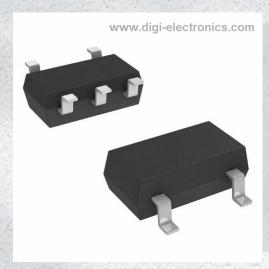


NC7SV32P5X Datasheet



https://www.DiGi-Electronics.com

DiGi Electronics Part Number NC7SV32P5X-DG

Manufacturer onsemi

Manufacturer Product Number NC7SV32P5X

Description IC GATE OR 1CH 2-INP SC70-5

Detailed Description OR Gate IC 1 Channel SC-70-5



Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

DiGi is a global authorized distributor of electronic components.



Purchase and inquiry

Manufacturer Product Number:	Manufacturer:
NC7SV32P5X	onsemi
Series:	Product Status:
7SV	Active
Logic Type:	Number of Circuits:
OR Gate	1
Number of Inputs:	Features:
2	
Voltage - Supply:	Current - Quiescent (Max):
0.9V ~ 3.6V	900 nA
Current - Output High, Low:	Input Logic Level - Low:
24mA, 24mA	0.7V ~ 0.8V
Input Logic Level - High:	Max Propagation Delay @ V, Max CL:
1.6V ~ 2V	3.3ns @ 3V, 30pF
Operating Temperature:	Mounting Type:
-40°C ~ 85°C	Surface Mount
Supplier Device Package:	Package / Case:
SC-70-5	5-TSSOP, SC-70-5, SOT-353
Base Product Number:	
7SV32	

Environmental & Export classification

RoHS Status:	Moisture Sensitivity Level (MSL):
ROHS3 Compliant	1 (Unlimited)
REACH Status:	ECCN:
REACH Unaffected	EAR99
HTSUS:	

8542.39.0001

MARKING



TinyLogic ULP-A 2-Input OR Gate

NC7SV32

The NC7SV32 is a single 2-Input OR Gate in tiny footprint packages. The device is designed to operate for $V_{CC} = 0.9 \text{ V}$ to 3.6 V.

Features

- Designed for 0.9 V to 3.6 V V_{CC} Operation
- 1.6 ns t_{PD} at 3.3 V (Typ)
- Inputs/Outputs Over-Voltage Tolerant up to 3.6 V
- I_{OFF} Supports Partial Power Down Protection
- Source/Sink 24 mA at 3.3 V
- Available in SC−88A and MicroPak[™] Packages
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant



Figure 1. Pinout Diagrams (Top Views)



Figure 2. Logic Symbol

SIP6 1.45X1.0 MicroPak CASE 127EB Pin 1 UDFN6 MicroPak2TM CASE 517DP CCKK XYZ CCKK XYZ

CC = Specific Device Code

KK = 2-Digit Lot Run Traceability Code

Pin 1

XY = 2-Digit Date Code Z = Assembly Plant Code



XXX = Specific Devic Code M = Date Code

= Pb-Free Package

ORDERING INFORMATION

See detailed ordering, marking and shipping information on page 6 of this data sheet.

NOTE: Some of the devices on this data sheet have been **DISCONTINUED**. Please refer to the table on page 6.

PIN ASSIGNMENT

Pin	SC-88A	MicroPak
1	А	А
2	В	В
3	GND	GND
4	Υ	Υ
5	V _{CC}	N.C.
6	-	V _{CC}

N.C. = No Connect

FUNCTION TABLE

1

Inp	Output Y = A + B	
Α	В	Υ
L	L	L
L	Н	Н
Н	L	Н
Н	Н	Н

MAXIMUM RATINGS

Symbol	Characteristics	Value	Unit
V _{CC}	DC Supply Voltage	-0.5 to +4.3	V
V _{IN}	DC Input Voltage	-0.5 to +4.3	V
V _{OUT}	DC Output Voltage 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 +4.3 -0.5 to +4.3	V
I _{IK}	DC Input Diode Current V _{IN} < GND	-50	mA
I _{OK}	DC Output Diode Current V _{OUT} < GND	-50	mA
I _{OUT}	DC Output Source/Sink Current	±50	mA
I _{CC} or I _{GND}	DC Supply Current per Supply Pin or Ground Pin	±50	mA
T _{STG}	Storage Temperature Range	-65 to +150	°C
TL	Lead Temperature, 1 mm from Case for 10 Seconds	260	°C
TJ	Junction Temperature Under Bias	+150	°C
θЈА	Thermal Resistance (Note 2) SC–88A MicroPak	377 154	°C/W
P _D	Power Dissipation in Still Air SC–88A MicroPak	332 812	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	4000 2000	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.

