Manuals+ — User Manuals Simplified.

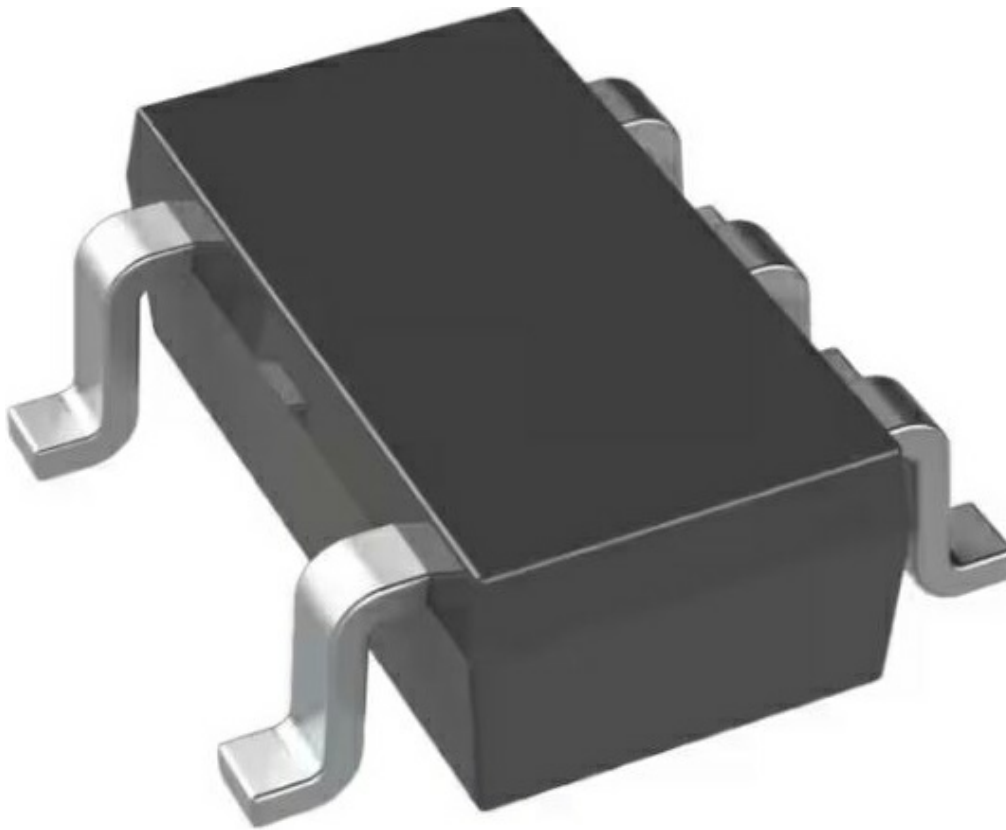# onsemi MC74VHC1G08 Single 2 Input And Gate User Guide

onsemi

onsemi MC74VHC1G08 Single 2 Input And Gate

Single 2-Input AND Gate MC74VHC1G08, MC74VHC1GT08
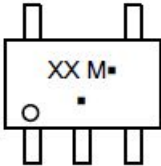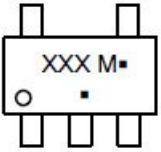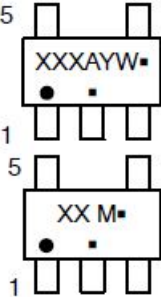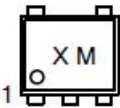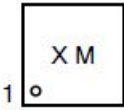
The MC74VHC1G08 / MC74VHC1GT08 is a single 2 input AND gate in tiny footprint packages. The MC74VHC1G08 has CMOS–level input thresholds while the MC74VHC1GT08 has TTL–level input thresholds. The input structures provide protection when voltages up to 5.5 V are applied, regardless of the supply voltage. This allows the device to be used to interface 5 V circuits to 3 V circuits. Some output structures also provide protection when VCC = 0 V and when the output voltage exceeds VCC. These input and output structures help prevent device destruction caused by supply voltage – input/output voltage mismatch, battery backup, hot insertion, etc.

Features

- Designed for 2.0 V to 5.5 V VCC Operation
- 3.5 ns tPD at 5 V (typ)
- Inputs/Outputs Over–Voltage Tolerant up to 5.5 V
- IOFF Supports Partial Power Down Protection
- Source/Sink 8 mA at 3.0 V
- Available in SC–88A, SC–74A, TSOP–5, SOT–953 and UDFN6 Packages
- Chip Complexity < 100 FETs
- NLV Prefix 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
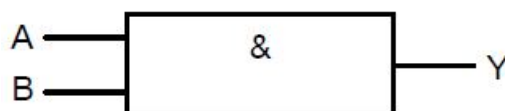
Figure 1. Logic Symbol

	SC−88A DF SUFFIX CASE 419A	XX M▪
	SC−74A DBV SUFFIX CASE 318BQ	XXX M▪
	TSOP−5 DT SUFFIX CASE 483	XXXAYW▪ XX M▪
	SOT−953 P5 SUFFIX CASE 527AE	X M
	UDFN6 1.2x1.0, 0.4P CASE 517AA−01	X M
	UDFN6 1.45 x 1.0 CASE 517AQ	X M
	UDFN6 1.0 x 1.0 CASE 517BX	X M

- XX = Specific Device Code
- M = Date Code*
- A = Assembly Location
- Y = Year
- W = Work Week
- ▪ = Pb−Free Package

(Note: Microdot may be in either location) *Date Code orientation and/or position may vary depending upon manufacturing location.

ORDERING INFORMATION

- See detailed ordering, marking and shipping information on page 8 of this data sheet.

