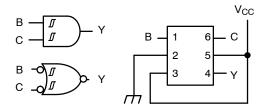


Figure 3. 2-Input AND (When A = "H")

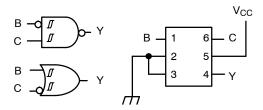


Figure 4. 2-Input NAND with input B inverted (When A = "L")

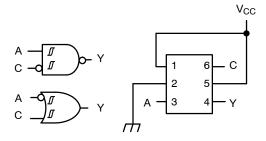


Figure 5. 2-Input NAND with Input C Inverted (When B = "H")

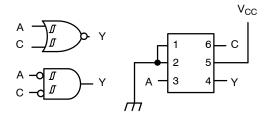


Figure 6. 2-Input NOR (When B = "L")

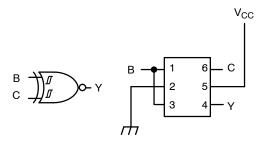


Figure 7. 2-Input XNOR (When A = B)

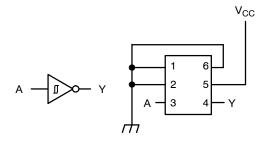


Figure 8. Inverter (When B = C = "L")

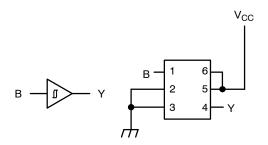


Figure 9. Buffer (When A = "L" and C = "H")

#### **MAXIMUM RATINGS**

Symbol	Parameter		Value	Unit
V <sub>CC</sub>	DC Supply Voltage		-0.5 to +6.5	V
V <sub>IN</sub>	DC Input Voltage		-0.5 to +6.5	V
V <sub>OUT</sub>	Т	ode (High or Low State) ri-State Mode (Note 1) rown Mode (V <sub>CC</sub> = 0 V)	-0.5 to V <sub>CC</sub> + 0.5 -0.5 to +6.5 -0.5 to +6.5	V
I <sub>IK</sub>	DC Input Diode Current	V <sub>IN</sub> < GND	-50	mA
I <sub>OK</sub>	DC Output Diode Current	V <sub>OUT</sub> < GND	-50	mA
I <sub>OUT</sub>	DC Output Source/Sink Current		±50	mA
I <sub>CC</sub> or I <sub>GND</sub>	DC Supply Current per Supply Pin or Ground Pin		±100	mA
T <sub>STG</sub>	Storage Temperature Range		-65 to +150	°C
TL	Lead Temperature, 1 mm from Case for 10 Secs		260	°C
TJ	Junction Temperature Under Bias		+150	°C
$\theta_{\sf JA}$	Thermal Resistance (Note 2)	SC-88 SC-74 UDFN6	377 320 154	°C/W
P <sub>D</sub>	Power Dissipation in Still Air	SC-88 SC-74 UDFN6	332 390 812	mW
MSL	Moisture Sensitivity		Level 1	
F <sub>R</sub>	Flammability Rating Oxygen	Oxygen Index: 28 to 34	UL 94 V-0 @ 0.125 in	
V <sub>ESD</sub>		Human Body Mode Charged Device Model Charged Device Model	>2000 >200 N/A	V
I <sub>LATCHUP</sub>	Latchup Performance (Note 4)		±100	mA

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. Applicable to devices with outputs that may be tri–stated.

- Measured with minimum pad spacing on an FR4 board, using 10 mm-by-1 inch, 2 ounce copper trace no air flow per JESD51-7.
   CDM tested to EIA/JESD22-C101-F. JEDEC recommends that ESD qualification to EIA/JESD22-A115-A (Machine Model) be discontinued per JEDEC/JEP172A.
- 4. Tested to EIA/JESD78 Class II.