- 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.
 HBM tested to EIA / JESD22-A114-A. CDM tested to JESD22-C101-A. JEDEC recommends that ESD qualification to EIA/JESD22-A115A.
- (Machine Model) be discontinued.
- 4. Tested to EIA/JESD78 Class II.

RECOMMENDED OPERATING CONDITIONS

Symbol	Parameter	Min	Max	Unit	
V _{CC}	Positive DC Supply Voltage	0.9	3.6	V	
V _{IN}	DC Input Voltage	0	3.6	V	
V _{OUT}	DC Output Voltage Active-Mode (High or Low State) Tri-State Mode (Note 1) Power-Down Mode (V _{CC} = 0 V)		0 0 0	V _{CC} 3.6 3.6	
T _A	Operating Temperature Range		-40	+85	°C
t _r , t _f	Input Transition Rise and Fall Time V _C	_C = 3.3 V ± 0.3 V	0	10	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

				Т	A = 25°	С	T _A = -40°0	C to +85°C					
Symbol	Parameter	Condition	V _{CC} (V)	Min	Тур	Max	Min	Max	Unit				
V _{IH}	High-Level Input		0.9	-	0.5	-	-	-	V				
	Voltage		1.1 to 1.3	0.65 x V _{CC}	-	-	0.65 x V _{CC}	-					
			1.4 to 1.6	0.65 x V _{CC}	-	-	0.65 x V _{CC}	-					
			1.65 to 1.95	0.65 x V _{CC}	-	-	0.65 x V _{CC}	_					
			2.3 to <2.7	1.6	-	-	1.6	_					
			2.7 to 3.6	2.0	-	-	2.0	-					
V _{IL}	Low-Level Input		0.9	-	0.5	-	-	-	V				
	Voltage		1.1 to 1.3	-	-	0.35 x V _{CC}	_	0.35 x V _{CC}					
			1.4 to 1.6	-	-	0.35 x V _{CC}	-	0.35 x V _{CC}					
			1.65 to 1.95	-	-	0.35 x V _{CC}	-	0.35 x V _{CC}					
			2.3 to <2.7	-	-	0.7	-	0.7					
			2.7 to 3.6	-	-	0.8	-	0.8					
V _{OH}	High-Level Output	$V_{IN} = V_{IH}$ or V_{IL}							V				
	Voltage	I _{OH} = -100 μA	0.9	-	V _{CC} – 0.1	_	_	-					
		1.1 to 1.3	1.1 to 1.3	V _{CC} – 0.1	-	-	V _{CC} – 0.1	-					
			1.4 to 1.6	V _{CC} – 0.1	_	-	V _{CC} – 0.1	-					
			1.65 to 1.95	V _{CC} - 0.2	_	-	V _{CC} – 0.2	-					
			2.3 to <2.7	V _{CC} - 0.2	_	-	V _{CC} – 0.2	-					
							2.7 to 3.6	V _{CC} - 0.2	_	-	V _{CC} – 0.2	-	
		$I_{OH} = -2 \text{ mA}$	1.1 o 1.3	0.75 x V _{CC}	_	-	0.75 x V _{CC}	-					
		$I_{OH} = -4 \text{ mA}$	1.4 to 1.6	0.75 x V _{CC}	_	-	0.75 x V _{CC}	-					
		$I_{OH} = -6 \text{ mA}$	1.65 to 1.95	1.25	-	-	1.25	-					
			2.3 to <2.7	2.0	_	-	2.0	-					
		I _{OH} = -12 mA	2.3 to <2.7	1.8	_	-	1.8	-					
			2.7 to 3.6	2.2	-	-	2.2	-					
			I _{OH} = -18 mA	2.3 to <2.7	1.7	-	-	1.7	-				
			2.7 to 3.6	2.4	-	-	2.4	_					
		$I_{OH} = -24 \text{ mA}$	2.7 to 3.6	2.2	_	-	2.2	-					

