

74LVC1G06 Single Inverter Buffer/Driver With Open-Drain Output

1. General Description

1.1 Description

This single inverter buffer and driver is designed for 1.65-V to 5.5-V VCC operation.

The output of the 74LVC1G06 device is open-drain and can be connected to other open-drain outputs to implement active-low wired-OR or active-high wired-AND functions. The maximum sink current is 32 mA.

1.2 Features

- Supports 5V VCC operation
- Input and Open-Drain Output accept voltages to 5.5V
- Low power consumption, 10μA max ICC

- ±24mA output drive at 3.3V for open-drain devices
- I_{off} supports partial-power-down mode Operation and Back-Drive Protection

1.3 Device Information

PART NUMBER	PACKAGE
74LVC1G06	SOT23
	SC70
	SOT5X3
	DFN
	DSBGA

2. Connection Diagrams and Pin Description

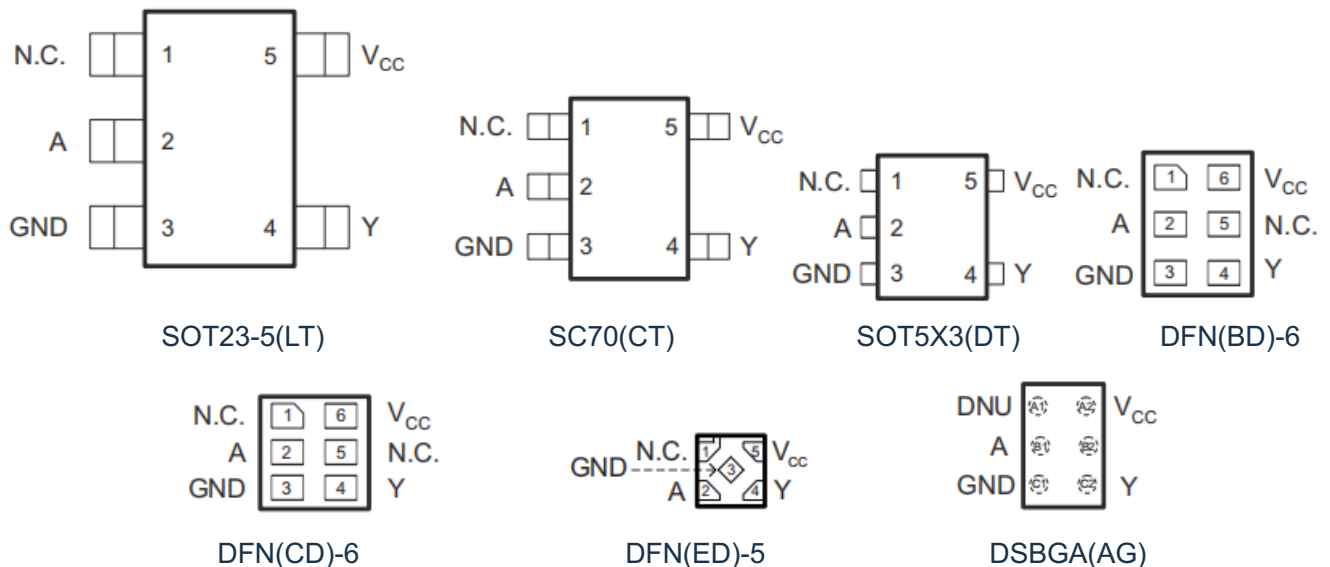


Figure 2.1 Top View

PIN No.				NAME	I/O	FUNCTION
LT/CT/DT	BD/CD	AG	ED			
1	1,5	A1,B2	1	NC		No Connected
2	2	B1	2	A	I	Input
3	3	C1	3	GND		Ground
4	4	C2	4	Y	O	Output
5	6	A2	5	VCC		Supply Voltage

3. System Diagram

3.1 Logic Diagram



Figure 3.1: 74LVC1G06 Logic Diagram

3.2 Function Table

Input	Output
A	Y
1	0
0	Hi-Z

1=High State, 0=Low State

4. Specifications

4.1 Absolute Maximum Ratings

Symbol	Parameter	MIN	MAX	Unit
V_{CC}	Supply Voltage	-0.5	6.5	V
V_I	Input Voltage Range	-0.5	6.5	V
V_O	Voltage Range(applied to any output in the high-impedance or power-off state) ⁽¹⁾	-0.5	6.5	V
	Voltage Range(applied to any output in the high or low state)	-0.5	$V_{CC} + 0.5$	V
I_O	Continuous Output Current		± 50	mA
T_J	Junction Temperature		125	°C
T_{OP}	Operating Temperature	0	70	°C

Absolute maximum ratings are those values beyond which the device could be permanently damaged, These are stress ratings only, which do not imply functional operation of the device at these or any other conditions beyond those indicated under normal operating conditions.

