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. The output structures also provide protection when $V_{CC} = 0$ V and when the output voltage exceeds V_{CC}. 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 V_{CC} Operation
- 3.5 ns t_{PD} at 5 V (typ)
- Inputs/Outputs Over−Voltage Tolerant up to 5.5 V
- I_{OFF} Supports Partial Power Down Protection
- Source/Sink 8 mA at 3.0 V
- Available in SC−88A, SC−74A, TSOP−5, SOT−553, 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
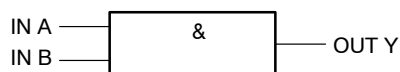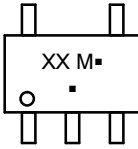- These Devices are Pb−Free, Halogen Free/BFR Free and are RoHS Compliant
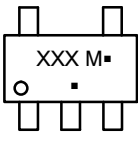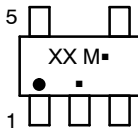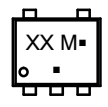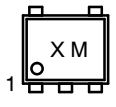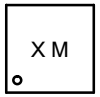
Figure 1. Logic Symbol

ON Semiconductor®

MARKING DIAGRAMS

SC−88A
DF SUFFIX
CASE 419A

SC−74A
DBV SUFFIX
CASE 318BQ

TSOP−5
DT SUFFIX
CASE 483

SOT−553
XV5 SUFFIX
CASE 463B

SOT−953
P5 SUFFIX
CASE 527AE

UDFN6
1.45 x 1.0
CASE 517AQ

UDFN6
1.0 x 1.0
CASE 517BX

XX	= Specific Device Code
M	= Date Code*
▪	= 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 in the package dimensions section on page 7 of this data sheet.

September, 2019 − Rev. 24

Publication Order Number:
MC74VHC1G08/D

MC74VHC1G08, MC74VHC1GT08
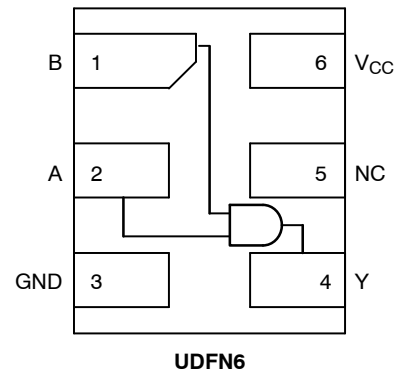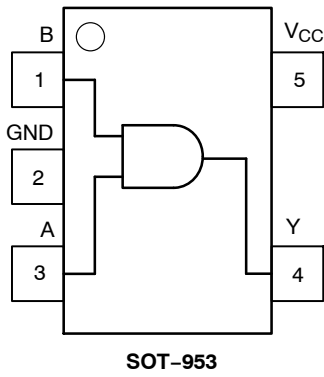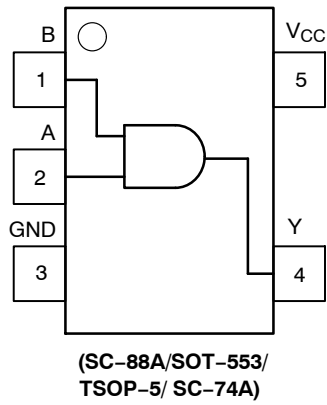
Figure 2. Pinout (Top View)

PIN ASSIGNMENT
(SC−88A/SOT−553/ TSOP−5/SC−74A)

Pin	Function
1	B
2	A
3	GND
4	Y
5	V_{CC}

PIN ASSIGNMENT (SOT−953)

Pin	Function
1	A
2	GND
3	B
4	Y
5	V_{CC}

PIN ASSIGNMENT (UDFN)