#### RECOMMENDED OPERATING CONDITIONS

Symbol	Par	Min	Max	Unit	
V <sub>CC</sub>	Positive DC Supply Voltage		1.65	5.5	V
V <sub>IN</sub>	DC Input Voltage		0	5.5	V
V <sub>OUT</sub>	DC Output Voltage	Active-Mode (High or Low State) Tri-State Mode (Note 1) Power-Down Mode (V <sub>CC</sub> = 0 V)	0 0 0	V <sub>CC</sub> 5.5 5.5	V
T <sub>A</sub>	Operating Free-Air Temperature		-55	+125	°C
t <sub>r</sub> , t <sub>f</sub>	Input Rise or Fall Rate	$V_{CC} = 1.65 \text{ V to } 1.95 \text{ V}$ $V_{CC} = 2.3 \text{ V to } 2.7 \text{ V}$ $V_{CC} = 3.0 \text{ V to } 3.6 \text{ V}$ $V_{CC} = 4.5 \text{ V to } 5.5 \text{ V}$	0 0 0 0	No Limit No Limit No Limit No Limit	nS/V

Functional operation above the stresses listed in the Recommended Operating Ranges is not implied. Extended exposure to stresses beyond the Recommended Operating Ranges limits may affect device reliability.

#### DC ELECTRICAL CHARACTERISTICS

			V <sub>CC</sub>		Γ <sub>A</sub> = 25°(	C		≤ T <sub>A</sub> ≤		≤ T <sub>A</sub> ≤ 5°C	
Symbol	Parameter	Condition	(V)	Min	Тур	Max	Min	Max	Min	Max	Unit
$V_{T+}$	Positive Input		1.65	-	_	1.4	-	1.4	-	1.4	V
	Threshold Voltage		2.3	-	-	1.8	-	1.8	-	1.8	
			3.0	-	-	2.2	-	2.2	-	2.2	
			4.5	-	-	3.1	-	3.1	-	3.1	
			5.5	-	-	3.6	-	3.6	-	3.6	
$V_{T-}$	Negative Input		1.65	0.2	-	-	0.2	-	0.2	-	V
	Threshold Voltage		2.3	0.4	-	-	0.4	-	0.4	-	
			3.0	0.6	-	-	0.6	-	0.6	-	
			4.5	1.0	-	-	1.0	-	1.0	-	
			5.5	1.2	-	-	1.2	_	1.2	-	
V <sub>H</sub>	Negative Input		1.65	0.1	0.1	0.9	0.48	0.9	0.1	0.9	V
	Threshold Voltage		2.3	0.25	0.25	1.1	0.75	1.1	0.25	1.1	
			3.0	0.4	0.4	1.2	0.93	1.2	0.4	1.2	
			4.5	0.6	0.6	1.5	1.2	1.5	0.6	1.5	
			5.5	0.7	0.7	1.7	1.4	1.7	0.7	1.7	
V <sub>OH</sub>	High-Level Output Voltage	I <sub>OH</sub> = -50 μA	1.65 to 5.5	V <sub>CC</sub> - 0.1	V <sub>CC</sub>	-	V <sub>CC</sub> - 0.1	-	V <sub>CC</sub> - 0.1	-	V
	$V_{IN} = V_{IH}$ or $V_{IL}$	I <sub>OH</sub> = -4 mA	1.65	1.20	1.52	-	1.20	_	1.20	-	
		I <sub>OH</sub> = -8 mA	2.3	1.9	2.1	-	1.9	_	1.9	-	
		I <sub>OH</sub> = -16 mA	3	2.4	2.7	-	2.4	-	2.4	-	
		I <sub>OH</sub> = -24 mA	3	2.3	2.5	-	2.3	_	2.3	-	
		I <sub>OH</sub> = -32 mA	4.5	3.8	4	-	3.8	_	3.8	-	
V <sub>OL</sub>	Low-Level Output Voltage	I <sub>OL</sub> = 100 μA	1.65 to 5.5	-	-	0.1	-	0.1	-	0.1	V
	$V_{IN} = V_{IH}$ or $V_{IL}$	I <sub>OL</sub> = 4 mA	1.65	-	0.08	0.45	-	0.45	-	0.45	
		I <sub>OL</sub> = 8 mA	2.3	-	0.2	0.3	-	0.3	-	0.4	
		I <sub>OL</sub> = 16 mA	3	-	0.28	0.4	-	0.4	-	0.5	
		I <sub>OL</sub> = 24 mA	3	-	0.38	0.55	-	0.55	-	0.55	
		I <sub>OL</sub> = 32 mA	4.5	-	0.42	0.55	-	0.55	-	0.65	
I <sub>IN</sub>	Input Leakage Current	V <sub>IN</sub> = 5.5 V or GND	1.65 to 5.5	-	_	+0.1	-	+1.0	-	+1.0	μΑ
I <sub>OFF</sub>	Power Off Leakage Current	V <sub>IN</sub> = 5.5 V or V <sub>OUT</sub> = 5.5 V	0	-	-	1.0	-	10	-	10	μΑ
I <sub>CC</sub>	Quiescent Supply Current	V <sub>IN</sub> = 5.5 V or GND	5.5	_	_	1.0	-	10	-	10	μΑ

