

74LVC1G66 Single Bilateral Analog Switch

1. General Description

1.1 Description

This single analog switch is designed for 1.65-V to 5.5-V VCC operation.

The 74LVC1G66 device can handle analog and digital signals. The device permits bidirectional transmission of signals with amplitudes of up to 5.5 V(peak).

1.2 Features

- 1.65-V to 5.5-V VCC Operation
- Inputs Accept Voltages to 5.5 V
- High On-Off Output Voltage Ratio
- High Degree of Linearity

- Low ON-State Resistance, Typically : 2.5 Ω (VCC= 4.5 V)

1.3 Device Information

PART NUMBER	PACKAGE
74LVC1G66	SOT23
	SC70
	SOT5X3
	DFN(BD)
	DFN(CD)
	DSBGA

2. Connection Diagrams and Pin Description

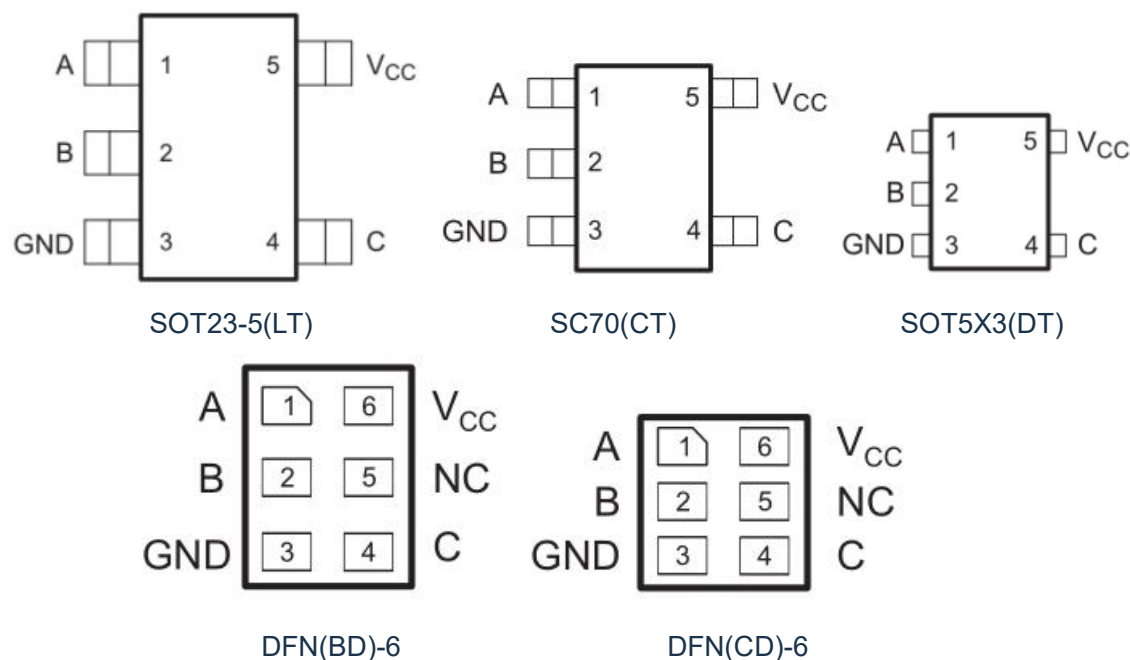
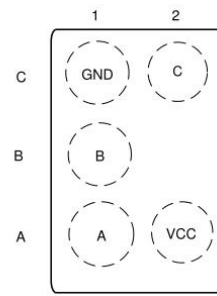


Figure 2.1 Top View



DSBGA(AG)

Figure 2.2 Bottom View

PIN No.			NAME	I/O	FUNCTION
LT/CT/DT	BD/CD	AG			
1	1	A1	A	I/O	Bidirectional signal to be switched
2	2	B1	B	I/O	Bidirectional signal to be switched
3	3	C1	GND	-	Ground pin
4	4	C2	C	I	Controls the switch (L = OFF, H = ON)
5	6	A2	VCC	-	Supply Voltage
-	5	-	NC	-	Do not connect

