

Table 1. MAXIMUM RATINGS

Symbol	Rating	Value	Unit
V_{CC}	Positive DC Supply Voltage	-0.5 to +7.0	V
V_S	Switch Input / Output Voltage (Pins 1A, 1B, 2A and 2B)	-0.5 to + V_{CC} + 0.5	V
V_I	Digital Control Input Voltage (Pins 1C and 2C)	-0.5 to +7.0	V
I_{OK}	I/O port diode current	±50	mA
I_{IK}	Control input diode current	-50	mA
$I_{I/O}$	Continuous DC Current Through Analog Switch	±100	mA
I_L	Latch-up Current, (Above V_{CC} and below GND at 125°C)	±100	mA
T_s	Storage Temperature	-65 to +150	°C
V_{ESD}	ESD Withstand Voltage: Human Body Model (HBM) Machine Model (MM)	≥ 5000 > 400	V

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.

Table 2. RECOMMENDED OPERATING CONDITIONS

Symbol	Parameter	Min	Max	Unit	
V_{CC}	Positive DC Supply Voltage	1.65	5.5	V	
V_S	Switch Input / Output Voltage (Pins 1A, 2A, 1B and 2B)	GND	V_{CC}	V	
V_I	Digital Control Input Voltage (Pins 1C and 2C)	GND	5.5	V	
T_A	Operating Temperature Range	-55	+125	°C	
t_r, t_f	Input Transition Rise or Fall Time (ON/OFF Control Input)	$V_{CC} = < 3.0$ V $V_{CC} = \geq 3.0$ V	0 0	20 10	ns/V

Table 3. ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Condition	V_{CC}	Guaranteed Limit				Unit	
				25°C		-55° to 125°C			
				Min	Max	Min	Max		
V_{IH}	High-Level Input Voltage, Control Input		1.65 to 1.95			$V_{CC} \times 0.65$		V	
			2.3 to 5.5			$V_{CC} \times 0.7$			
V_{IL}	Low-Level Input Voltage, Control Input		1.65 to 1.95			$V_{CC} \times 0.35$		V	
			2.3 to 5.5			$V_{CC} \times 0.30$			
I_I	Input Leakage Current, Control Input	$V_I = V_{CC}$ or GND	5.5		±0.1		±1	μA	
$I_{S(ON)}$	ON-State Switch Leakage Current	$V_{IS} = V_{CC}$ or GND, $V_I = V_{IH}$, V_{OS} = Open	5.5		±0.1		±1	μA	
$I_{S(OFF)}$	OFF-State Switch Leakage Current	$V_{IS} = V_{CC}$ and V_{OS} = GND, or $V_{IS} = V_{CC}$ and $V_{OS} = V_{CC}$ GND, $V_I = V_{IL}$	5.5		±0.1		±1	μA	
I_{CC}	Quiescent Supply Current	$V_I = V_{CC}$ or GND	5.5		1.0		10	μA	
ΔI_{CC}	Supply Current Change	$V_I = V_{CC} - 0.6$	5.5				500	μA	
C_I	Control Input Capacitance		5				3.0	pF	
$C_{I/O(Off)}$	Switch OFF Input / Output Capacitance	See Figure 3	5				6.0	pF	
$C_{I/O(On)}$	Switch ON Input / Output Capacitance	See Figure 4	5				13	pF	

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Table 4. SWITCHING CHARACTERISTICS

Symbol	Parameter	Condition	V _{CC}	Guaranteed Limit		Unit	
				-55° to 125°C			
				Min	Max		
t _{PLH} , t _{PHL}	Propagation Delay, A to B, B to A	C _L = 30 pF, R _L = 1 kΩ	1.8		6.5	ns	
			2.5		3.3		
		C _L = 50 pF, R _L = 500 Ω	3.3		2.5		
			5.0		2.2		
t _{EN} (t _{PZL} , t _{PZH})	Enable Time, C to Analog Output (A or B)	C _L = 50 pF, R _L = 500 Ω See Figure 6	1.8		10	ns	
			2.5		6.5		
			3.3		5.5		
			5.0		4.9		
t _{PIS} (t _{PZI} , t _{PHZ})	Disable Time, C to Analog Output (A or B)	C _L = 50 pF, R _L = 500 Ω See Figure 6	1.8		9.0	ns	
			2.5		7.2		
			3.3		6.5		
			5.0		6.0		