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

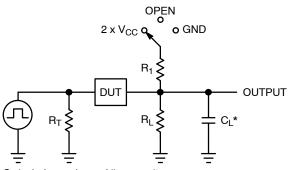
#### **AC ELECTRICAL CHARACTERISTICS**

				7	Γ <sub>A</sub> = 25°C			S ≤ T <sub>A</sub> S5°C	-55°C ≤ 12	≤ T <sub>A</sub> 25°C	
Symbol	Parameter	Condition	V <sub>CC</sub> (V)	Min	Тур	Max	Min	Max	Min	Max	Unit
t <sub>PLH</sub> , t <sub>PHL</sub>	Propagation Delay, (A or B or C) to Y (Figures 10 and 11)	$R_L = 1 \text{ k}\Omega,$ $C_L = 30 \text{ pF}$	1.65 to 1.95	_	8.6	14.4	-	14.4	-	14.4	ns
	ules 10 and 11)	$R_L = 500 \Omega$ , $CL = 30 pF$	2.3 to 2.7	_	5.1	8.3	-	8.3	-	8.3	
		R <sub>L</sub> = 500 Ω,	3.0 to 3.6	-	3.9	6.3	-	6.3	-	6.3	
		C <sub>L</sub> = 50 pF	4.5 to 5.5	-	3.3	5.1	-	5.1	-	5.1	

#### **CAPACITIVE CHARACTERISTICS**

Symbol	Parameter	Condition	Typical	Unit
C <sub>IN</sub>	Input Capacitance	$V_{CC}$ = 5.5 V, $V_{IN}$ = 0 V or $V_{CC}$	2.5	pF
C <sub>OUT</sub>	Output Capacitance	$V_{CC}$ = 5.5 V, $V_{IN}$ = 0 V or $V_{CC}$	4.0	pF
C <sub>PD</sub>	Power Dissipation Capacitance (Note 5)	10 MHz, $V_{CC}$ = 3.3 V, $V_{IN}$ = 0 V or $V_{CC}$ 10 MHz, $V_{CC}$ = 5.0 V, $V_{IN}$ = 0 V or $V_{CC}$	16 19.5	pF

<sup>5.</sup> C<sub>PD</sub> is defined as the value of the internal equivalent capacitance which is calculated from the operating current consumption without load. Average operating current can be obtained by the equation: I<sub>CC(OPR)</sub> = C<sub>PD</sub> • V<sub>CC</sub> • f<sub>in</sub> + I<sub>CC</sub>. C<sub>PD</sub> is used to determine the no–load dynamic power consumption; P<sub>D</sub> = C<sub>PD</sub> • V<sub>CC</sub><sup>2</sup> • f<sub>in</sub> + I<sub>CC</sub> • V<sub>CC</sub>.



Test	Switch Position	C <sub>L</sub> , pF	$R_L, \Omega$	R <sub>1</sub> , Ω
t <sub>PLH</sub> / t <sub>PHL</sub>	Open	See AC Characteristics Table		
t <sub>PLZ</sub> / t <sub>PZL</sub>	2 x V <sub>CC</sub>	50	500	500
t <sub>PHZ</sub> / t <sub>PZH</sub>	GND	50	500	500

X = Don't Care

 $C_L$  includes probe and jig capacitance  $R_T$  is  $Z_{OUT}$  of pulse generator (typically 50  $\Omega)$  f = 1 MHz