- (1) The input and output negative-voltage ratings may be exceeded if the input and output current ratings are observed.

4.2 Electrical Characteristics

4.2.1 DC Specifications

($T_a=25^{\circ}\text{C}$, voltages are referenced to GND (ground=0V), All typical values are at $V_{CC}=3.3\text{V}$, unless otherwise specified)

Symbol	Parameter	Test Condition	MIN	TYP	MAX	Unit
V_{IH}	High Level Input Voltage	$V_{CC}=1.65\text{V to }1.95\text{V}$	$0.65V_{CC}$	--	--	V
		$V_{CC}=2.3\text{V to }2.7\text{V}$	1.7	--	--	V
		$V_{CC}=2\text{V to }5.5\text{V}$	$0.7V_{CC}$	--	--	V
V_{IL}	Low Level Input Voltage	$V_{CC}=1.65\text{V to }1.95\text{V}$	--	--	$0.35V_{CC}$	V
		$V_{CC}=2.3\text{V to }2.7\text{V}$	--	--	0.7	V
		$V_{CC}=3\text{V to }3.6\text{V}$	--	--	0.8	V
		$V_{CC}=4.5\text{V to }5.5\text{V}$	--	--	$0.3V_{CC}$	V
I_{OL}	Low Level Output Current	$V_{CC}=1.65\text{V}$	--	--	4	mA
		$V_{CC}=2.3\text{V}$	--	--	8	mA
		$V_{CC}=3\text{V}$	--	--	16	mA
			--	--	24	mA
		$V_{CC}=4.5\text{V}$	--	--	32	mA

Symbol	Parameter	Test Condition	MIN	TYP	MAX	Unit
V_{OL}	Low Level Output Voltage	$V_{CC}=1.65V$ to $5.5V, I_{OL}=100\mu A$	--	--	0.1	V
		$V_{CC}=1.65V, I_{OL}=4mA$	--	0.09	--	V
		$V_{CC}=2.3V, I_{OL}=8mA$	--	0.1	--	V
		$V_{CC}=3V, I_{OL}=16mA$	--	0.15	--	V
		$V_{CC}=3V, I_{OL}=24mA$	--	0.25	--	V
		$V_{CC}=4.5V, I_{OL}=32mA$	--	0.25	--	V
I_i	A Input Leakage Current	$V_{CC}=0$ to $5.5V, V_i=V_{CC}$ or GND	--	0	± 1	μA
I_{off}	Power Off Leakage Current	$V_{CC}=0V, V_i$ or $V_o=5.5V$	--	0	± 10	μA
I_{CC}	Quiescent Supply Current	$V_{CC}=1.65V$ to $5.5V, V_i=V_{CC}$ or GND, $I_o=0$	--	0	10	μA
ΔI_{CC}	Additional Quiescent Supply Current Per Input Pin	$V_{CC}=3V$ to $5.5V$, one input at V_{CC} -0.6V, other inputs at V_{CC} or GND	--	--	500	μA