MC74VHC1G08, MC74VHC1GT08
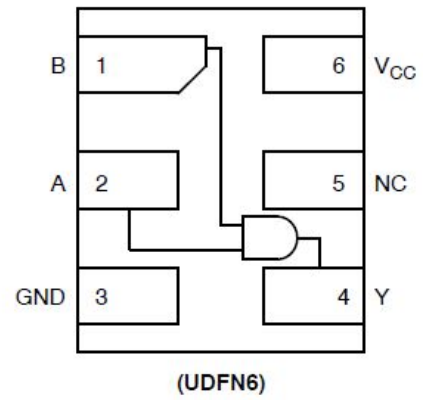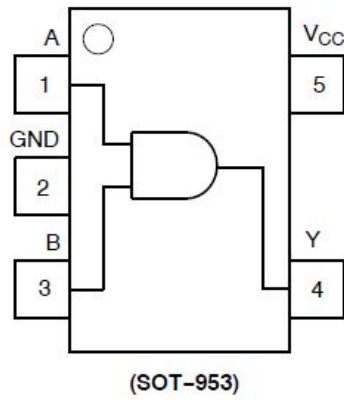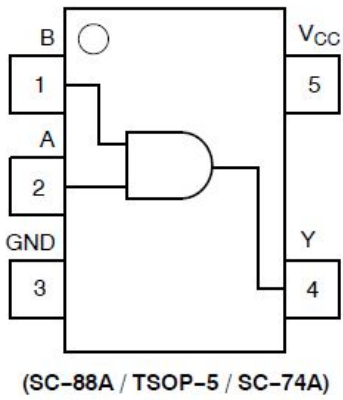
Figure 2. Pinout (Top View)

PIN ASSIGNMENT (SC−88A / TSOP−5 / SC−74A)

Pin	Function
1	B
2	A
3	GND
4	Y
5	VCC

PIN ASSIGNMENT (SOT−953)

Pin	Function
1	A
2	GND
3	B
4	Y
5	VCC

PIN ASSIGNMENT (UDFN)

Pin	Function
1	B
2	A
3	GND
4	Y
5	NC
6	VCC

FUNCTION TABLE

Input		Output
A	**B**	**Y**
L	L	L
L	H	L
H	L	L
H	H	H

MC74VHC1G08, MC74VHC1GT08

MAXIMUM RATINGS

Symbol	Characteristics		Value	Unit
VCC	DC Supply Voltage	TSOP−5, SC−88A (NLV) SC−74A, SC−88A, UDFN6, SOT−553, SOT−953	−0.5 to +7.0 −0.5 to +6.5	V

VIN	DC Input Voltage	TSOP–5, SC–88A (NLV) SC–74A, SC–88A, UDFN6, SOT–553, SOT–953	−0.5 to +7.0 −0.5 to +6.5	V
VOUT	DC Output Voltage (NLV)	1Gxx and MC74VHC1GT08P5T5G–L 22088	−0.5 to VCC + 0.5	V
		1GTxx Active–Mode (High or Low State)	−0.5 to VCC + 0.5	
		Tri–State Mode (Note 1) Power–Down Mode (VCC = 0 V)	−0.5 to +7.0 −0.5 to +7.0	
	DC Output Voltage	Active–Mode (High or Low State) Tri–State Mode (Note 1) Power–Down Mode (VCC = 0 V)	−0.5 to VCC + 0.5 −0.5 to +6.5 −0.5 to +6.5	V
IIK	DC Input Diode Current	VIN < GND	−20	mA
IOK	DC Output Diode Current (NLV)	1Gxx and MC74VHC1GT08P5T5G–L 22088 VOUT > VCC, VOUT < GND	±20	mA
		1GTxx VOUT < GND	−20	
	DC Output Diode Current	VOUT < GND	−20	mA
IOUT	DC Output Source/Sink Current		±25	mA
ICC or IGND	DC Supply Current per Supply Pin or Ground Pin		±50	mA
TSTG	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

8JA	Thermal Resistance (Note 2)	SC−88A SC−74A SOT−553 SOT−953 UDFN6	377 320 324 254 154	° C/W
PD	Power Dissipation in Still Air	SC−88A SC−74A SOT−553 SOT−953 UDFN6	332 390 386 491 812	mW
MSL	Moisture Sensitivity		Level 1	−
FR	Flammability Rating	Oxygen Index: 28 to 34	UL 94 V−0 @ 0.125 in	−
VESD	ESD Withstand Voltage (Note 3) Charged Device Model	Human Body Model	2000 1000	V
ILatchup	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.
2. Measured with minimum pad spacing on an FR4 board, using 10mm−by−1inch, 2 ounce copper trace no air flow per JESD51−7.
3. HBM tested to ANSI/ESDA/JEDEC JS−001−2017. 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	Characteristics		Min	Max	Unit
VCC	Positive DC Supply Voltage		2.0	5.5	V
VIN	DC Input Voltage		0	5.5	V
VOUT	DC Output Voltage (NLV)	1Gxx and MC74VHC1GT08P5T5G−L22088	0	VCC	V
		1GTxx Active−Mode (High or Low State)	0 0 0	VCC 5.5 5.5	
		Tri−State Mode (Note 1) Power−Down Mode (VCC = 0 V)			
	DC Output Voltage Active−Mode (High or Low State) Tri−State Mode (Note 1) Power−Down Mode (VCC = 0 V)		0 0 0	VCC 5.5 5.5	V
TA	Operating Temperature Range		−55	+125	°C
tr , tf	Input Rise and Fall Time TSOP−5, SC−88A (NLV) VCC = 3.0 V to 3.6 V VCC = 4.5 V to 5.5 V		0 0	100 20	ns/V
	Input Rise and Fall Time SC−74A, SC−88A, UDFN6, SOT−553, SOT−953 VCC = 2.0 V VCC = 2.3 V to 2.7 V VCC = 3.0 V to 3.6 V VCC = 4.5 V to 5.5 V		0 0 0 0	20 20 10 5	

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 (MC74VHC1G08)

Symbol	Parameter	Test Conditions	VCC (V)	TA = 25°C			−40°C £ TA £ 85°C		−55°C £ TA £ 125°C		Unit
				Min	Typ	Max	Min	Max	Min	Max	