3. System Diagram

3.1 Logic Diagram

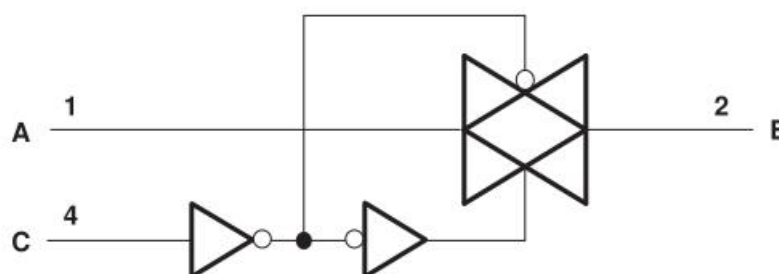


Figure 3.1: 74LVC1G66 Logic Diagram

4. Specifications

4.1 Absolute Maximum Ratings

over operating free-air temperature range (unless otherwise noted)(1)

Symbol	Parameter		MIN	MAX	Unit
V_{CC}	Supply Voltage		-0.5	6.5	V
V_I	Input Voltage Range		-0.5	6.5	V
$V_{I/O}$	Switch I/O voltage(2)(3)(4)		-0.5	$V_{CC} + 0.5$	V
I_{IK}	Continuous Output Current	$V_I < 0$		-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) Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under Recommended Operating Conditions is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

(2) All voltages are with respect to ground, unless otherwise specified.

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

(4) This value is limited to 5.5 V maximum.



4.2 Recommended Operating Conditions

Symbol	Parameter		MIN	MAX	Unit
V_{CC}	Supply Voltage		1.65	5.5	V
$V_{I/O}$	Switch I/O voltage		0	VCC	V
V_{IH}	High-level input voltage, control input	VCC = 1.65 V to 1.95 V	VCC × 0.65		V
		VCC = 2.3 V to 2.7 V	VCC × 0.7		
		VCC = 3 V to 3.6 V	VCC × 0.7		
		VCC = 4.5 V to 5.5 V	VCC × 0.7		
V_{IL}	Low-level input voltage, control input	VCC = 1.65 V to 1.95 V		VCC × 0.35	V
		VCC = 2.3 V to 2.7 V		VCC × 0.3	
		VCC = 3 V to 3.6 V		VCC × 0.3	
		VCC = 4.5 V to 5.5 V		VCC × 0.3	
V_I	Control input voltage		0	5.5	V

4.3 Electrical Characteristics

4.3.1 DC Specifications

($T_a=25^{\circ}\text{C}$, voltages are referenced to GND (ground=0V), unless otherwise specified)

Symbol	Parameter	Test Condition	V_{CC}	MIN	TYP	MAX	Unit
r_{on}	ON-state switch resistance	$V_I = V_{CC}$ or GND, $V_C = V_{IH}$	IS = 4 mA	1.65 V	--	10	Ω
			IS = 8mA	2.3 V	--	5	
			IS = 24 mA	3V	--	4	
			IS = 32mA	4.5V	--	3	
$r_{on(p)}$	Peak on resistance	$V_I = V_{CC}$ or GND, $V_C = V_{IH}$	IS = 4 mA	1.65 V	--	--	Ω
			IS = 8mA	2.3 V	--	--	
			IS = 24 mA	3V	--	--	
			IS = 32mA	4.5V	--	--	
$I_{S(off)}$	OFF-state switch leakage current	$V_I = V_{CC}$ and $V_O = \text{GND}$ or $V_I = \text{GND}$ and $V_O = V_{CC}$, $V_C = V_{IL}$	5.5V	--	--	±1	μA
$I_{S(on)}$	ON-state switch leakage current	$V_I = V_{CC}$ or GND, $V_C = V_{IH}$, $V_O = \text{Open}$	5.5V	--	--	±1	μA
I_I	Control input current	$V_C = V_{CC}$ or GND	5.5 V	--	--	±1	μA
I_{CC}	Supply current	$V_C = V_{CC}$ or GND	5.5 V	--	--	10	μA
ΔI_{CC}	Supply current change	$V_C = V_{CC} - 0.6 \text{ V}$	5.5 V	--	--	500	μA