Pin	Function
1	B
2	A
3	GND
4	Y
5	NC
6	V_{CC}

FUNCTION TABLE

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

MAXIMUM RATINGS

Symbol	Characteristics		Value	Unit
V_{CC}	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
V_{IN}	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
V_{OUT}	DC Output Voltage TSOP−5, SC−88A (NLV)	Active−Mode (High or Low State) Tri−State Mode (Note 1) Power−Down Mode (V_{CC} = 0 V)	−0.5 to V_{CC} + 0.5 −0.5 to +7.0 −0.5 to +7.0	V
	DC Output Voltage SC−74A, SC−88A, UDFN6, SOT−553, SOT−953	Active−Mode (High or Low State) Tri−State Mode (Note 1) Power−Down Mode (V_{CC} = 0 V)	−0.5 to V_{CC} + 0.5 −0.5 to +6.5 −0.5 to +6.5	V
I_{IK}	DC Input Diode Current	V_{IN} < GND	−20	mA
I_{OK}	DC Output Diode Current	V_{OUT} < GND	±20	mA
I_{OUT}	DC Output Source/Sink Current		±12.5	mA
I_{CC} or I_{GND}	DC Supply Current per Supply Pin or Ground Pin		±25	mA
T_{STG}	Storage Temperature Range		−65 to +150	°C
T_L	Lead Temperature, 1 mm from Case for 10 secs		260	°C
T_J	Junction Temperature Under Bias		+150	°C
θ_{JA}	Thermal Resistance (Note 2)	SC−88A SC−74A TSOP−5 SOT−553 SOT−953 UDFN6	659 555 555 562 560 382	°C/W
P_D	Power Dissipation in Still Air	SC−88A SC−74A TSOP−5 SOT−553 SOT−953 UDFN6	190 225 225 222 223 327	mW
MSL	Moisture Sensitivity		Level 1	−
F_R	Flammability Rating	Oxygen Index: 28 to 34	UL 94 V−0 @ 0.125 in	−
V_{ESD}	ESD Withstand Voltage (Note 3)	Human Body Model Charged Device Model	2000 1000	V
$I_{Latchup}$	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.
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
V_{CC}	Positive DC Supply Voltage		2.0	5.5	V
V_{IN}	DC Input Voltage		0	5.5	V
V_{OUT}	DC Output Voltage	TSOP−5, SC−88A (NLV)	0	V_{CC}	V
	DC Output Voltage	SC−74A, SC−88A, UDFN6, SOT−553, SOT−953			
		Active−Mode (High or Low State)	0	V_{CC}	
		Tri−State Mode (Note 1)	0	5.5	
		Power−Down Mode (V_{CC} = 0 V)	0	5.5	
T_A	Operating Temperature Range		−55	+125	°C
t_r , t_f	Input Rise and Fall Time	TSOP−5, SC−88A (NLV)			ns/V
		V_{CC} = 3.0 V to 3.6 V	0	100	
		V_{CC} = 4.5 V to 5.5 V	0	20	
	Input Rise and Fall Time	SC−74A, SC−88A, UDFN6, SOT−553, SOT−953			
		V_{CC} = 1.65 V to 1.95 V	0	20	
		V_{CC} = 2.3 V to 2.7 V	0	20	
		V_{CC} = 3.0 V to 3.6 V	0	10	
		V_{CC} = 4.5 V to 5.5 V	0	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	V_{CC} (V)	T_A = 25°C			−40°C ≤ T_A ≤ 85°C		−55°C ≤ T_A ≤ 125°C		Unit
				Min	Typ	Max	Min	Max	Min	Max	
V_{IH}	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	–	
V_{IL}	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	
V_{OH}	High−Level Output Voltage	V_{IN} = V_{IH} or V_{IL} I_{OH} = −50 μA I_{OH} = −50 μA I_{OH} = −50 μA I_{OH} = −4 mA I_{OH} = −8 mA	2.0 3.0 4.5 3.0 4.5	1.9 2.9 4.4 2.58 3.94	2.0 3.0 4.5 – –	– – – – –	1.9 2.9 4.4 2.48 3.80	– – – – –	1.9 2.9 4.4 2.34 3.66	– – – – –	V
V_{OL}	Low−Level Output Voltage	V_{IN} = V_{IH} or V_{IL} I_{OL} = 50 μA I_{OL} = 50 μA I_{OL} = 50 μA I_{OL} = 4 mA I_{OL} = 8 mA	2.0 3.0 4.5 3.0 4.5	– – – – –	0.0 0.0 0.0 – –	0.1 0.1 0.1 0.36 0.36	– – – – –	0.1 0.1 0.1 0.44 0.44	– – – – –	0.1 0.1 0.1 0.52 0.52	V
I_{IN}	Input Leakage Current	V_{IN} = 5.5 V or GND	2.0 to 5.5	–	–	±0.1	–	±1.0	–	± 1.0	μA
I_{OFF}	Power Off Leakage Current	V_{IN} = 5.5 V or V_{OUT} = 5.5 V	0	–	–	1.0	–	10	–	10	μA
I_{CC}	Quiescent Supply Current	V_{IN} = V_{CC} or GND	5.5	–	–	1.0	–	20	–	40	μA