Symbol	Parameter	Conditions									Unit
VIH	High–Level Input Voltage		2.0	1.5	–	–	1.5	–	1.5	–	V
			3.0	2.1	–	–	2.1	–	2.1	–	
			4.5	3.15	–	–	3.15	–	3.15	–	
			5.5	3.85	–	–	3.85	–	3.85	–	
VIL	Low–Level Input Voltage		2.0	–	–	0.5	–	0.5	–	0.5	V
			3.0	–	–	0.9	–	0.9	–	0.9	
			4.5	–	–	1.35	–	1.35	–	1.35	
			5.5	–	–	1.65	–	1.65	–	1.65	
VOH	High–Level Output Voltage	VIN = VIH or VIL IOH = –50 µA IOH = –50 µA IOH = –50 µA IOH = –4 mA IOH = –8 mA	2.0	1.9	2.0	–	1.9	–	1.9	–	V
			3.0	2.9	3.0	–	2.9	–	2.9	–	
			4.5	4.4	4.5	–	4.4	–	4.4	–	
			3.0	2.58	–	–	2.48	–	2.34	–	
			4.5	3.94	–	–	3.80	–	3.66	–	
VOL	Low–Level Output Voltage	VIN = VIH or VIL IOL = 50 µA IOL = 50 µA IOL = 50 µA IOL = 4 mA IOL = 8 mA	2.0	–	0.0	0.1	–	0.1	–	0.1	V
			3.0	–	0.0	0.1	–	0.1	–	0.1	
			4.5	–	0.0	0.1	–	0.1	–	0.1	
			3.0	–	–	0.36	–	0.44	–	0.52	
			4.5	–	–	0.36	–	0.44	–	0.52	
IIN	Input Leakage Current	VIN = 5.5 V or GND	2.0 to 5.5	–	–	±0.1	–	±1.0	–	±1.0	µA
	Power Off Leakage Current (NL V)	VIN = 5.5 V	0.0	–	–	1.0	–	10	–	10	µA
IOFF											

Symbol	Parameter	Test Conditions	VCC (V)	TA = 25°C			−40°C £ TA £ 85°C		−55°C £ TA £ 125°C		Unit
				Min	Typ	Max	Min	Max	Min	Max	
	Power Off Leakage Current	VIN = 5.5 V or VOUT = 5.5 V	0.0	–	–	1.0	–	10	–	10	µA
ICC	Quiescent Supply Current	VIN = VCC or GND	5.5	–	–	1.0	–	20	–	40	µA

Symbol	Parameter	Test Conditions	VCC (V)	TA = 25°C			−40°C £ TA £ 85°C		−55°C £ TA £ 125°C		Unit
				Min	Typ	Max	Min	Max	Min	Max	
VIH	High−Level Input Voltage		2.0	1.0	–	–	1.0	–	1.0	–	V
			3.0	1.4	–	–	1.4	–	1.4	–	
			4.5	2.0	–	–	2.0	–	2.0	–	
			5.5	2.0	–	–	2.0	–	2.0	–	
VIL	Low−Level Input Voltage		2.0	–	–	0.28	–	0.28	–	0.28	V
			3.0	–	–	0.45	–	0.45	–	0.45	
			4.5	–	–	0.8	–	0.8	–	0.8	
			5.5	–	–	0.8	–	0.8	–	0.8	
VOH	High−Level Output Voltage	VIN = VIH or VIL IOH = −50 µA IOH = −50 µA IOH = −50 µA IOH = −4 mA IOH = −8 mA	2.0	1.9	2.0	–	1.9	–	1.9	–	V
			3.0	2.9	3.0	–	2.9	–	2.9	–	
			4.5	4.4	4.5	–	4.4	–	4.4	–	
			3.0	2.58	–	–	2.48	–	2.34	–	
			4.5	3.94	–	–	3.80	–	3.66	–	

Symbol	Parameter	Condition	VCC								Unit
VOL	Low–Level Output Voltage	VIN = VIH or VIL IOL = 50 µA	2.0	–	0.0	0.1	–	0.1	–	0.1	V
			3.0	–	0.0	0.1	–	0.1	–	0.1	
		IOL = 50 µA IOL = 50 µA IOL = 4 mA IOL = 8 mA	4.5	–	0.0	0.1	–	0.1	–	0.1	
			3.0	–	–	0.36	–	0.44	–	0.52	
			4.5	–	–	0.36	–	0.44	–	0.52	
IIN	Input Leakage Current	VIN = 5.5 V or GND	2.0 to 5.5	–	–	±0.1	–	±1.0	–	±1.0	µA
IOFF	Power Off Leakage Current	VIN = 5.5 V or VOUT = 5.5 V	0	–	–	1.0	–	10	–	10	µA
	Power Off Leakage Current (MC74VHC1GT08P 5T5G–L22088 Only)	VIN = 5.5 V	0	–	–	1.0	–	10	–	10	µA
ICC	Quiescent Supply Current	VIN = VCC or GND	5.5	–	–	1.0	–	20	–	40	µA
ICCT	Increase in Quies- cent Supply Current per Input Pin	One Input: VIN = 3.4 V; Other Input at VCC or GND	5.5	–	–	1.35	–	1.5	–	1.65	mA

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

Symbol	Parameter	Conditions	VCC (V)	TA = 25°C			−40°C £ TA £ 85°C		−55°C £ TA £ 125°C		Unit
				Min	Typ	Max	Min	Max	Min	Max	
tPLH, tPHL	Propagation Delay, A to Y (Figures 3 and 4)	CL = 15 pF	3.0 to 3.6	–	4.1	8.8	–	10.5	–	12.5	ns
		CL = 50 pF		–	5.9	12.3	–	14.0	–	16.5	
		CL = 15 pF	4.5 to 5.5	–	3.5	5.9	–	7.0	–	9.0	
		CL = 50 pF		–	4.2	7.9	–	9.0	–	11.0	
CIN	Input Capacitance			–	4.0	10	–	10	–	10	pF
COUT	Output Capacitance	Output in High Impedance State		–	6.0	–	–	–	–	–	pF

Symbol	Parameter	Typical @ 25°C, VCC = 5.0 V	Unit
CPD	Power Dissipation Capacitance (Note 5)	8.0	pF

- CPD 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: ICC(OPR) = CPD ● VCC ● fin + ICC. CPD is used to determine the no−load dynamic power consumption; PD = CPD ● VCC 2 ● fin + ICC ● VCC.