5. Application Information

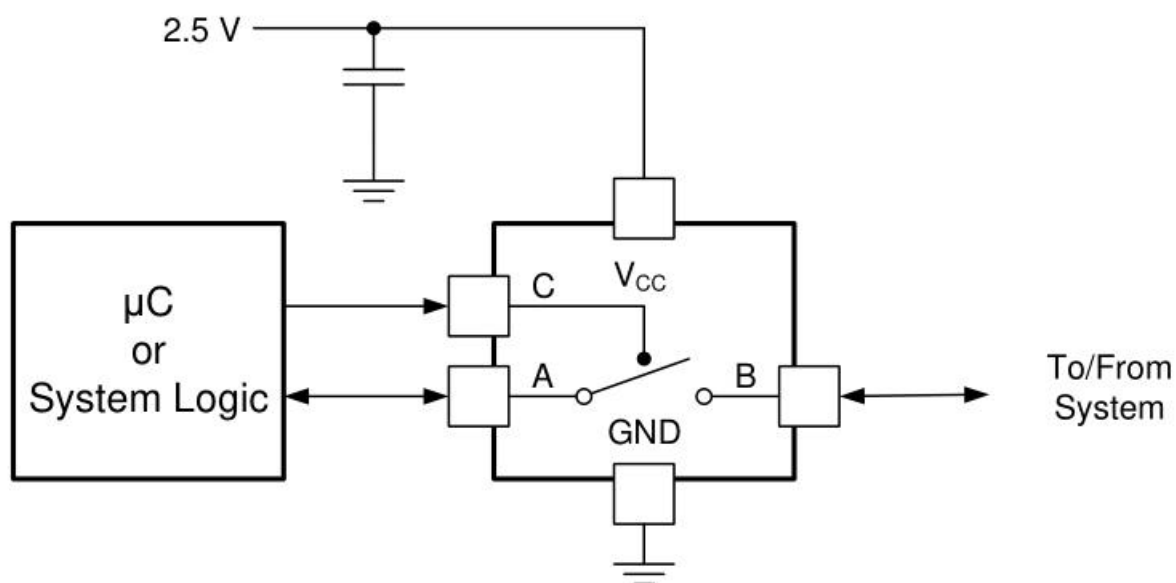


Figure 5.1: Application Schematic

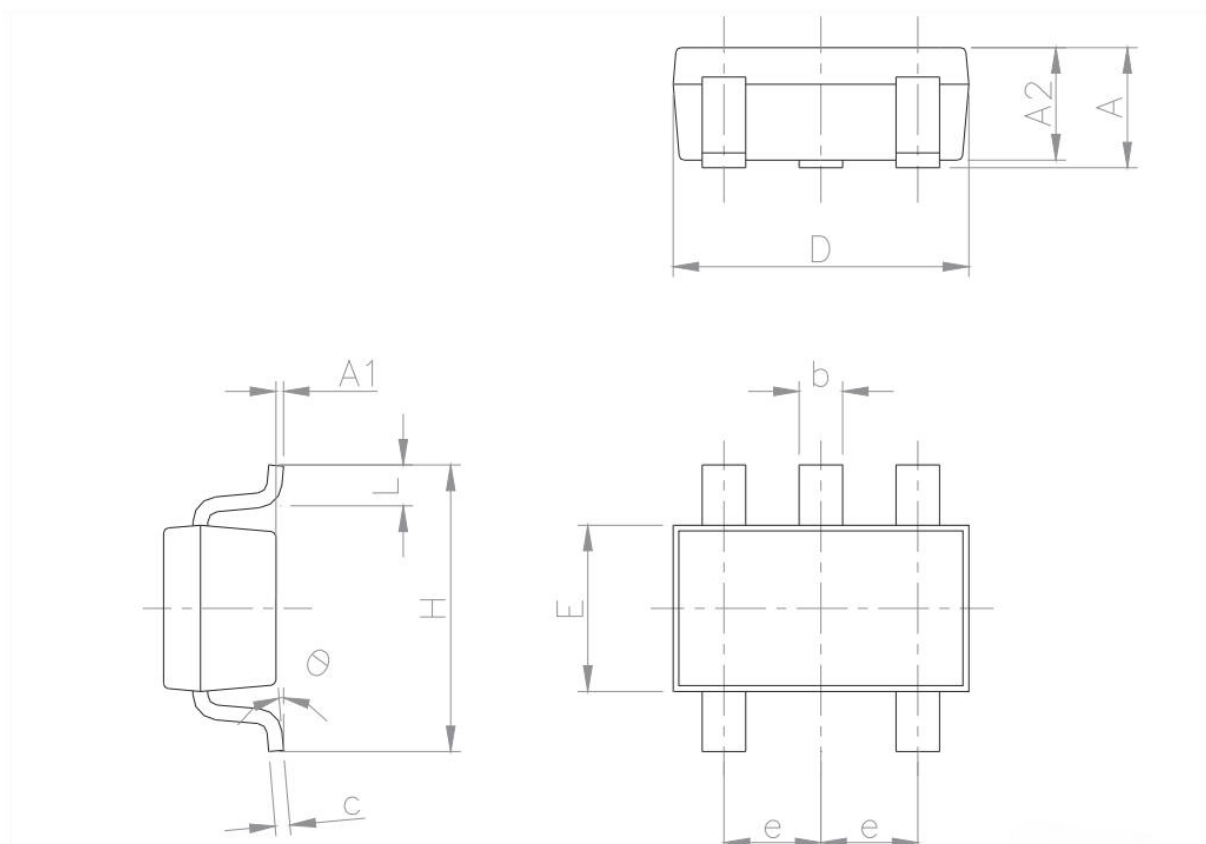


6. Ordering Information

Orderable Device	Package Type	Pins	Packing	Package Qty
74LVC1G66LT05ARCQ	SOT23	5	Tape & Reel	3000
74LVC1G66CT05ARCQ	SC70	5	Tape & Reel	3000
74LVC1G66DT05ARDQ	SOT5x3	5	Tape & Reel	4000
74LVC1G66BD06AREQ	DFN(BD)	6	Tape & Reel	5000
74LVC1G66CD06AREQ	DFN(CD)	6	Tape & Reel	5000
74LVC1G66AG05ARCQ	DSBGA	5	Tape & Reel	3000