DC ELECTRICAL CHARACTERISTICS (MC74VHC1GT08)

| Symbol	Parameter	Test Conditions	V_{CC} (V)	$T_A = 25°C$			$-40°C \leq T_A \leq 85°C$		$-55°C \leq T_A \leq 125°C$		Unit
				Min	Typ	Max	Min	Max	Min	Max	
V_{IH}	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	–	
V_{IL}	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	
V_{OH}	High–Level Output Voltage	$V_{IN} = V_{IH}$ or V_{IL} $I_{OH} = -50\ \mu A$ $I_{OH} = -50\ \mu A$ $I_{OH} = -50\ \mu A$ $I_{OH} = -4$ mA $I_{OH} = -8$ mA	2.0 3.0 4.5 3.0 4.5	1.9 2.9 4.4 2.58 3.94	2.0 3.0 4.5 – –	– – – – –	1.9 2.9 4.4 2.48 3.80	– – – – –	1.9 2.9 4.4 2.34 3.66	– – – – –	V
V_{OL}	Low–Level Output Voltage	$V_{IN} = V_{IH}$ or V_{IL} $I_{OL} = 50\ \mu A$ $I_{OL} = 50\ \mu A$ $I_{OL} = 50\ \mu A$ $I_{OL} = 4$ mA $I_{OL} = 8$ mA	2.0 3.0 4.5 3.0 4.5	– – – – –	0.0 0.0 0.0 – –	0.1 0.1 0.1 0.36 0.36	– – – – –	0.1 0.1 0.1 0.44 0.44	– – – – –	0.1 0.1 0.1 0.52 0.52	V
I_{IN}	Input Leakage Current	$V_{IN} = 5.5$ V or GND	1.65 to 5.5	–	–	±0.1	–	±1.0	–	±1.0	μA
I_{OFF}	Power Off Leakage Current	$V_{IN} = 5.5$ V or $V_{OUT} = 5.5$ V	0	–	–	1.0	–	10	–	10	μA
I_{CC}	Quiescent Supply Current	$V_{IN} = V_{CC}$ or GND	5.5	–	–	1.0	–	20	–	40	μA
I_{CCT}	Increase in Quiescent Supply Current per Input Pin	One Input: V_{IN} = 3.4 V; Other Input at V_{CC} 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 (Input $t_r = t_f = 3.0$ ns)

Symbol	Parameter	Conditions	V_{CC} (V)	$T_A = 25°C$			$-40°C \leq T_A \leq 85°C$		$-55°C \leq T_A \leq 125°C$		Unit
				Min	Typ	Max	Min	Max	Min	Max	
t_{PLH}, t_{PHL}	Propagation Delay, A to Y (Figures 3 and 4)	$C_L = 15$ pF	3.0 to 3.6	–	4.1	8.8	–	10.5	–	12.5	ns
		$C_L = 50$ pF		–	5.9	12.3	–	14.0	–	16.5	
		$C_L = 15$ pF	4.5 to 5.5	–	3.5	5.9	–	7.0	–	9.0	
		$C_L = 50$ pF		–	4.2	7.9	–	9.0	–	11.0	
C_{IN}	Input Capacitance			–	4.0	10	–	10	–	10	pF
C_{OUT}	Output Capacitance	Output in High Impedance State		–	6.0	–	–	–	–	–	pF

			Typical @ 25°C, V_{CC} = 5.0 V	
C_{PD}	Power Dissipation Capacitance (Note 5)		8.0	pF