MC74VHC1G08, MC74VHC1GT08
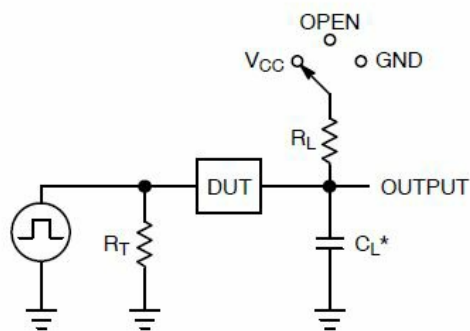
C_L includes probe and jig capacitance
R_T is Z_{OUT} of pulse generator (typically 50 Ω)
f = 1 MHz

Figure 3. Test Circuit

Test	Switch Position	C_L, pF	R_L, Ω
t_{PLH} / t_{PHL}	Open	See AC Characteristics Table	X
t_{PLZ} / t_{PZL}	V_{CC}		1 k
t_{PHZ} / t_{PZH}	GND		1 k

X = Don't Care
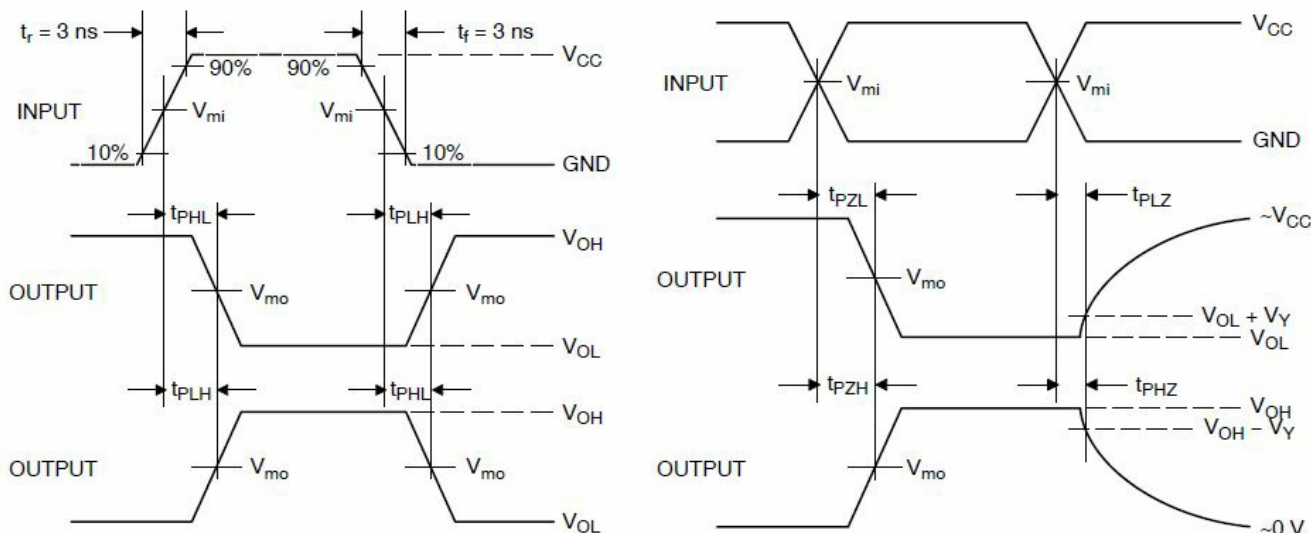
Figure 4. Switching Waveforms

VCC, V	Vmi, V	Vmo, V		VY, V
		tPLH, tPHL	tPZL, tPLZ, tPZH, tPHZ	
3.0 to 3.6	VCC/2	VCC/2	VCC/2	0.3
4.5 to 5.5	VCC/2	VCC/2	VCC/2	0.3

ORDERING INFORMATION

Device	Packages	Specific Device Code	Pin 1 Orientation (See below)	Shipping†
MC74VHC1G08DFT1G	SC−88A	V2	Q2	3000 / Tape & Reel
MC74VHC1G08DFT1G−L22038**	SC−88A	V2	Q2	3000 / Tape & Reel

MC74VHC1G08DFT2G	SC−88A	V2	Q4	3000 / Tape & Reel
MC74VHC1G08DFT2G−F22038**	SC−88A	V2	Q4	3000 / Tape & Reel
NLVVHC1G08DFT1G*	SC−88A	V2	Q2	3000 / Tape & Reel
NLVVHC1G08DFT2G*	SC−88A	V2	Q4	3000 / Tape & Reel
M74VHC1GT08DFT1G	SC−88A	VT	Q2	3000 / Tape & Reel
M74VHC1GT08DFT1G−L22038**	SC−88A	VT	Q2	3000 / Tape & Reel
M74VHC1GT08DFT2G	SC−88A	VT	Q4	3000 / Tape & Reel
M74VHC1GT08DFT2G−F22038**	SC−88A	VT	Q4	3000 / Tape & Reel
NLVVHC1GT08DFT1G*	SC−88A	VT	Q2	3000 / Tape & Reel
NLVVHC1GT08DFT2G*	SC−88A	VT	Q4	3000 / Tape & Reel
MC74VHC1G08DBVT1G	SC−74A	V2	Q4	3000 / Tape & Reel
MC74VHC1GT08DBVT1G	SC−74A	VT	Q4	3000 / Tape & Reel
MC74VHC1G08DTT1G**	TSOP−5	V2	Q4	3000 / Tape & Reel
M74VHC1GT08DTT1G**	TSOP−5	VT	Q4	3000 / Tape & Reel
NLV74VHC1G08DTT1G*	TSOP−5	V2	Q4	3000 / Tape & Reel
NLVVHC1GT08DTT1G*	TSOP−5	VT	Q4	3000 / Tape & Reel
MC74VHC1G08P5T5G	SOT−953	E	Q2	8000 / Tape & Reel
MC74VHC1G08P5T5G−L22088**	SOT−953	E	Q2	8000 / Tape & Reel
MC74VHC1GT08P5T5G	SOT−953	P	Q2	8000 / Tape & Reel
MC74VHC1GT08P5T5G−L22088**	SOT−953	P	Q2	8000 / Tape & Reel
MC74VHC1G08MU1TCG	UDFN6, 1.45 x 1.0, 0.5P	K (Rotated 180° CW)	Q4	3000 / Tape & Reel

MC74VHC1GT08MU1TCG	UDFN6, 1.45 x 1.0, 0.5P	4 (Rotated 270° CW)	Q4	3000 / Tape & Reel
MC74VHC1G08MU2TCG	UDFN6, 1.2 x 1.0, 0.4P	2	Q4	3000 / Tape & Reel
MC74VHC1G08MU3TCG	UDFN6, 1.0 x 1.0, 0.35	D (Rotated 270° CW)	Q4	3000 / Tape & Reel
MC74VHC1GT08MU3TCG	UDFN6, 1.0 x 1.0, 0.35	K	Q4	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.
- NLV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC−Q100 Qualified and PPAP Capable.
- Please refer to NLV specifications for this device.