Figure 10. Test Circuit

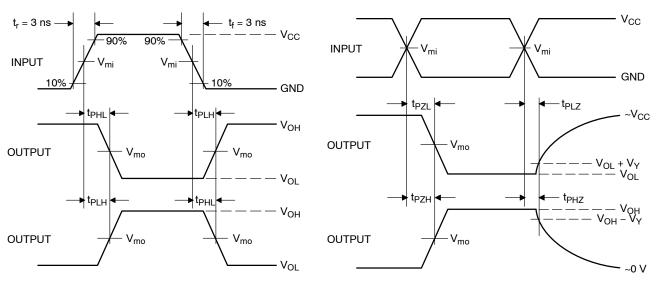


Figure 11. Switching Waveforms

		,		
V <sub>CC</sub> , V	V <sub>mi</sub> , V	t <sub>PLH</sub> , t <sub>PHL</sub>	t <sub>PZL</sub> , t <sub>PLZ</sub> , t <sub>PZH</sub> , t <sub>PHZ</sub>	V <sub>Y</sub> , V
1.65 to 1.95	V <sub>CC</sub> / 2	V <sub>CC</sub> / 2	V <sub>CC</sub> / 2	0.15
2.3 to 2.7	V <sub>CC</sub> / 2	V <sub>CC</sub> / 2	V <sub>CC</sub> / 2	0.15
3.0 to 3.6	V <sub>CC</sub> / 2	V <sub>CC</sub> / 2	V <sub>CC</sub> / 2	0.3
4.5 to 5.5	V <sub>CC</sub> / 2	V <sub>CC</sub> / 2	V <sub>CC</sub> / 2	0.3

#### **ORDERING INFORMATION**

Device	Package	Specific Device Code	Pin 1 Orientation (See below)	Shipping <sup>†</sup>
NL7SZ57DFT2G	SC-88 (Pb-Free)	MN	Q4	3000 / Tape & Reel
NL7SZ57DFT2G-Q*	SC-88 (Pb-Free)	MN	Q4	3000 / Tape & Reel
NL7SZ57DBVT1G	SC-74 (Pb-Free)	AL	Q4	3000 / Tape & Reel
NL7SZ57MU1TCG (Contact <b>onsemi</b> )	UDFN6, 1.45 x 1.0, 0.5P (Pb-Free)	TBD	Q4	3000 / Tape & Reel
NL7SZ57MU3TCG (Contact <b>onsemi</b> )	UDFN6, 1.0 x 1.0, 0.35P (Pb-Free)	P (Rotated 270° CW)	Q4	3000 / Tape & Reel

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

\*-Q Suffix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP

#### Pin 1 Orientation in Tape and Reel

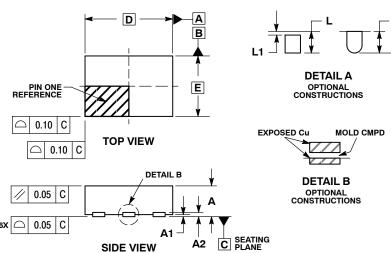
#### **Direction of Feed**

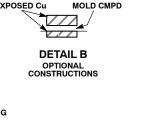


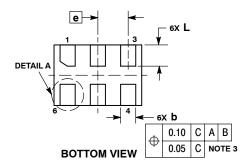
Capable.

#### **PACKAGE DIMENSIONS**

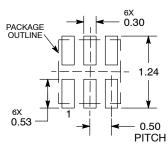
## UDFN6, 1.45x1.0, 0.5P CASE 517AQ ISSUE O







#### MOUNTING FOOTPRINT



**DIMENSIONS: MILLIMETERS** 

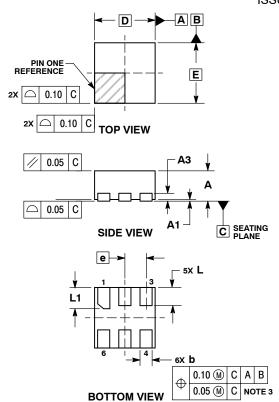
\*For additional information on our Pb-Free strategy and soldering details, please download the **onsemi** Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

- NOTES:
  1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
  2. CONTROLLING DIMENSION: MILLIMETERS.
  3. DIMENSION & APPLIES TO PLATED TERMINAL AND IS MEASURED BETWEEN 0.15 AND 0.30 mm FROM THE TERMINAL TIP.