Table 5. ANALOG SWITCH CHARACTERISTICS

Symbol	Parameter	Conditions	V _{CC}	25°C	-55° to 125°C		Unit
				Typ	Min	Max	
R _{ON}	On-Resistance	V _{IS} = V _{CC} or GND, V _I = V _{IH} , See Figure 2	I _S = 4 mA	1.65	12		30
			I _S = 8 mA	2.3	9		20
			I _S = 24 mA	3.0	7.5		15
			I _S = 32 mA	4.5	5.5		13
R _{ON(peak)}	Peak On-Resistance	V _{IS} = GND to V _{CC} ; V _I = V _{IH} , See Figure 2	I _S = 4 mA	1.65	74.5		220
			I _S = 8 mA	2.3	20		75
			I _S = 24 mA	3.0	11.5		25
			I _S = 32 mA	4.5	7.5		17
ΔR _{ON}	On-Resistance Mismatch between Switches	V _{IS} = GND to V _{CC} ; V _I = V _{IH} , See Figure 2	I _S = 4 mA	1.65			8.0
			I _S = 8 mA	2.3			5.0
			I _S = 24 mA	3.0			3.0
			I _S = 32 mA	4.5			2.0
BW	Bandwidth (f _{-3dB})	R _L = 50 Ω, C _L = 5 pF, f _{IN} = Sine Wave See Figure 8	1.65			> 270	MHz
			2.3			> 270	
			3.0			> 270	
			4.5			> 270	

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Table 5. ANALOG SWITCH CHARACTERISTICS (continued)

Symbol	Parameter	Conditions	V _{CC}	25°C		Unit	
					Typ		
ISO _{Off}	Off-Channel Feedthrough Isolation	$R_L = 600 \Omega$, $C_L = 50 \text{ pF}$, $f_{IN} = 1 \text{ MHz}$ Sine Wave See Figure 9	1.65	-70		dB	
			2.3	-70			
			3.0	-70			
			4.5	-70			
	R _L = 50 Ω , $C_L = 5 \text{ pF}$, $f_{IN} = 1 \text{ MHz}$ Sine Wave See Figure 9		1.65	-60			
			2.3	-60			
			3.0	-60			
			4.5	-60			
XTalk	Crosstalk Between Switches	$R_L = 600 \Omega$, $C_L = 50 \text{ pF}$, $f_{IN} = 1 \text{ MHz}$ Sine Wave See Figure 10	1.65	-100		dB	
			2.3	-100			
			3.0	-100			
			4.5	-100			
	R _L = 50 Ω , $C_L = 5 \text{ pF}$, $f_{IN} = 1 \text{ MHz}$ Sine Wave See Figure 10		1.65	-90			
			2.3	-90			
			3.0	-90			
			4.5	-90			
	Feedthrough Noise, Control to Switch	$R_L = 600 \Omega$, $C_L = 50 \text{ pF}$, $f_{IN} = 1 \text{ MHz}$ Square Wave, $t_r = t_f = 2 \text{ ns}$, See Figure 11	1.65	10		mV _{pp}	
			2.3	10			
			3.0	10			
			4.5	15			
THD	Total Harmonic Distortion	$C_L = 50 \text{ pF}$, $R_L = 50 \Omega$, $f_{IN} = 600 \text{ Hz}$ to 20 KHz Sine Wave, See Figure 12	2.3	0.025		%	
			3.0	0.015			
			4.5	0.01			

Table 6. POWER DISSIPATION CHARACTERISTICS

Symbol	Parameter	Conditions	V _{CC}	25°C		Unit
					Typ	
C _{PD}	Power Dissipation Capacitance	$f = 10 \text{ MHz}$	1.65	8.0		pF
			2.3	8.9		
			3.0	9.6		
			4.5	10.9		

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Table 7. DEVICE ORDERING INFORMATION

Device Order Number	Package	Shipping [†]
NLX2G66DMUTAG	UDFN8-0.5P, 1.95 mm x 1.0 mm (Pb-Free)	3000 / Tape & Reel
NLX2G66DMUTCG	UDFN8-0.5P, 1.95 mm x 1.0 mm (Pb-Free)	3000 / Tape & Reel
NLX2G66MU3TCG (In Development)	UDFN8-0.35P, 1.45 mm x 1.0 mm (Pb-Free)	3000 / Tape & Reel
NLX2G66FCTAG	WLCSP8, 1.888 mm x 0.888 mm (Pb-Free)	3000 / Tape & Reel

[†]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.