5. C_{PD} 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: $I_{CC(OPR)} = C_{PD} \bullet V_{CC} \bullet f_{in} + I_{CC}$. C_{PD} is used to determine the no–load dynamic power consumption; $P_D = C_{PD} \bullet V_{CC}^2 \bullet f_{in} + I_{CC} \bullet V_{CC}$.
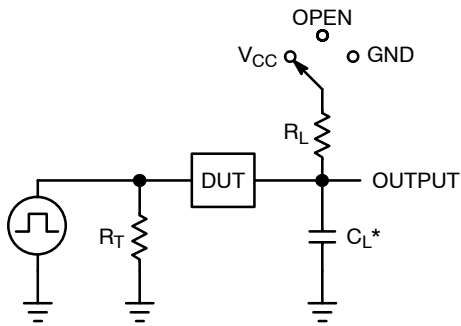
C_L includes probe and jig capacitance
R_T is Z_{OUT} of pulse generator (typically 50 Ω)
f = 1 MHz

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

V_{CC}, V	V_{mi}, V	V_{mo}, V		V_Y, V
		t_{PLH}, t_{PHL}	t_{PZL}, t_{PLZ}, t_{PZH}, t_{PHZ}	
3.0 to 3.6	$V_{CC}/2$	$(V_{OH} - V_{OL})/2$	$V_{CC}/2$	0.3
4.5 to 5.5	$V_{CC}/2$	$(V_{OH} - V_{OL})/2$	$V_{CC}/2$	0.3

ORDERING INFORMATION

Device	Packages	Specific Device Code	Pin 1 Orientation (See below)	Shipping†
MC74VHC1G08DFT1G	SC–88A	V2	Q2	3000 / Tape & Reel
MC74VHC1G08DFT2G	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
M74VHC1GT08DFT2G	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	V2	Q4	3000 / Tape & Reel
MC74VHC1G08DTT1G	TSOP–5	V2	Q4	3000 / Tape & Reel
M74VHC1GT08DTT1G	TSOP–5	VT	Q4	3000 / Tape & Reel
NLV74VHC1G08DTT1G*	TSOP–5	V2R	Q4	3000 / Tape & Reel
NLVVHC1GT08DTT1G*	TSOP–5	VT	Q4	3000 / Tape & Reel
MC74VHC1G08XV5T2G (In Development)	SOT–553	TBD	Q4	3000 / Tape & Reel
MC74VHC1GT08XV5T2G (In Development)	SOT–553	TBD	Q4	3000 / Tape & Reel
MC74VHC1G08P5T5G	SOT–953	E	Q2	4000 / Tape & Reel
MC74VHC1GT08P5T5G	SOT–953	E	Q2	4000 / Tape & Reel
MC74VHC1G08MU1TCG (In Development)	UDFN6, 1.45 x 1.0, 0.5P	TBD	Q4	3000 / Tape & Reel
MC74VHC1GT08MU1TCG	UDFN6, 1.45 x 1.0, 0.5P	TBD	Q4	3000 / Tape & Reel
MC74VHC1G08MU3TCG (In Development)	UDFN6, 1.0 x 1.0, 0.35	TBD	Q4	3000 / Tape & Reel
MC74VHC1GT08MU3TCG	UDFN6, 1.0 x 1.0, 0.35	TBD	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.

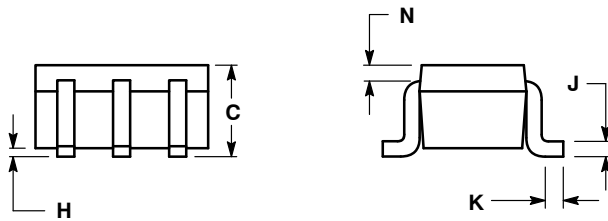**Pin 1 Orientation in Tape and Reel**
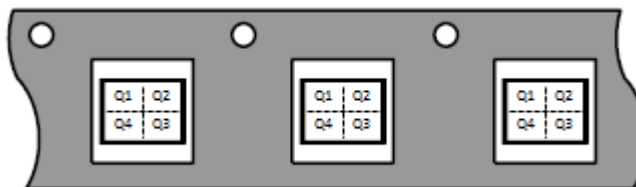
PACKAGE DIMENSIONS