PIN 1 ORIENTATION IN TAPE AND REEL

Direction of Feed
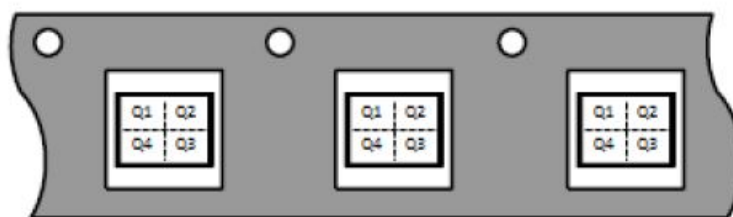
PACKAGE DIMENSIONS

SC–74A
CASE 318BQ
ISSUE B
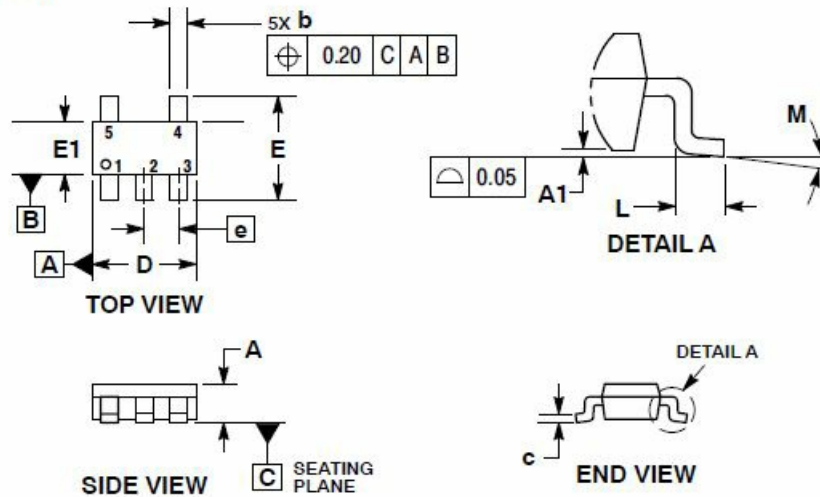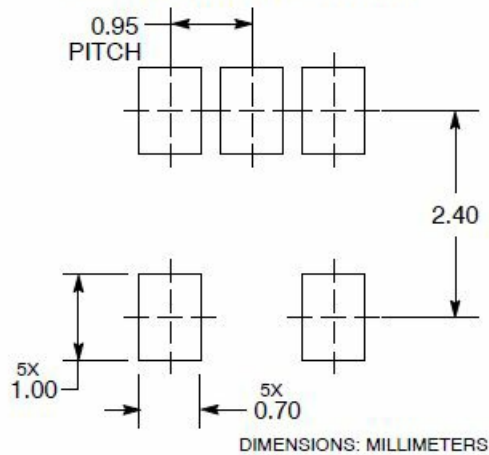
SCALE 2:1

TOP VIEW

SIDE VIEW

DETAIL A

END VIEW

RECOMMENDED
SOLDERING FOOTPRINT*

DIMENSIONS: MILLIMETERS

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

NOTES

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. DIMENSIONS A AND B DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS. MOLD FLASH, PROTRUSIONS, OR GATE BURRS SHALL NOT EXCEED 0.15 PER SIDE.

DIM	MILLIMETERS	
	MIN	MAX
A	0.90	1.10
A1	0.01	0.10
b	0.25	0.50
c	0.10	0.26
D	2.85	3.15
E	2.50	3.00
E1	1.35	1.65
e	0.95 BSC	
L	0.20°	0.6°0
M	0	10

GENERIC MARKING DIAGRAM
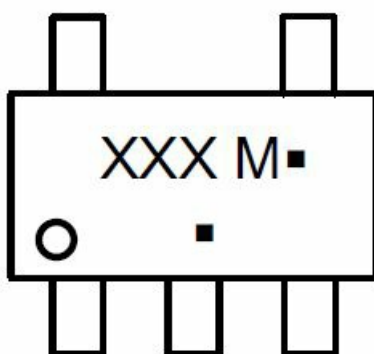
- XXX = Specific Device Code
- M = Date Code
- = Pb−Free Package

(Note: Microdot may be in either location)

- This information is generic. Please refer to the 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.

SOLDER FOOTPRINT

$\dfrac{0.50}{0.0197}$

$\dfrac{0.65}{0.025}$

$\dfrac{0.65}{0.025}$

$\dfrac{0.40}{0.0157}$

$\dfrac{1.9}{0.0748}$

SCALE 20:1 $\left(\dfrac{mm}{inches}\right)$

D 5 PL ⊕ 0.2 (0.008) Ⓜ B Ⓜ

NOTES

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. 419A–01 OBSOLETE. NEW STANDARD 419A–02.
4. DIMENSIONS A AND B DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.071	0.087	1.80	2.20
B	0.045	0.053	1.15	1.35
C	0.031	0.043	0.80	1.10
D	0.004	0.012	0.10	0.30
G	0.026 BSC		0.65 BSC	
H	—	0.004	—	0.10
J	0.004	0.010	0.10	0.25
K	0.004	0.012	0.10	0.30
N	0.008 REF		0.20 REF	
S	0.079	0.087	2.00	2.20

GENERIC MARKING DIAGRAM
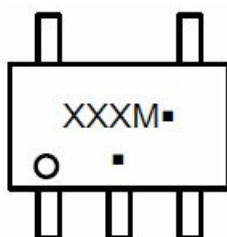
- XXX = Specific Device Code
- M = Date Code
- = Pb−Free Package

(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.

STYLE 1:

1. PIN 1. BASE
2. EMITTER
3. BASE
4. COLLECTOR
5. COLLECTOR

STYLE 2:

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

STYLE 3:

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

STYLE 4:

1. PIN 1. SOURCE 1
2. DRAIN 1/2
3. SOURCE 1
4. GATE 1
5. GATE 2

STYLE 5:
P

1. IN 1. CATHODE
2. COMMON ANODE
3. CATHODE 2
4. CATHODE 3
5. CATHODE 4

STYLE 6:

1. PIN 1. EMITTER 2
2. BASE 2
3. EMITTER 1
4. COLLECTOR
5. COLLECTOR 2/BASE 1

STYLE 7:

1. PIN 1. BASE
2. EMITTER
3. BASE

4. COLLECTOR

5. COLLECTOR

STYLE 8:

1. PIN 1. CATHODE

2. COLLECTOR

3. N/C

4. BASE

5. EMITTER

STYLE 9:

1. PIN 1. ANODE

2. CATHODE

3. ANODE

4. ANODE

5. ANODE

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.