DC ELECTRICAL CHARACTERISTICS (continued)

				7	T _A = 25°C		$T_A = -40^{\circ}C \text{ to } +85^{\circ}C$		
Symbol	Parameter	Condition	V _{CC} (V)	Min	Тур	Max	Min	Max	Unit
V _{OL}	Low-Level	$V_{IN} = V_{IH}$ or V_{IL}							V
	Output Voltage	I _{OL} = 100 μA	0.9	-	0.1	-	-	-	
			1.1 to 1.3	ı	_	0.1	ı	0.1	
			1.4 to 1.6	ı	_	0.1	-	0.1	
			1.65 to 1.95	ı	_	0.2	ı	0.2	
			2.3 to < 2.7	ı	_	0.2	-	0.2	
			2.7 to 3.6	ı	_	0.2	-	0.2	
		I _{OL} = 2 mA	1.1 o 1.3	ı	_	0.25 x V _{CC}	ı	0.25 x V _{CC}	
		I _{OL} = 4 mA	1.4 to 1.6	ı	_	0.25 x V _{CC}	-	0.25 x V _{CC}	
		I _{OL} = 6 mA	1.65 to 1.95	ı	_	0.3	ı	0.3	
		I _{OL} = 12 mA	2.3 to <2.7	ı	_	0.4	-	0.4	
			2.7 to 3.6	1	_	0.4	ı	0.4	
		I _{OL} = 18 mA	2.3 to <2.7	ı	_	0.6	ı	0.6	
			2.7 to 3.6	1	_	0.4	ı	0.4	
		I _{OL} = 24 mA	2.7 to 3.6	ı	_	0.55	ı	0.55	
I _{IN}	Input Leakage Current	V _{IN} = 0 V to 3.6 V	0.9 to 3.6	-	-	±0.1	-	±0.5	μΑ
I _{OFF}	Power Off Leakage Current	V _{IN} = 0 V to 3.6 V or V _{OUT} = 0 V to 3.6 V	0	-	-	0.5	-	0.5	μΑ
I _{CC}	Quiescent Supply Current	V _{IN} = V _{CC} or GND	0.9 to 3.6	-	-	0.9	-	0.9	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.

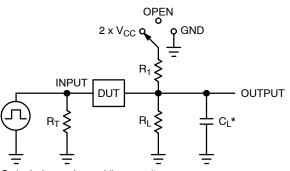
AC ELECTRICAL CHARACTERISTICS

				1	Γ _A = 25°0)	T _A = -40°C	C to +85°C	
Symbol	Parameter	Condition	V _{CC} (V)	Min	Тур	Max	Min	Max	Unit
t _{PLH} ,	Propagation Delay,	$R_L = 1 \text{ M}\Omega$, $C_L = 15 \text{ pF}$	0.9	_	15.7	_	ı	-	ns
t _{PHL}	(A or B) to Y (Figures 3 and 4)	$R_L = 2 \text{ k}\Omega$, $C_L = 15 \text{ pF}$	1.1 to 1.3	_	6.7	15.8	-	18.6	
	,		1.4 to 1.6	_	3.7	8.7	-	9.7	
		$R_L = 500 \ \Omega, \ C_L = 30 \ pF$	1.65 to 1.95	-	2.7	6.0	-	6.8	
			2.3 to 2.7	-	1.9	4.1	-	4.7	
			2.7 to 3.6	-	1.6	3.3	-	4.0	

CAPACITIVE CHARACTERISTICS

Symbol	Parameter	Test Condition	Typical (T _A = 25°C)	Unit
C _{IN}	Input Capacitance	V _{CC} = 0 V	2.0	pF
C _{PD}	Power Dissipation Capacitance (Note 5)	$f = 10 \text{ MHz}$, $V_{CC} = 0.9 \text{ to } 3.6 \text{ V}$, $V_{IN} = 0 \text{ V or } V_{CC}$	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} • V_{CC} • f_{in} + I_{CC}. C_{PD} is used to determine the no–load dynamic power consumption: P_D = C_{PD} • V_{CC}² • f_{in} + I_{CC} • V_{CC}.