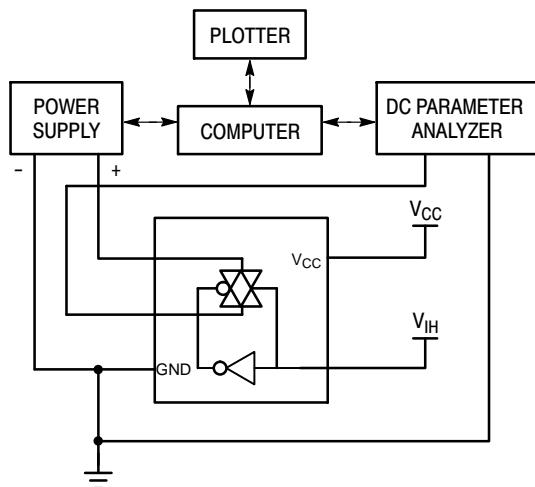


Figure 2. On Resistance Test Set-Up

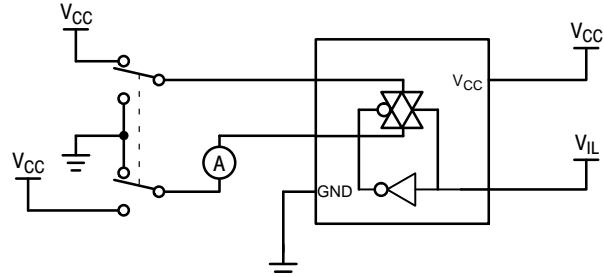


Figure 3. Maximum Off-Channel Leakage Current Test Set-Up

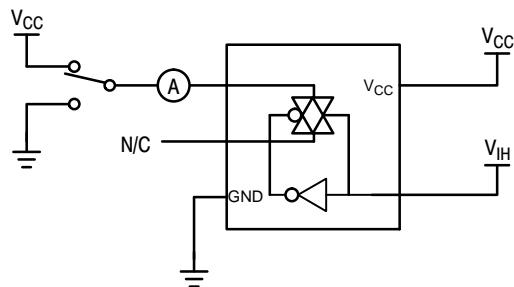


Figure 4. Maximum On-Channel Leakage Current Test Set-Up

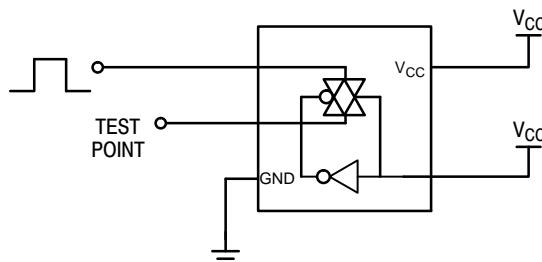


Figure 5. Propagation Delay Test Set-Up

Switch to Position 2 when testing t_{PLZ} and t_{PZL}
 Switch to Position 1 when testing t_{PHZ} and t_{PZH}