TSOP−5
CASE 483
ISSUE N
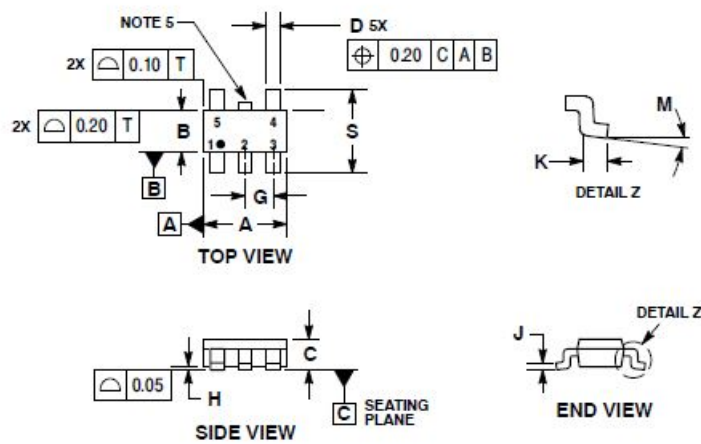
SCALE 2:1
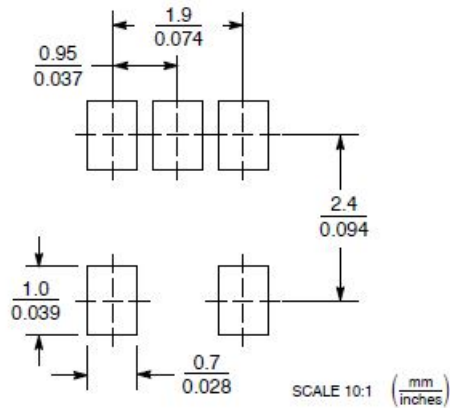
TOP VIEW

NOTE 5
D 5X
2X △ 0.10 T
⊕ 0.20 C A B
2X △ 0.20 T
B
S
B
G
A
A

DETAIL Z
M
K

SIDE VIEW
△ 0.05
H
C
C SEATING PLANE

END VIEW
J
DETAIL Z

SOLDERING FOOTPRINT*

0.95 / 0.037
1.9 / 0.074
2.4 / 0.094
1.0 / 0.039
0.7 / 0.028
SCALE 10:1 (mm / inches)

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

NOTES

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. DIMENSIONS A AND B DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS. MOLD FLASH, PROTRUSIONS, OR GATE BURRS SHALL NOT EXCEED 0.15 PER SIDE. DIMENSION A.
5. OPTIONAL CONSTRUCTION: AN ADDITIONAL TRIMMED LEAD IS ALLOWED IN THIS LOCATION. TRIMMED LEAD NOT TO EXTEND MORE THAN 0.2 FROM BODY.

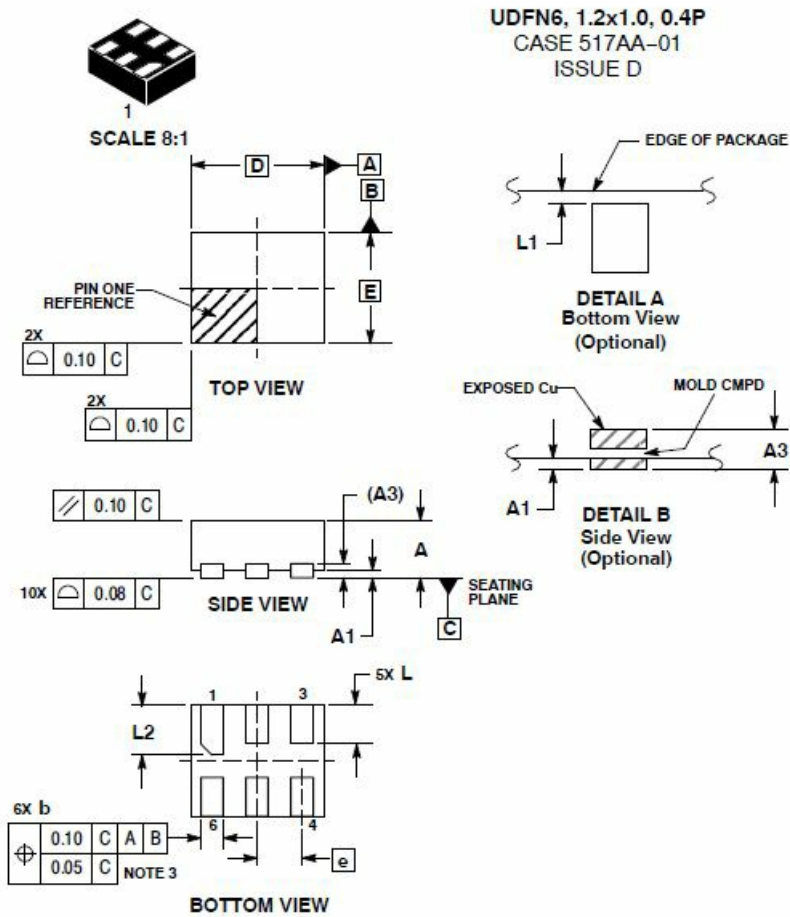| DIM	MILLIMETERS	
	MIN	MAX
A	2.85	3.15
B	1.35	1.65
C	0.90	1.10
D	0.25	0.50
G	0.95 BSC	
H	0.01	0.10
J	0.10	0.26
K	0.20°	0.6°0
M	0	10
S	2.50	3.00

GENERIC MARKING DIAGRAM

Analog   Discrete/Logic
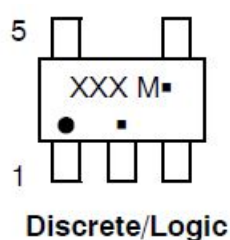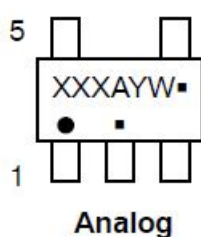
- XXX = Specific Device Code
- A = Assembly Location
- Y = Year
- W = Work Week
- = Pb−Free Package
- XXX = Specific Device Code
- M = Date Code
- = Pb−Free Package

(Note: Microdot may be in either location)

This information is generic. Please refer todevice data sheet for actual part marking.Pb−Free indicator, "G" or microdot "█",may or may not be present.