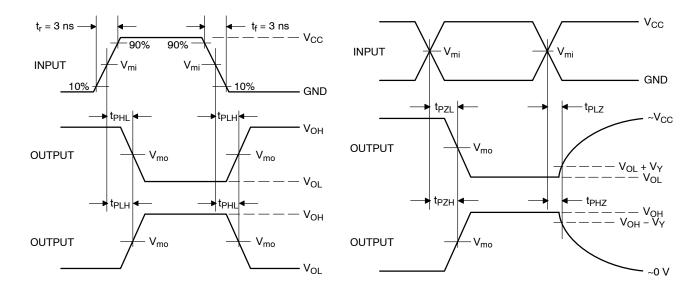
Test	Switch Position
t _{PLH} / t _{PHL}	Open
t _{PLZ} / t _{PZL}	2 x V _{CC}
t _{PHZ} / t _{PZH}	GND

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



V _{CC} , V	V _{mi} , V	V _{mo} , V	V _Y , V
0.9	V _{CC} / 2	V _{CC} / 2	0.1
1.1 to 1.3	V _{CC} / 2	V _{CC} / 2	0.1
1.4 to 1.6	V _{CC} / 2	V _{CC} / 2	0.1
1.65 to 1.95	V _{CC} / 2	V _{CC} / 2	0.15
2.3 to 2.7	V _{CC} / 2	V _{CC} / 2	0.15
3.0 to 3.6	1.5	1.5	0.3

Figure 4. Switching Waveforms

ORDERING INFORMATION

Device	Package	Marking	Pin 1 Orientation (See below)	Shipping [†]
NC7SV32P5X	SC-88A	V32	Q4	3000 / Tape & Reel

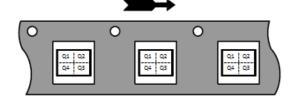
DISCONTINUED (Note 6)

NC7SV32L6X	MicroPak	G6	Q4	5000 / Tape & Reel
NC7SV32FHX	MicroPak2	G6	Q4	5000 / Tape & Reel
NC7SV32FHX-L22780	MicroPak2	G6	Q4	5000 / 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.

PIN 1 ORIENTATION IN TAPE AND REEL

Direction of Feed



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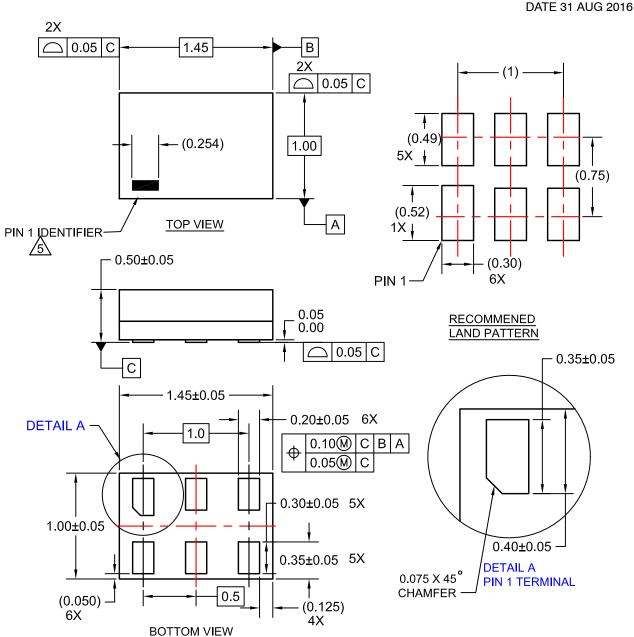


^{6.} **DISCONTINUED:** These devices are not recommended for new design. Please contact your **onsemi** representative for information. The most current information on these devices may be available on www.onsemi.com.