5. Application Information

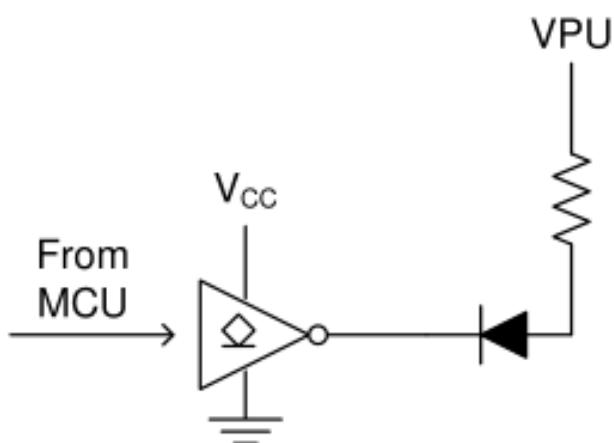


Figure 5.1: Application Schematic

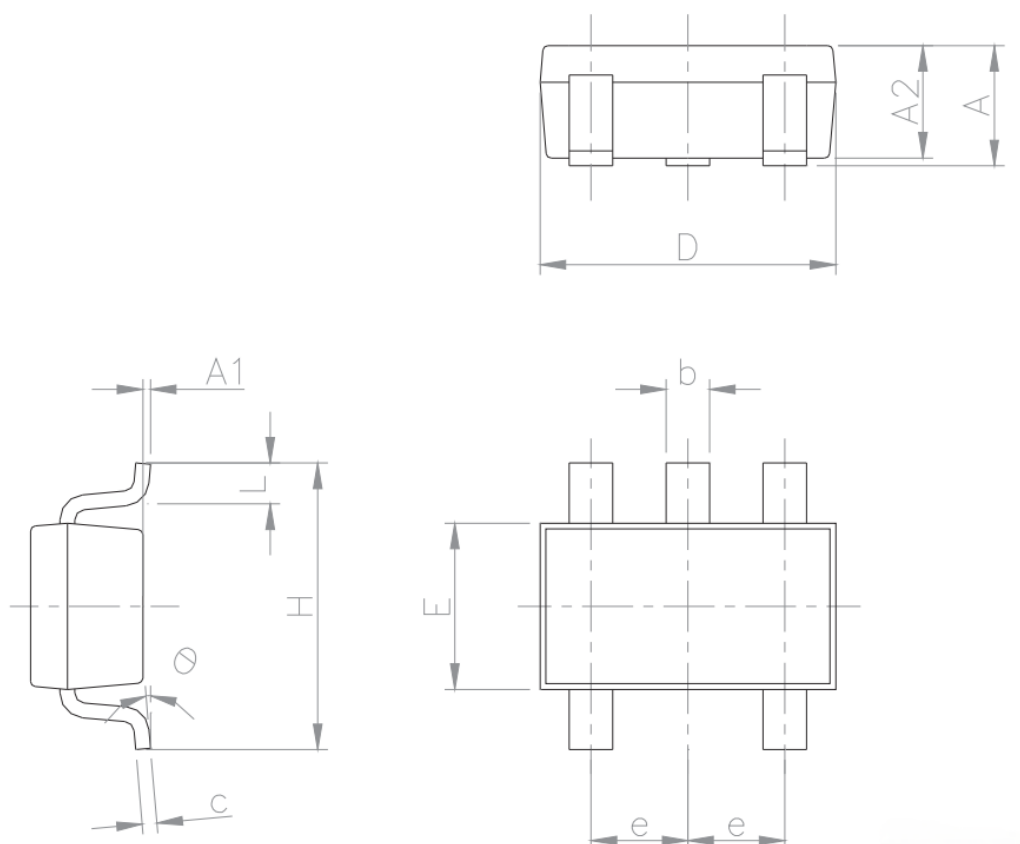


6. Ordering Information

Orderable Device	Package Type	Pins	Packing	Package Qty
74LVC1G06LT05ARCQ	SOT23	5	Tape & Reel	3000
74LVC1G06CT05ARCQ	SC70	5	Tape & Reel	3000
74LVC1G06DT05ARDQ	SOT5x3	5	Tape & Reel	4000
74LVC1G06BD06AREQ	DFN(BD)	6	Tape & Reel	5000
74LVC1G06CD06AREQ	DFN(CD)	6	Tape & Reel	5000
74LVC1G06ED05ARCQ	DFN	5	Tape & Reel	3000
74LVC1G06AG05ARCQ	DSBGA	5	Tape & Reel	3000