UDFN6, 1.2x1.0, 0.4P
CASE 517AA–01
ISSUE D

NOTES

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. DIMENSION b APPLIES TO PLATED TERMINAL AND IS MEASURED BETWEEN 0.25 AND 0.30 mm FROM TERMINAL.
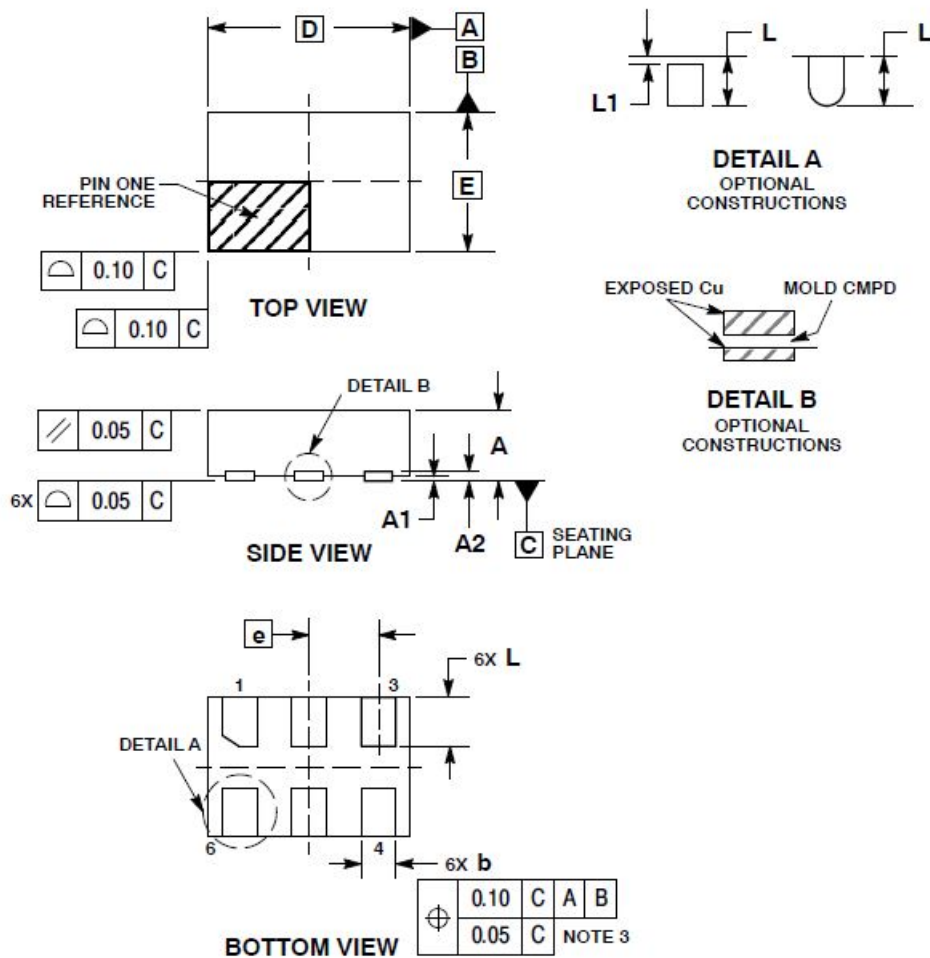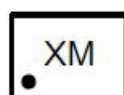4. COPLANARITY APPLIES TO THE EXPOSED PAD AS WELL AS THE TERMINALS.

DIM	MILLIMETERS	
	MIN	MAX
A	0.45	0.55
A1	0.00	0.05
A3	0.127 REF	
b	0.15	0.25
D	1.20 BSC	
E	1.00 BSC	
e	0.40 BSC	
L	0.30	0.40
L1	0.00	0.15
L2	0.40	0.50

GENERIC MARKING DIAGRAM*
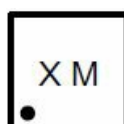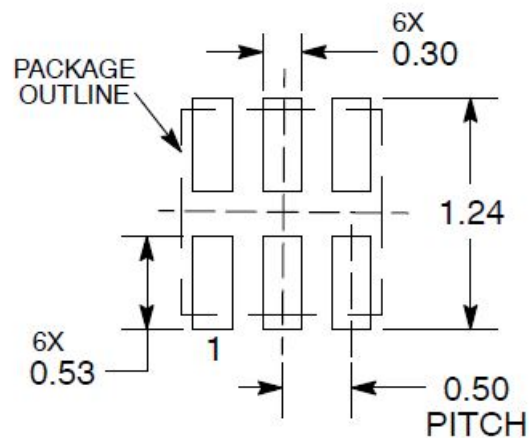

- X = Specific Device Code
- M = Date Code

*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.

MOUNTING FOOTPRINT

DIMENSIONS: MILLIMETERS

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

SCALE 4:1

TOP VIEW

D | A | B

PIN ONE REFERENCE

☐ 0.10 C

☐ 0.10 C

E

DETAIL A
OPTIONAL CONSTRUCTIONS

L
L1
L

DETAIL B
OPTIONAL CONSTRUCTIONS

EXPOSED Cu   MOLD CMPD

SIDE VIEW

// 0.05 C

6X ☐ 0.05 C

DETAIL B

A
A1
A2
C SEATING PLANE

BOTTOM VIEW

e
1   3
6X L
DETAIL A
6   4
6X b

⊕ | 0.10 | C | A | B
  | 0.05 | C | NOTE 3

GENERIC MARKING DIAGRAM

XM
●

- X = Specific Device Code
- M = Date Code

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.

NOTES

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

DIM	MILLIMETERS	
	MIN	MAX
A	0.45	0.55
A1	0.00	0.05
A2	0.07 REF	
b	0.20	0.30
D	1.45 BSC	
E	1.00 BSC	
e	0.50 BSC	
L	0.30	0.40
L1	----	0.15

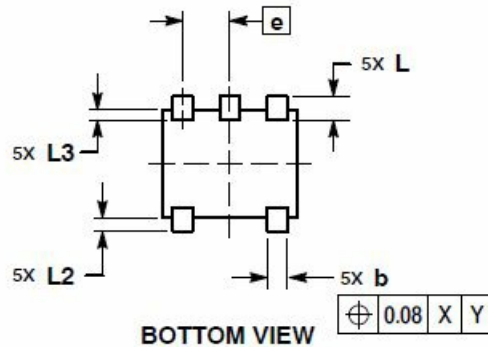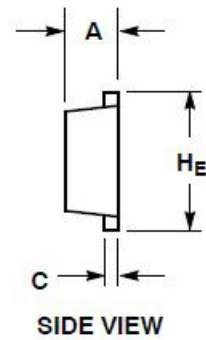**MOUNTING FOOTPRINT**