MECHANICAL CASE OUTLINE PACKAGE DIMENSIONS

SIP6 1.45X1.0 CASE 127EB **ISSUE O**



NOTES:

- 1. CONFORMS TO JEDEC STANDARD MO-252 VARIATION UAAD
- 2. DIMENSIONS ARE IN MILLIMETERS
- 3. DRAWING CONFORMS TO ASME Y14.5M-2009
 4. PIN ONE IDENTIFIER IS 2X LENGTH OF ANY

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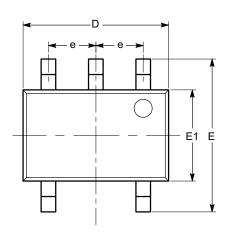
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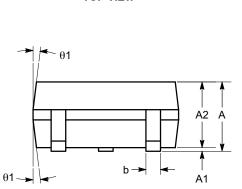
PACKAGE DIMENSIONS

SC-88A (SC-70 5 Lead), 1.25x2 CASE 419AC-01 ISSUE A

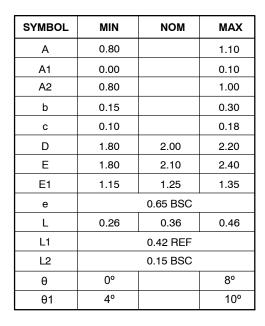
DATE 29 JUN 2010

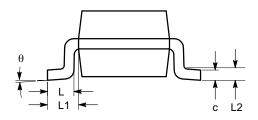


TOP VIEW



SIDE VIEW





END VIEW

Notes:

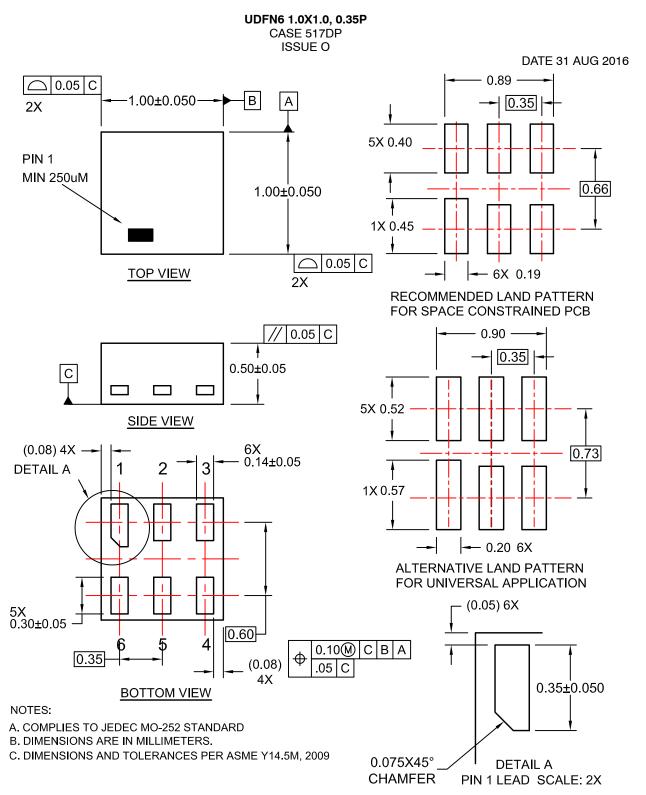
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onsemi Website: www.onsemi.com