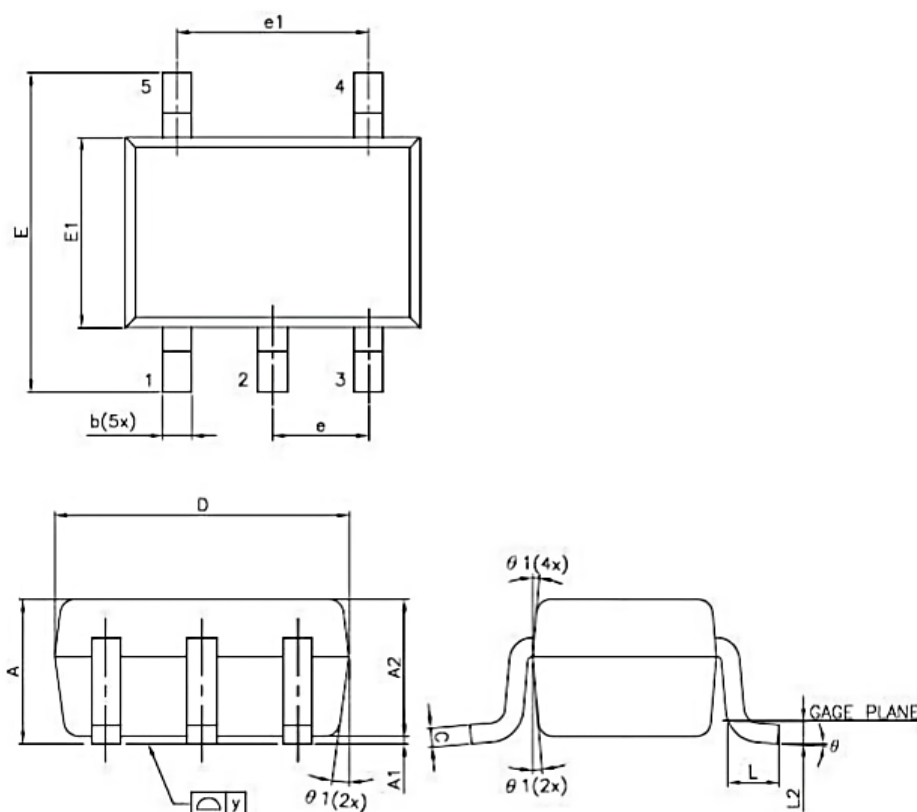
7. Package Information

7.1 SOT23-5



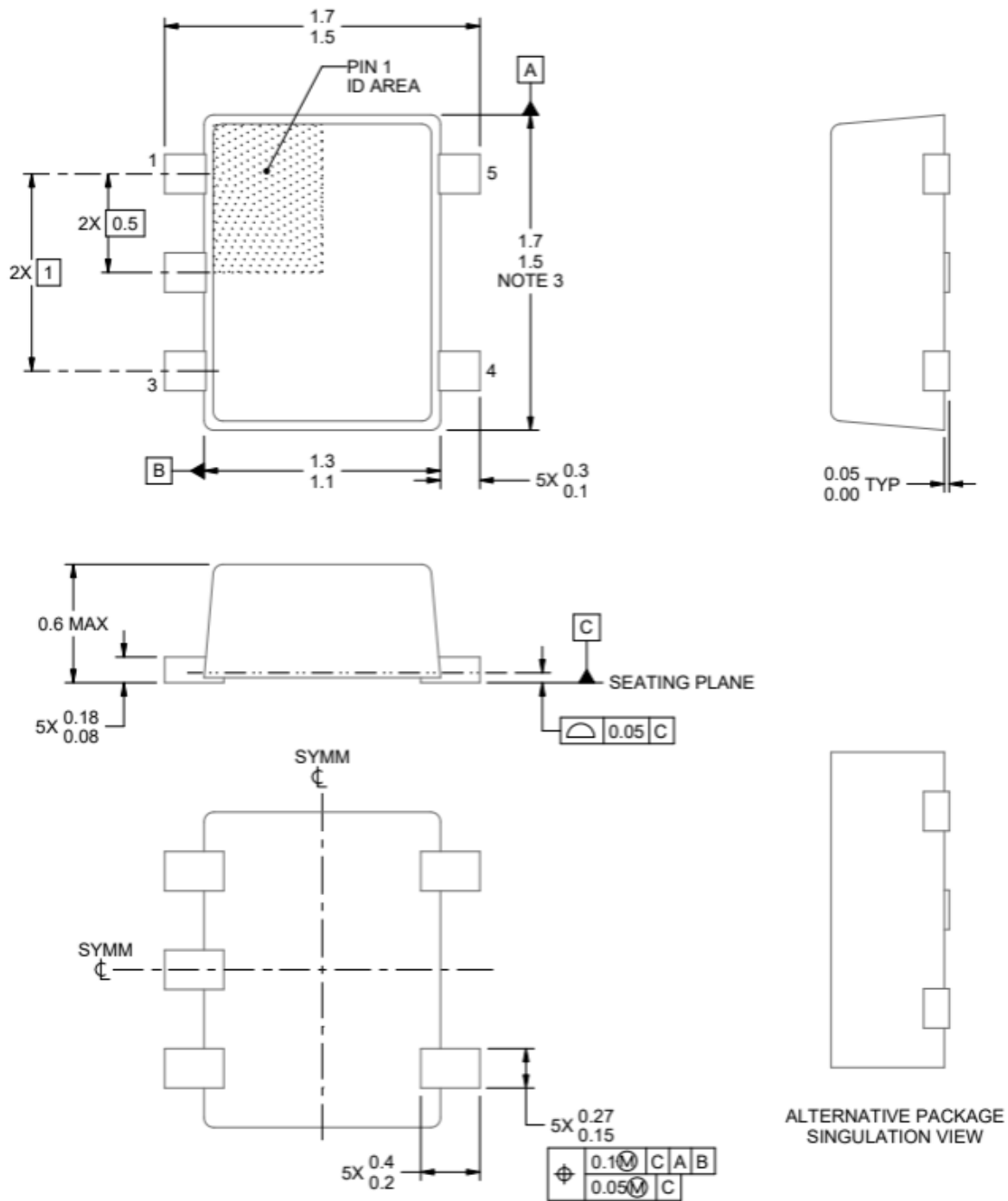
Symbol	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	0.90	-	1.45	0.035	-	0.057
A1	-	-	0.15	-	-	0.006
A2	0.90	-	1.30	0.035	-	0.051
b	0.35	-	0.50	0.014	-	0.020
c	0.09	-	0.20	0.004	-	0.008
D	2.80	-	3.05	0.110	-	0.120
E	1.50	-	1.75	0.059	-	0.069
e	-	0.95	-	-	0.037	-
H	2.60	-	3.00	0.102	-	0.118
L	0.10	-	0.60	0.004	-	0.024
θ	0 degrees	-	10 degrees	-	-	-