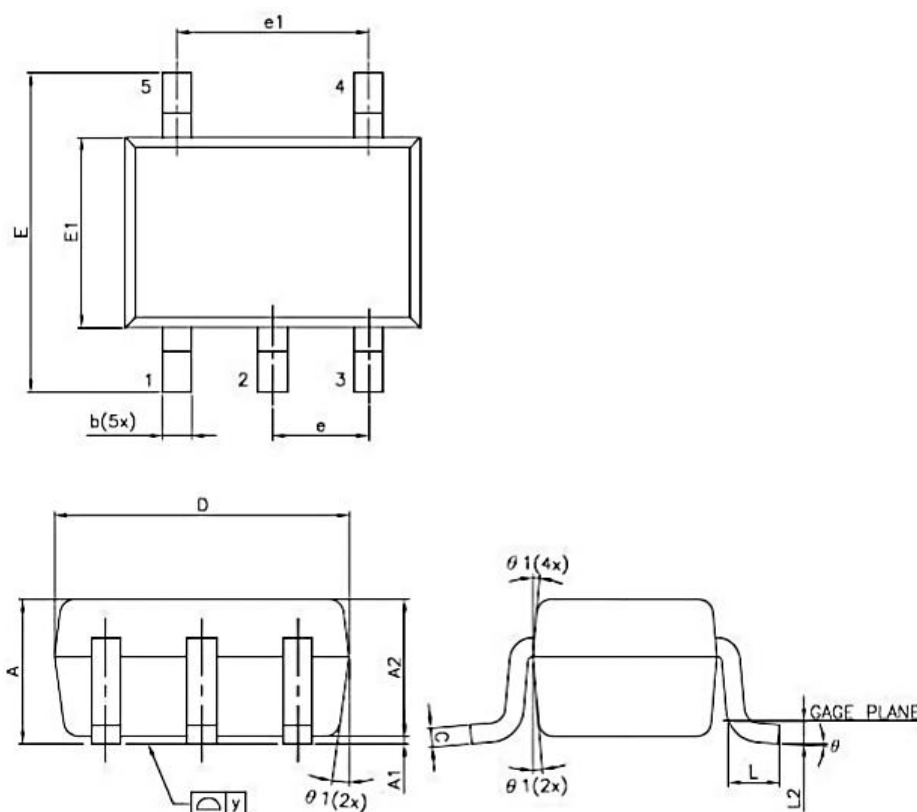
7. Package Information

7.1 SOT23-5



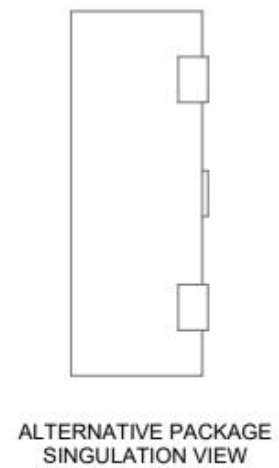
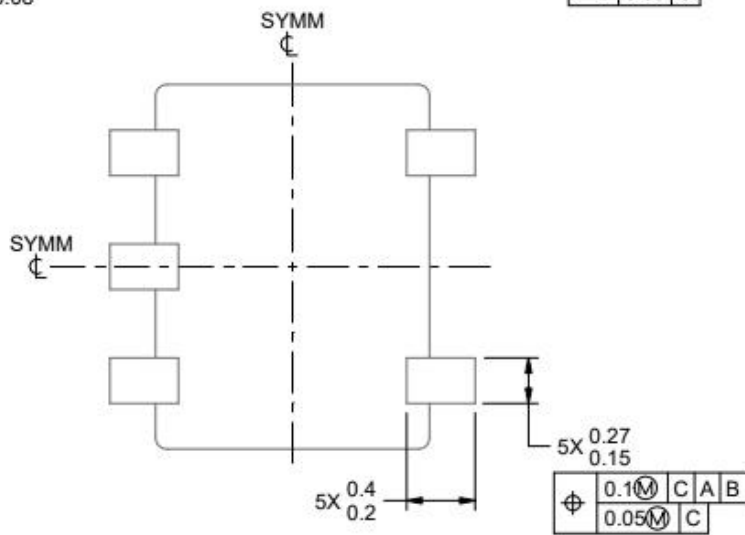
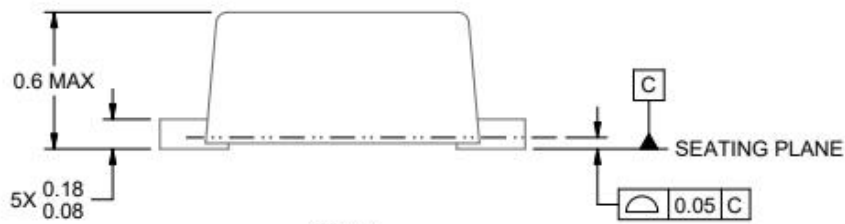
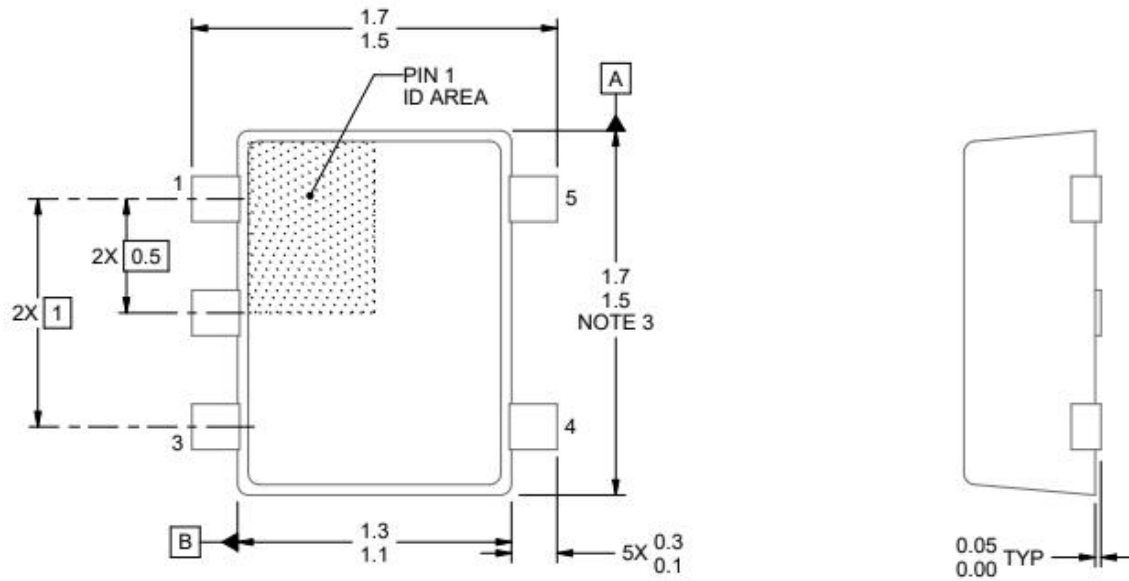
Symbol	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	0.90	-	1.45	0.035	-	0.057
A1	-	-	0.15	-	-	0.006
A2	0.90	-	1.30	0.035	-	0.051
b	0.35	-	0.50	0.014	-	0.020
c	0.09	-	0.20	0.004	-	0.008
D	2.80	-	3.05	0.110	-	0.120
E	1.50	-	1.75	0.059	-	0.069
e	-	0.95	-	-	0.037	-
H	2.60	-	3.00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