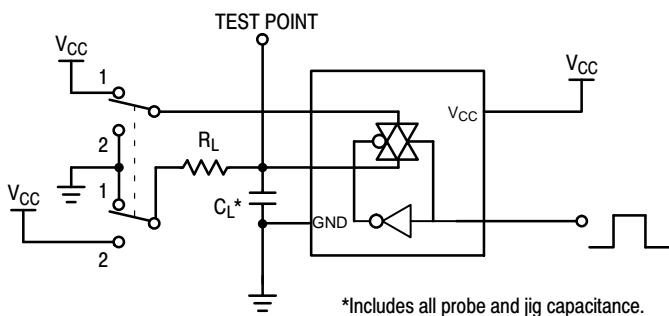


Figure 6. Propagation Delay Output Enable/Disable Test Set-Up

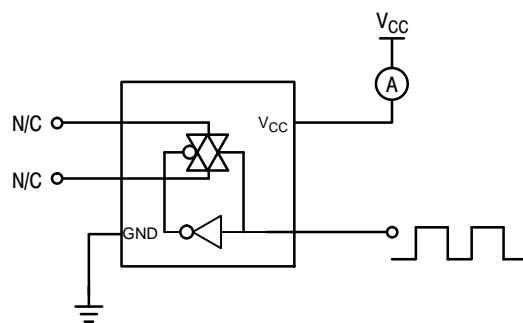


Figure 7. Power Dissipation Capacitance Test Set-Up

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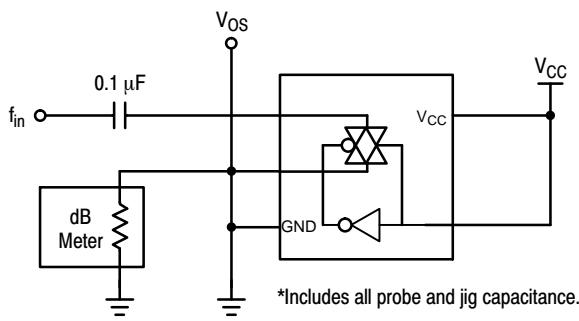


Figure 8. Maximum On-Channel Bandwidth Test Set-Up

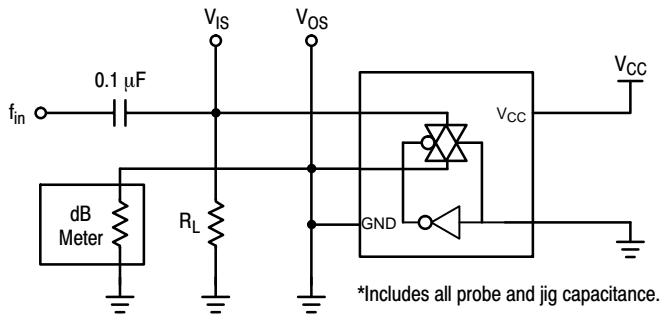


Figure 9. Off-Channel Feedthrough Isolation Test Set-Up

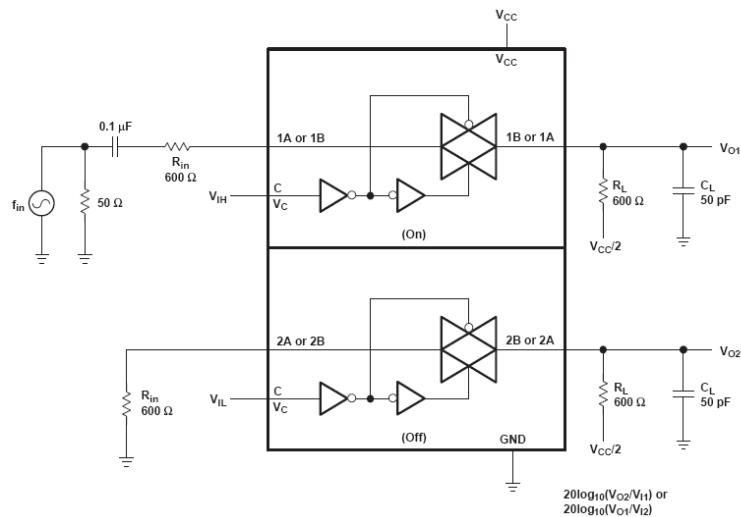


Figure 10. Crosstalk (between Switches)

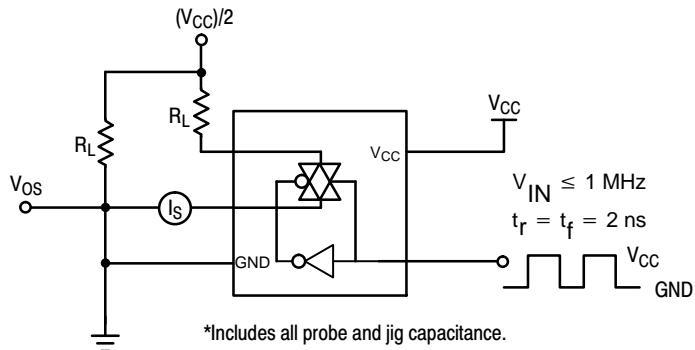


Figure 11. Feedthrough Noise, ON/OFF Control to Analog Out, Test Set-Up

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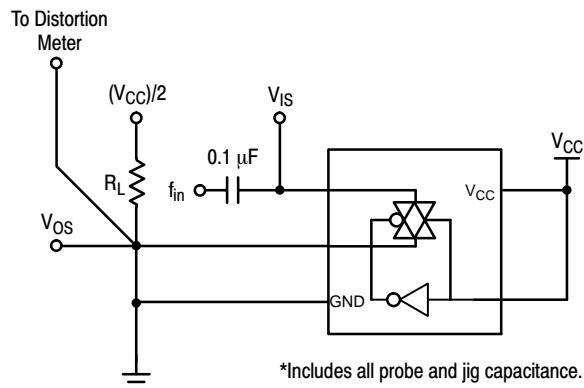