	<b>MILLIMETERS</b>				
DIM	MIN	MAX			
Α	0.45	0.55			
A1	0.00	0.05			
A2	0.07 REF				
b	0.20	0.30			
D	1.45	BSC			
Е	1.00 BSC				
е	0.50 BSC				
L	0.30	0.40			
11		0.15			

#### PACKAGE DIMENSIONS

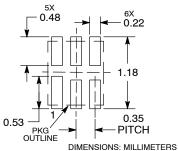
#### UDFN6, 1x1, 0.35P CASE 517BX **ISSUE O**



- NOTES:
  1. DIMENSIONING AND TOLERANCING PER DIMENSIONING AND TOLERANCING FEA ASME Y14.5M, 1994. CONTROLLING DIMENSION: MILLIMETERS. DIMENSION 6 APPLIES TO PLATED
- TERMINAL AND IS MEASURED BETWEEN
  0.15 AND 0.20 MM FROM TERMINAL TIP.
  PACKAGE DIMENSIONS EXCLUSIVE OF
  BURRS AND MOLD FLASH.

DOTTI TO AIND MICED I					
	MILLIN	MILLIMETERS			
DIM	MIN	MAX			
Α	0.45	0.55			
A1	0.00	0.05			
А3	0.13	REF			
b	0.12	0.22			
D	1.00	BSC			
Е	1.00	BSC			
е	0.35 BSC				
L	0.25	0.35			
L1	0.30	0.40			

#### RECOMMENDED **SOLDERING FOOTPRINT\***



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

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#### **PUBLICATION ORDERING INFORMATION**

LITERATURE FULFILLMENT: Email Requests to: orderlit@onsemi.com

onsemi Website: www.onsemi.com

TECHNICAL SUPPORT North American Technical Support: Voice Mail: 1 800-282-9855 Toll Free USA/Canada Phone: 011 421 33 790 2910

Europe, Middle East and Africa Technical Support:

Phone: 00421 33 790 2910

For additional information, please contact your local Sales Representative





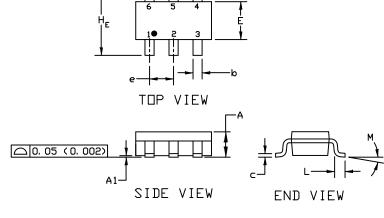
SC-74 CASE 318F ISSUE P

**DATE 07 OCT 2021** 

#### NOTES:

- 1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994
- 2. CONTROLLING DIMENSION: INCHES
- MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF THE BASE MATERIAL.

	MILLIMETERS			INCHES		
DIM	MIN.	N□M.	MAX.	MIN.	N□M.	MAX.
A	0. 90	1. 00	1. 10	0. 035	0. 039	0. 043
A1	0. 01	0. 06	0. 10	0. 001	0. 002	0. 004
ھ	0, 25	0. 37	0. 50	0. 010	0. 015	0. 020
С	0.10	0. 18	0. 26	0. 004	0. 007	0. 010
D	2. 90	3. 00	3. 10	0. 114	0. 118	0. 122
Ε	1. 30	1. 50	1. 70	0. 051	0. 059	0. 067
е	0. 85	0. 95	1. 05	0. 034	0. 037	0. 041
Η <sub>E</sub>	2. 50	2. 75	3. 00	0. 099	0. 108	0. 118
L	0. 20	0. 40	0. 60	0. 008	0. 016	0. 024
М	0*		10*	0*		10*



## GENERIC MARKING DIAGRAM\*

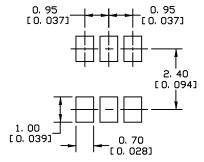


XXX = Specific Device Code

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 UN Seniconductor Soldering and Mounting Techniques Reference Manual, SULDERRM/D.