DIMENSIONS: MILLIMETERS

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

UDFN6, 1x1, 0.35P
CASE 517BX
ISSUE O
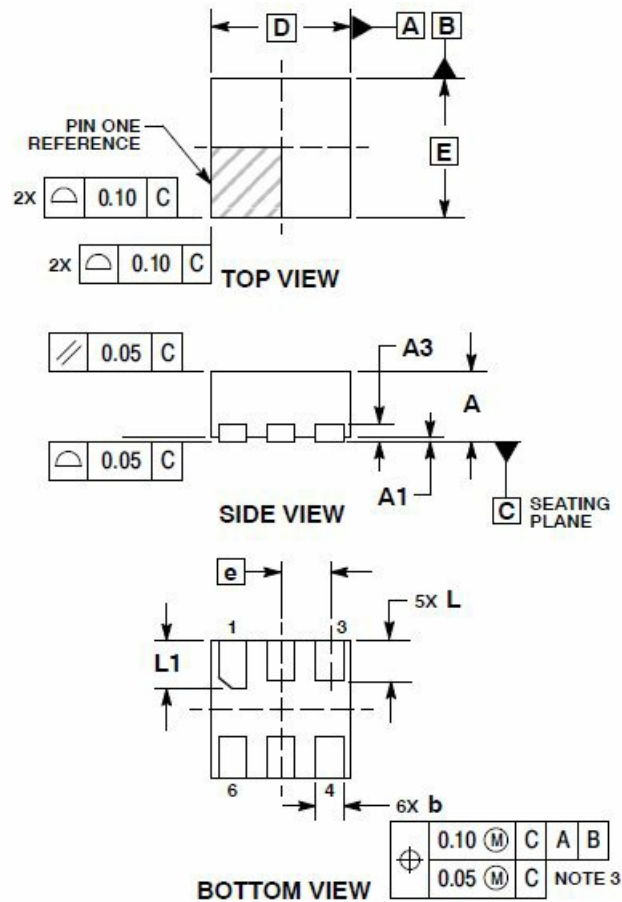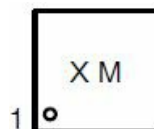
SCALE 4:1

TOP VIEW

SIDE VIEW

BOTTOM VIEW

GENERIC MARKING DIAGRAM

- X = Specific Device Code
- M = Date Code

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.

NOTES

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

DIM	MILLIMETERS	
	MIN	MAX
A	0.45	0.55
A1	0.00	0.05
A3	0.13 REF	
b	0.12	0.22
D	1.00 BSC	
E	1.00 BSC	
e	0.35 BSC	
L	0.25	0.35
L1	0.30	0.40

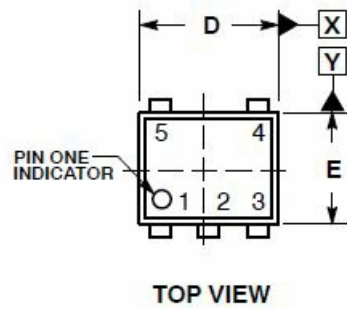**RECOMMENDED SOLDERING FOOTPRINT***
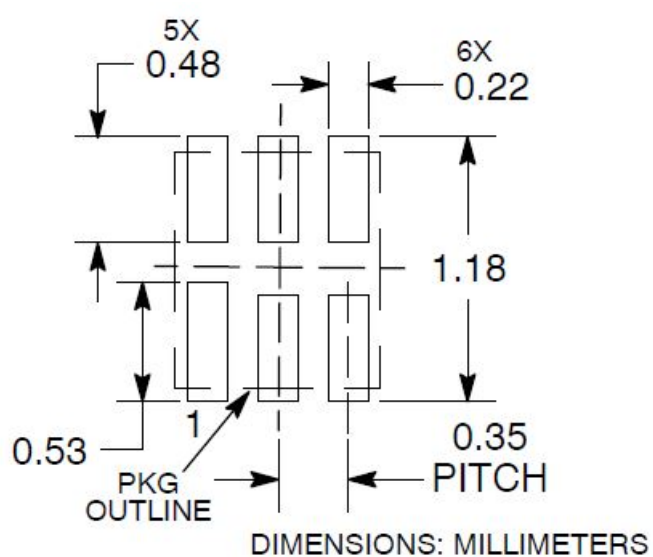
DIMENSIONS: MILLIMETERS

For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.
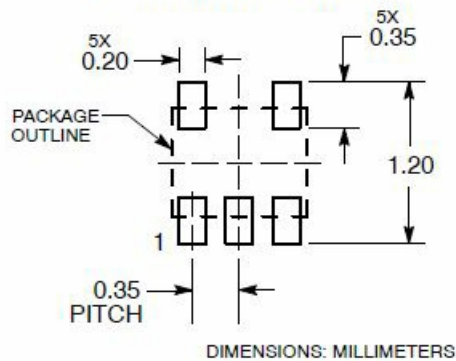
SOT–953
CASE 527AE
ISSUE E

SCALE 4:1

TOP VIEW

PIN ONE
INDICATOR

5 4
1 2 3

E

D

X
Y

SIDE VIEW

A

H_E

C

BOTTOM VIEW

5X L3

5X L2

e

5X L

5X b

⊕ 0.08 X Y

SOLDERING FOOTPRINT*

5X
0.20

PACKAGE
OUTLINE

5X
0.35

1.20

1

0.35
PITCH

DIMENSIONS: MILLIMETERS

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

NOTES

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF THE BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

DIM	MILLIMETERS		
	MIN	NOM	MAX
A	0.34	0.37	0.40
b	0.10	0.15	0.20
C	0.07	0.12	0.17
D	0.95	1.00	1.05
E	0.75	0.80	0.85
e	0.35 BSC		
HE	0.95	1.00	1.05
L	0.175 REF		
L2	0.05	0.10	0.15
L3	–––	–––	0.15

GENERIC MARKING DIAGRAM
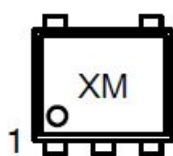
- X = Specific Device Code
- M = Month Code

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.

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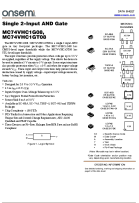- onsemi Website: **www.onsemi.com**

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MC74VHC1G08 Single 2 Input And Gate, MC74VHC1G08, Single 2 Input And Gate, 2 Input And Gate, Gate

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