Figure 12. Total Harmonic Distortion Test Set-Up

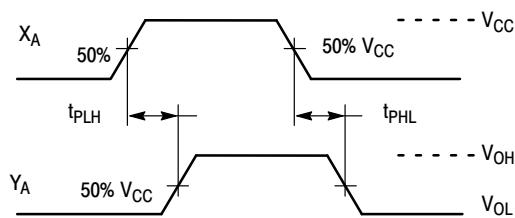


Figure 13. Propagation Delay, Analog In to Analog Out Waveforms

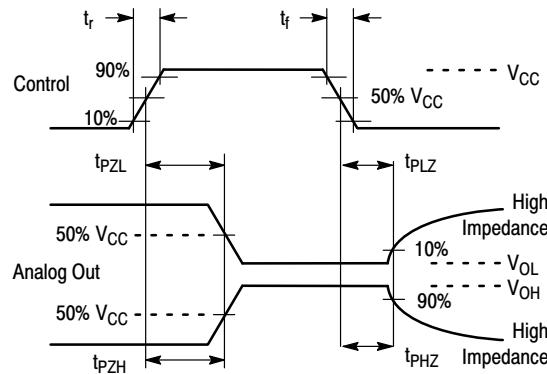
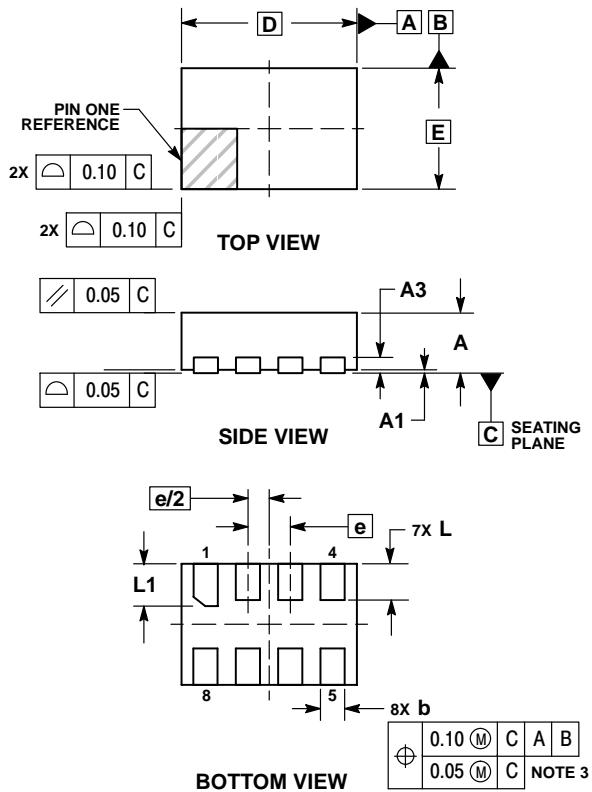


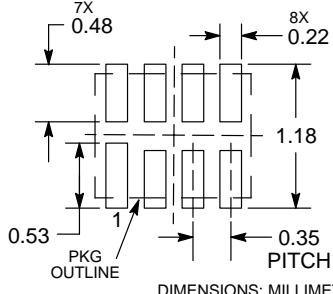
Figure 14. Propagation Delay, ON/OFF Control