SOLDERING FOOTPRINT

STYLE 1: PIN 1. CATHODE 2. ANODE 3. CATHODE 4. CATHODE 5. ANODE 6. CATHODE	STYLE 2: PIN 1. NO CONNECTION 2. COLLECTOR 3. EMITTER 4. NO CONNECTION 5. COLLECTOR 6. BASE	STYLE 3: PIN 1. EMITTER 1 2. BASE 1 3. COLLECTOR 2 4. EMITTER 2 5. BASE 2 6. COLLECTOR 1	STYLE 4: PIN 1. COLLECTOR 2 2. EMITTER 1/EMITTER 2 3. COLLECTOR 1 4. EMITTER 3 5. BASE 1/BASE 2/COLLECTOR 3 6. BASE 3	STYLE 5: PIN 1. CHANNEL 1 2. ANODE 3. CHANNEL 2 4. CHANNEL 3 5. CATHODE 6. CHANNEL 4	STYLE 6: PIN 1. CATHODE 2. ANODE 3. CATHODE 4. CATHODE 5. CATHODE 6. CATHODE
STYLE 7: PIN 1. SOURCE 1 2. GATE 1 3. DRAIN 2 4. SOURCE 2 5. GATE 2 6. DRAIN 1	STYLE 8: PIN 1. EMITTER 1 2. BASE 2 3. COLLECTOR 2 4. EMITTER 2 5. BASE 1 6. COLLECTOR 1	STYLE 9: PIN 1. EMITTER 2 2. BASE 2 3. COLLECTOR 1 4. EMITTER 1 5. BASE 1 6. COLLECTOR 2	STYLE 10: PIN 1. ANODE/CATHODE 2. BASE 3. EMITTER 4. COLLECTOR 5. ANODE 6. CATHODE	STYLE 11: PIN 1. EMITTER 2. BASE 3. ANODE/CATHOD 4. ANODE 5. CATHODE 6. COLLECTOR	E

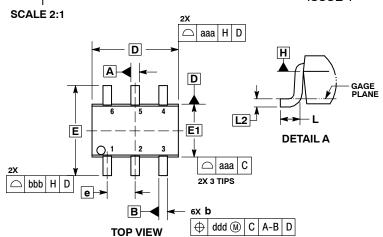
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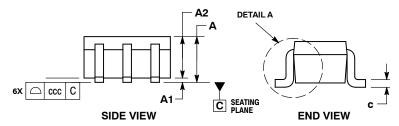
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**DATE 11 DEC 2012** 





#### NOTES:

- 1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M. 1994.
- CONTROLLING DIMENSION: MILLIMETERS.
  DIMENSIONS D AND E1 DO NOT INCLUDE MOLD FLASH,
- DIMENSIONS D AND E1 DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS. MOLD FLASH, PROTRUSIONS, OR GATE BURRS SHALL NOT EXCEED 0.20 PER END. DIMENSIONS D AND E1 AT THE OUTERMOST EXTREMES OF THE PLASTIC BODY AND DATUM H. DIMENSIONS b AND B ARE DETERMINED AT DATUM H. DIMENSIONS b AND C APPLY TO THE FLAT SECTION OF THE LEAD BETWEEN 0.08 AND 0.15 FROM THE TIP.

- DIMENSION 6 DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.08 TOTAL IN
- EXCESS OF DIMENSION 6 AT MAXIMUM MATERIAL CONDITION. THE DAMBAR CANNOT BE LOCATED ON THE LOWER RADIUS OF THE FOOT.

	MILLIMETERS			INCHES		
DIM	MIN	NOM	MAX	MIN	NOM	MAX
Α			1.10			0.043
A1	0.00		0.10	0.000		0.004
A2	0.70	0.90	1.00	0.027	0.035	0.039
b	0.15	0.20	0.25	0.006	0.008	0.010
С	0.08	0.15	0.22	0.003	0.006	0.009
D	1.80	2.00	2.20	0.070	0.078	0.086
E	2.00	2.10	2.20	0.078	0.082	0.086
E1	1.15	1.25	1.35	0.045	0.049	0.053
е	0.65 BSC			0.026 BSC		
L	0.26	0.36	0.46	0.010	0.014	0.018
L2	0.15 BSC			0.006 BSC		
aaa	0.15			0.006		
bbb	0.30			0.012		
ccc	0.10			0.004		
ddd		0.10		0.004		

#### **GENERIC MARKING DIAGRAM\***



XXX = Specific Device Code

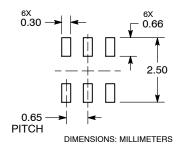
= Date Code\*

= Pb-Free Package

(Note: Microdot may be in either location)

- \*Date Code orientation and/or position may vary depending upon manufacturing 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.