SC−88A (SC−70−5/SOT−353)
CASE 419A−02
ISSUE L

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

D 5 PL | ⊕ | 0.2 (0.008) Ⓜ | B Ⓜ

SOLDER FOOTPRINT*

$\frac{0.50}{0.0197}$

$\frac{0.65}{0.025}$

$\frac{0.65}{0.025}$

$\frac{0.40}{0.0157}$

$\frac{1.9}{0.0748}$

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

*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

SC−74A
CASE 318BQ
ISSUE B
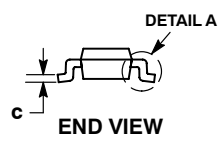
NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. DIMENSIONS A AND B DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS. MOLD FLASH, PROTRUSIONS, OR GATE BURRS SHALL NOT EXCEED 0.15 PER SIDE.

TOP VIEW

SIDE VIEW

DETAIL A

END VIEW

	MILLIMETERS	
DIM	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	0.60
M	0 °	10 °

**RECOMMENDED
SOLDERING FOOTPRINT***
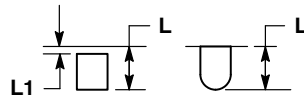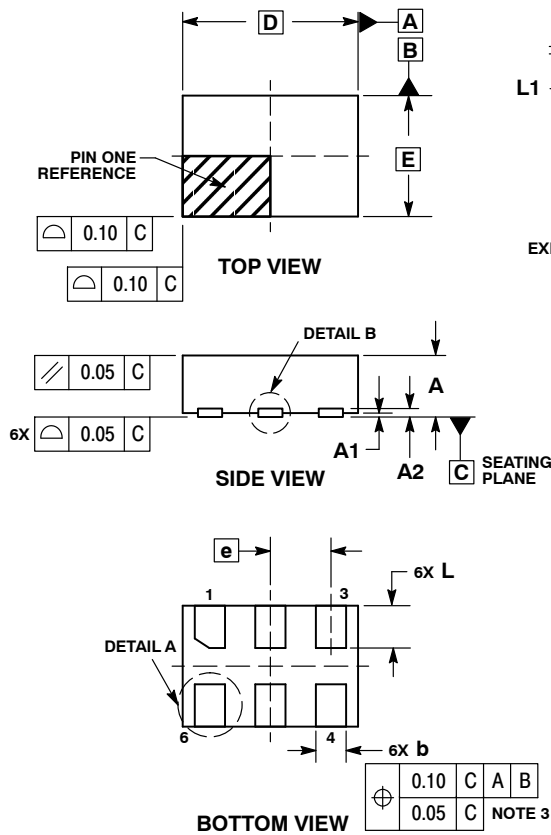
0.95
PITCH

2.40

5X
1.00

5X
0.70

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.

PACKAGE DIMENSIONS

TSOP–5
CASE 483–02
ISSUE M
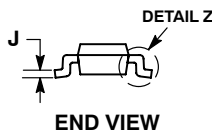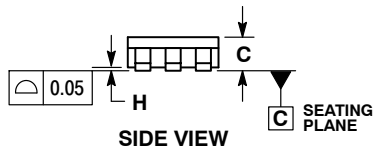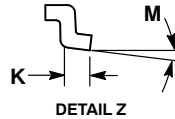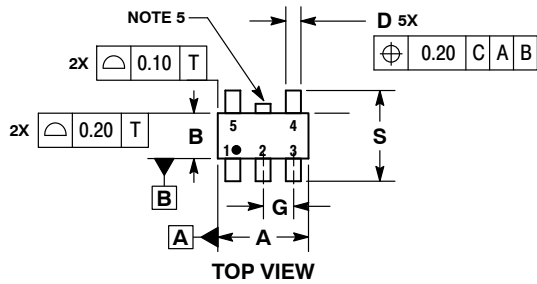
NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. DIMENSIONS A AND B DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS. 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	0.60
M	0 °	10 °
S	2.50	3.00

TOP VIEW

SIDE VIEW

DETAIL Z

END VIEW

SOLDERING FOOTPRINT*

SCALE 10:1 $\left(\dfrac{mm}{inches}\right)$

*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

SOT−553, 5 LEAD
CASE 463B
ISSUE C

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_E	1.55	1.60	1.65	0.061	0.063	0.065