PACKAGE DIMENSIONS

UDFN8 1.45x1.0, 0.35P
CASE 517BZ
ISSUE O



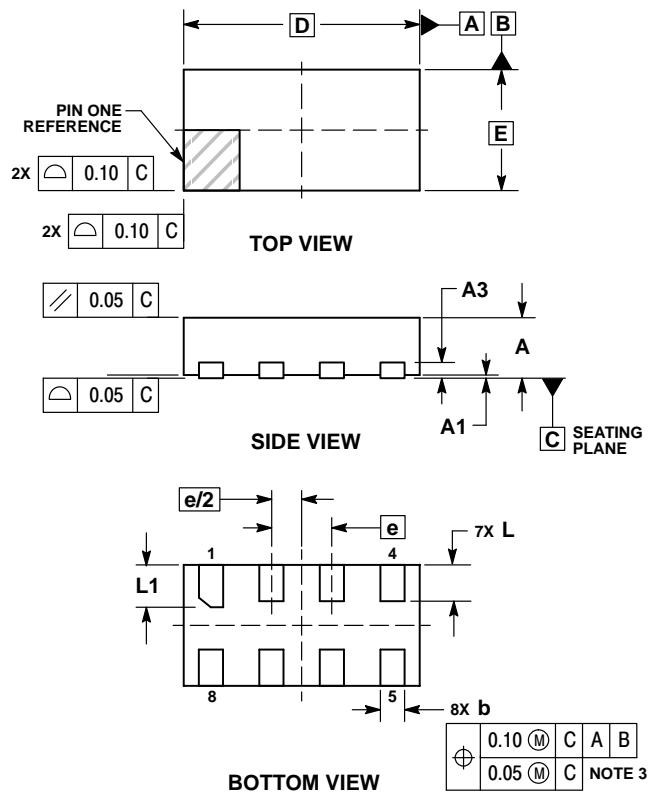
MILLIMETERS		
DIM	MIN	MAX
A	0.45	0.55
A1	0.00	0.05
A3	0.13	REF
b	0.15	0.25
D	1.45	BSC
E	1.00	BSC
e	0.35	BSC
L	0.25	0.35
L1	0.30	0.40

RECOMMENDED
SOLDERING FOOTPRINT*

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

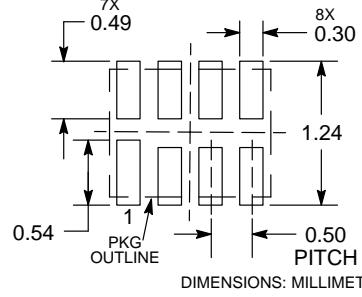
PACKAGE DIMENSIONS

UDFN8 1.95x1.0, 0.5P
CASE 517CA
ISSUE O



MILLIMETERS		
DIM	MIN	MAX
A	0.45	0.55
A1	0.00	0.05
A3	0.13 REF	
<i>b</i>	0.15	0.25
D	1.95 BSC	
E	1.00 BSC	
<i>e</i>	0.50 BSC	
L	0.25	0.35
L1	0.30	0.40

RECOMMENDED SOLDERING FOOTPRINT*



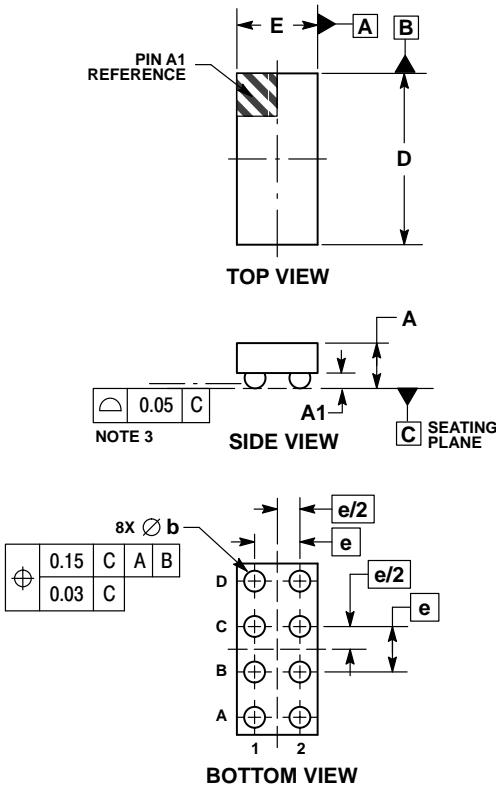
*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

PACKAGE DIMENSIONS

WLCSP8, 1.888x0.888

CASE 567MR

ISSUE O

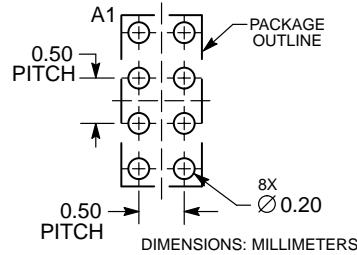


NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. COPLANARITY APPLIES TO SPHERICAL CROWNS OF SOLDER BALLS.

DIM	MILLIMETERS	
	MIN	MAX
A	—	0.50
A1	0.15	0.19
b	0.21	0.25
D	1.858	1.918
E	0.858	0.918
e	0.50	0.50 BSC

RECOMMENDED SOLDERING FOOTPRINT*



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