ONLINE SUPPORT: www.onsemi.com/support

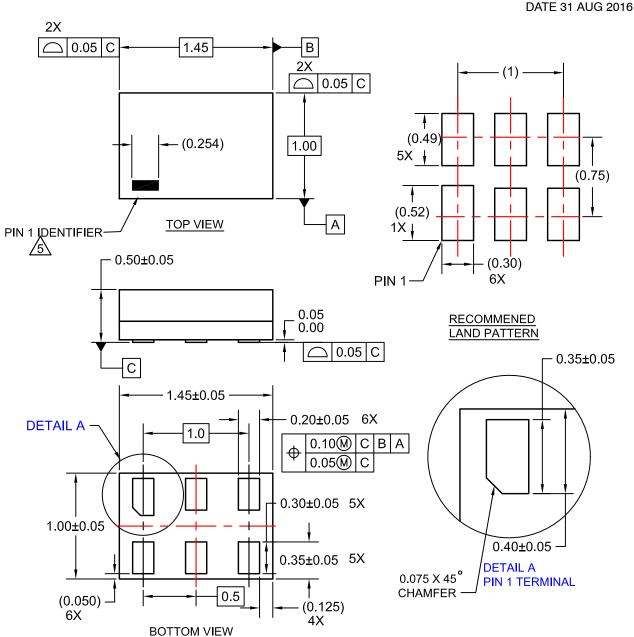
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MECHANICAL CASE OUTLINE PACKAGE DIMENSIONS

SIP6 1.45X1.0 CASE 127EB **ISSUE O**



NOTES:

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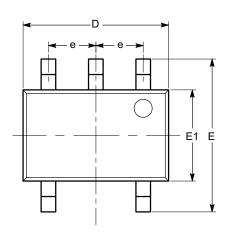
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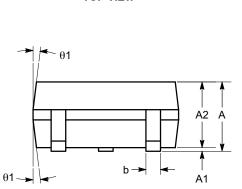
PACKAGE DIMENSIONS

SC-88A (SC-70 5 Lead), 1.25x2 CASE 419AC-01 ISSUE A

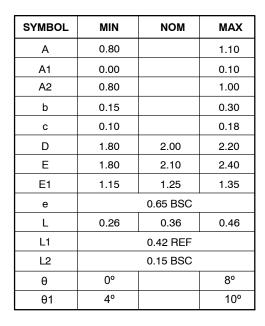
DATE 29 JUN 2010

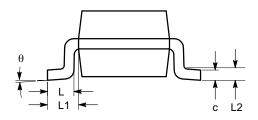


TOP VIEW



SIDE VIEW





END VIEW

Notes:

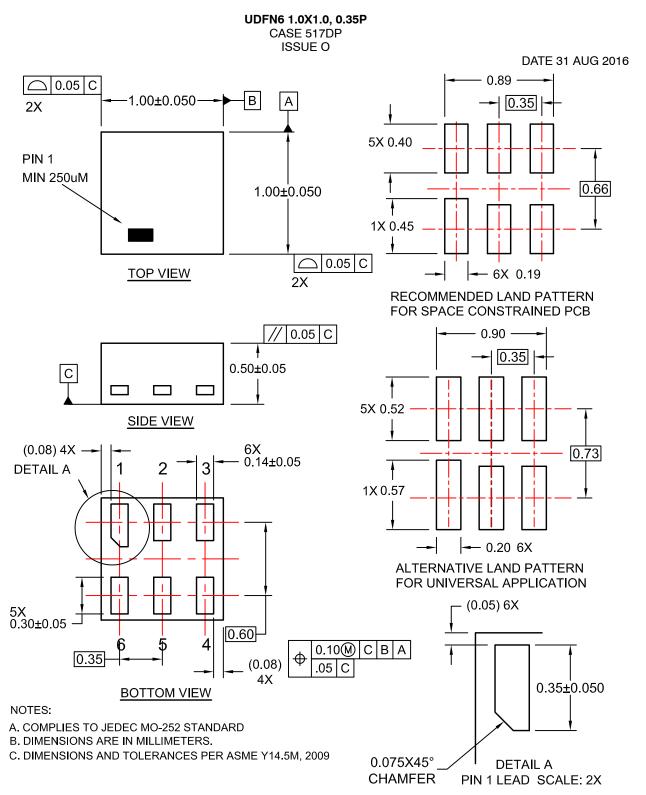
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PACKAGE DIMENSIONS



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