SOLDERING FOOTPRINT*

SCALE 20:1 $\left(\dfrac{mm}{inches}\right)$
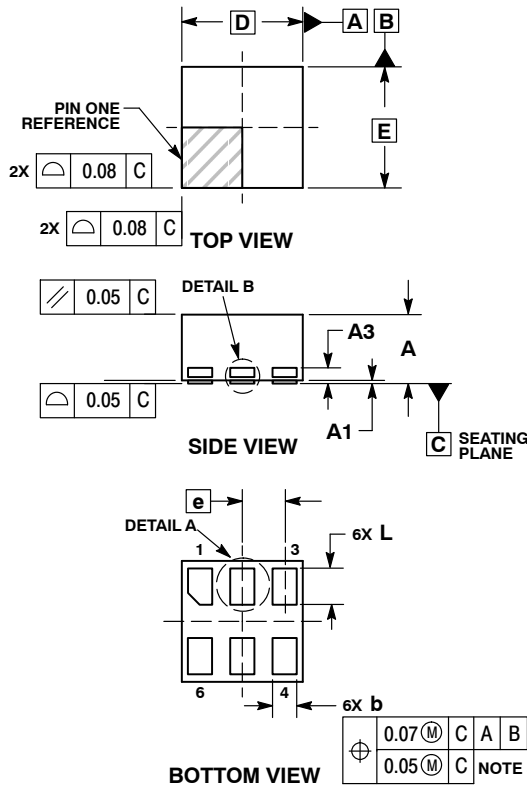
*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

MC74VHC1G08, MC74VHC1GT08

PACKAGE DIMENSIONS

SOT−953
CASE 527AE
ISSUE E

TOP VIEW

PIN ONE INDICATOR

SIDE VIEW

BOTTOM VIEW

⊕ | 0.08 | X | Y

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		
H$_E$	0.95	1.00	1.05
L	0.175 REF		
L2	0.05	0.10	0.15
L3	−−−	−−−	0.15

SOLDERING FOOTPRINT*

5X 0.20

5X 0.35

PACKAGE OUTLINE

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.

PACKAGE DIMENSIONS

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

TOP VIEW

D ⟶ A
B
E

PIN ONE
REFERENCE

▱ 0.10 C

▱ 0.10 C

SIDE VIEW

⟋ 0.05 C

6X ▱ 0.05 C

DETAIL B

A
A1
A2
C SEATING PLANE

BOTTOM VIEW

DETAIL A

e
6X **L**
1   3
6   4
6X **b**

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

DETAIL A
OPTIONAL
CONSTRUCTIONS

L
L
L1

DETAIL B
OPTIONAL
CONSTRUCTIONS

EXPOSED Cu   MOLD CMPD

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
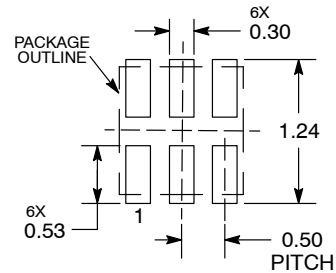
PACKAGE
OUTLINE

6X
0.30

1.24

6X
0.53

1

0.50
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.

PACKAGE DIMENSIONS

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

TOP VIEW

PIN ONE REFERENCE

2X ⌴ 0.08 C

2X ⌴ 0.08 C

SIDE VIEW

DETAIL B

0.05 C

0.05 C

A3
A
A1

C SEATING PLANE

BOTTOM VIEW

DETAIL A

6X L

6X b

| 0.07 Ⓜ C A B |
| 0.05 Ⓜ C | NOTE 3 |

DETAIL A
ALTERNATE TERMINAL CONSTRUCTION

L1 — L
L3

DETAIL B
ALTERNATE CONSTRUCTION

EXPOSED Cu   MOLD CMPD

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	0.50	0.65
A1	0.00	0.05
A3	0.13 REF	
b	0.17	0.23
D	1.00 BSC	
E	1.00 BSC	
e	0.35	
L	0.20	0.40
L1	---	0.15
L3	0.26	0.33

RECOMMENDED SOLDERING FOOTPRINT*

6X 0.25
6X 0.52
1.20
0.35
PITCH

PACKAGE OUTLINE

DIMENSION: 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.