#### **RECOMMENDED** SOLDERING FOOTPRINT\*



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

#### **STYLES ON PAGE 2**

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**DATE 11 DEC 2012** 

STYLE 1: PIN 1. EMITTER 2 2. BASE 2 3. COLLECTOR 1 4. EMITTER 1 5. BASE 1 6. COLLECTOR 2	STYLE 2: CANCELLED	STYLE 3: CANCELLED	STYLE 4: PIN 1. CATHODE 2. CATHODE 3. COLLECTOR 4. EMITTER 5. BASE 6. ANODE	STYLE 5: PIN 1. ANODE 2. ANODE 3. COLLECTOR 4. EMITTER 5. BASE 6. CATHODE	STYLE 6: PIN 1. ANODE 2 2. N/C 3. CATHODE 1 4. ANODE 1 5. N/C 6. CATHODE 2
STYLE 7: PIN 1. SOURCE 2 2. DRAIN 2 3. GATE 1 4. SOURCE 1 5. DRAIN 1 6. GATE 2	STYLE 8: CANCELLED	STYLE 9: PIN 1. EMITTER 2 2. EMITTER 1 3. COLLECTOR 1 4. BASE 1 5. BASE 2 6. COLLECTOR 2	STYLE 10: PIN 1. SOURCE 2 2. SOURCE 1 3. GATE 1 4. DRAIN 1 5. DRAIN 2 6. GATE 2	STYLE 11: PIN 1. CATHODE 2 2. CATHODE 2 3. ANODE 1 4. CATHODE 1 5. CATHODE 1 6. ANODE 2	STYLE 12: PIN 1. ANODE 2 2. ANODE 2 3. CATHODE 1 4. ANODE 1 5. ANODE 1 6. CATHODE 2
STYLE 13: PIN 1. ANODE 2. N/C 3. COLLECTOR 4. EMITTER 5. BASE 6. CATHODE	STYLE 14: PIN 1. VREF 2. GND 3. GND 4. IOUT 5. VEN 6. VCC	STYLE 15: PIN 1. ANODE 1 2. ANODE 2 3. ANODE 3 4. CATHODE 3 5. CATHODE 2 6. CATHODE 1	STYLE 16: PIN 1. BASE 1 2. EMITTER 2 3. COLLECTOR 2 4. BASE 2 5. EMITTER 1 6. COLLECTOR 1	STYLE 17: PIN 1. BASE 1 2. EMITTER 1 3. COLLECTOR 2 4. BASE 2 5. EMITTER 2 6. COLLECTOR 1	STYLE 18: PIN 1. VIN1 2. VCC 3. VOUT2 4. VIN2 5. GND 6. VOUT1
STYLE 19: PIN 1. I OUT 2. GND 3. GND 4. V CC 5. V EN 6. V REF	STYLE 20: PIN 1. COLLECTOR 2. COLLECTOR 3. BASE 4. EMITTER 5. COLLECTOR 6. COLLECTOR	STYLE 21: PIN 1. ANODE 1 2. N/C 3. ANODE 2 4. CATHODE 2 5. N/C 6. CATHODE 1	STYLE 22: PIN 1. D1 (i) 2. GND 3. D2 (i) 4. D2 (c) 5. VBUS 6. D1 (c)	STYLE 23: PIN 1. Vn 2. CH1 3. Vp 4. N/C 5. CH2 6. N/C	STYLE 24: PIN 1. CATHODE 2. ANODE 3. CATHODE 4. CATHODE 5. CATHODE 6. CATHODE
STYLE 25: PIN 1. BASE 1 2. CATHODE 3. COLLECTOR 2 4. BASE 2 5. EMITTER 6. COLLECTOR 1	STYLE 26: PIN 1. SOURCE 1 2. GATE 1 3. DRAIN 2 4. SOURCE 2 5. GATE 2 6. DRAIN 1	STYLE 27: PIN 1. BASE 2 2. BASE 1 3. COLLECTOR 1 4. EMITTER 1 5. EMITTER 2 6. COLLECTOR 2	STYLE 28: PIN 1. DRAIN 2. DRAIN 3. GATE 4. SOURCE 5. DRAIN 6. DRAIN	STYLE 29: PIN 1. ANODE 2. ANODE 3. COLLECTOR 4. EMITTER 5. BASE/ANODE 6. CATHODE	STYLE 30: PIN 1. SOURCE 1 2. DRAIN 2 3. DRAIN 2 4. SOURCE 2 5. GATE 1 6. DRAIN 1

Note: Please refer to datasheet for style callout. If style type is not called out in the datasheet refer to the device datasheet pinout or pin assignment.

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