7.2 SC70

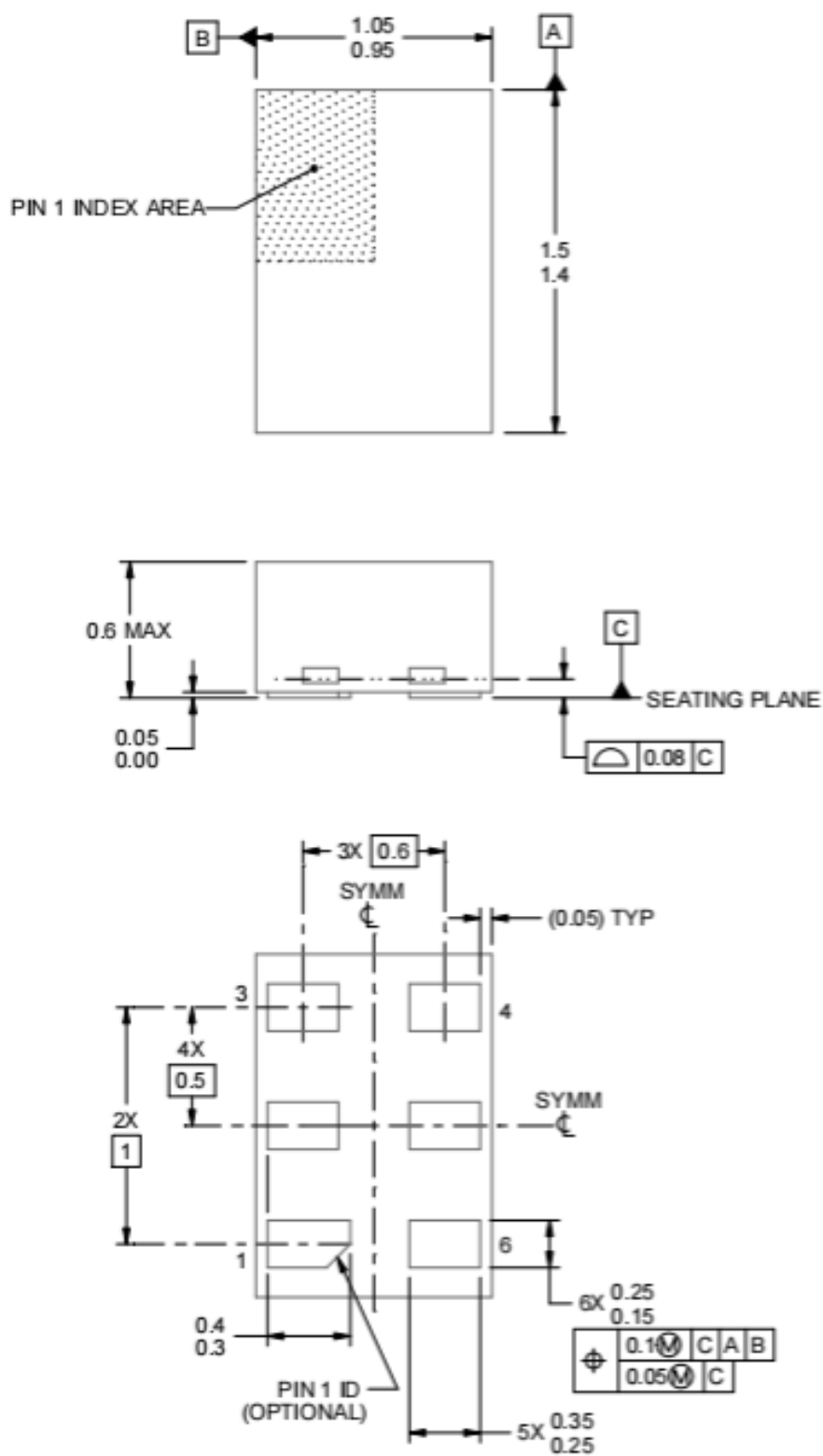


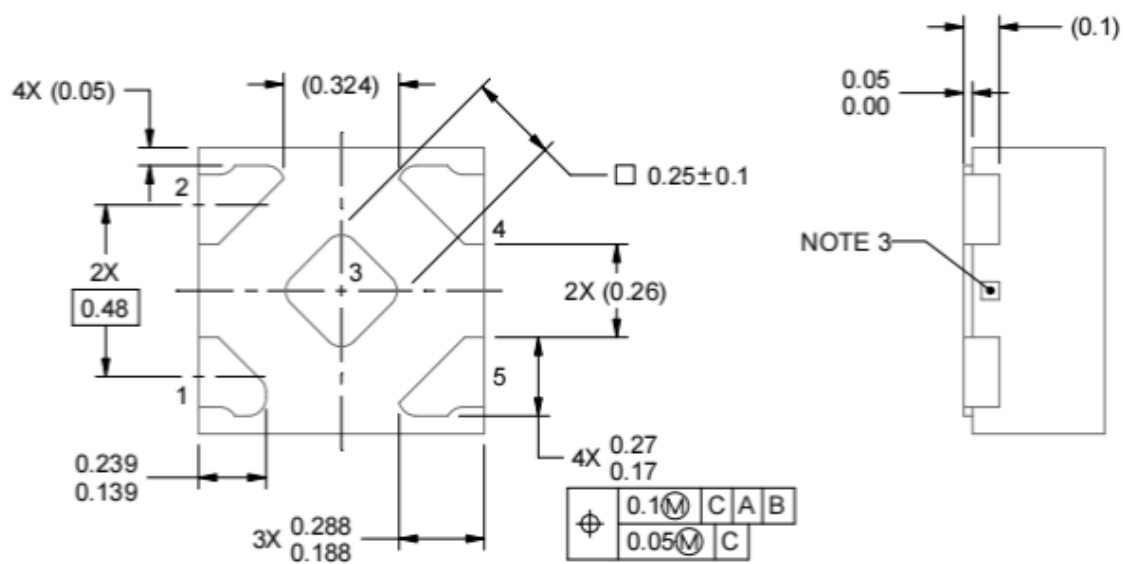
Symbol	Dim in mm		
	MIN	TYP	MAX
A	0.90	1.00	1.10
A1	0.00	0.05	0.10
A2	0.90	0.95	1.00
b	0.15	0.25	0.35
C	0.10	0.12	0.15
D	1.80	2.00	2.20
E	2.15	2.25	2.35
E1	1.15	1.25	1.35
e	0.650TYP.		
e1	1.20	1.30	1.40
L	0.25	0.30	0.40
L2	0.15TYP.		
Y	0.00	0.05	0.10
θ	4°	8°	12°

7.3 SOT5X3



7.4 DFN(BD)-6





7.7 DSBGA