7.2 SC70

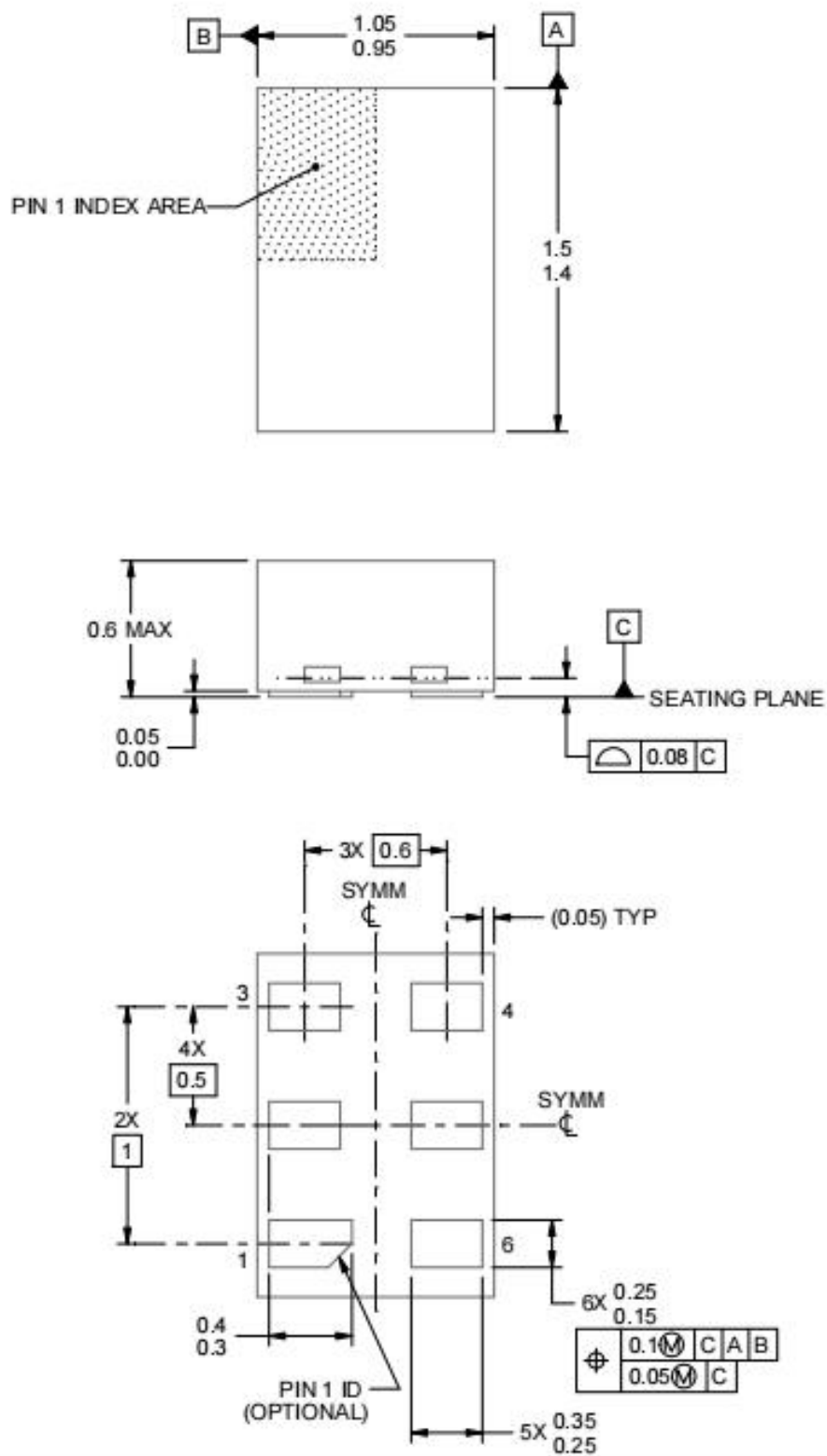


Symbol	Dim in mm		
	MIN	TYP	MAX
A	0.90	1.00	1.10
A1	0.00	0.05	0.10
A2	0.90	0.95	1.00
b	0.15	0.25	0.35
C	0.10	0.12	0.15
D	1.80	2.00	2.20
E	2.15	2.25	2.35
E1	1.15	1.25	1.35
e	0.650TYP.		
e1	1.20	1.30	1.40
L	0.25	0.30	0.40
L2	0.15TYP.		
Y	0.00	0.05	0.10
θ	4°	8°	12°

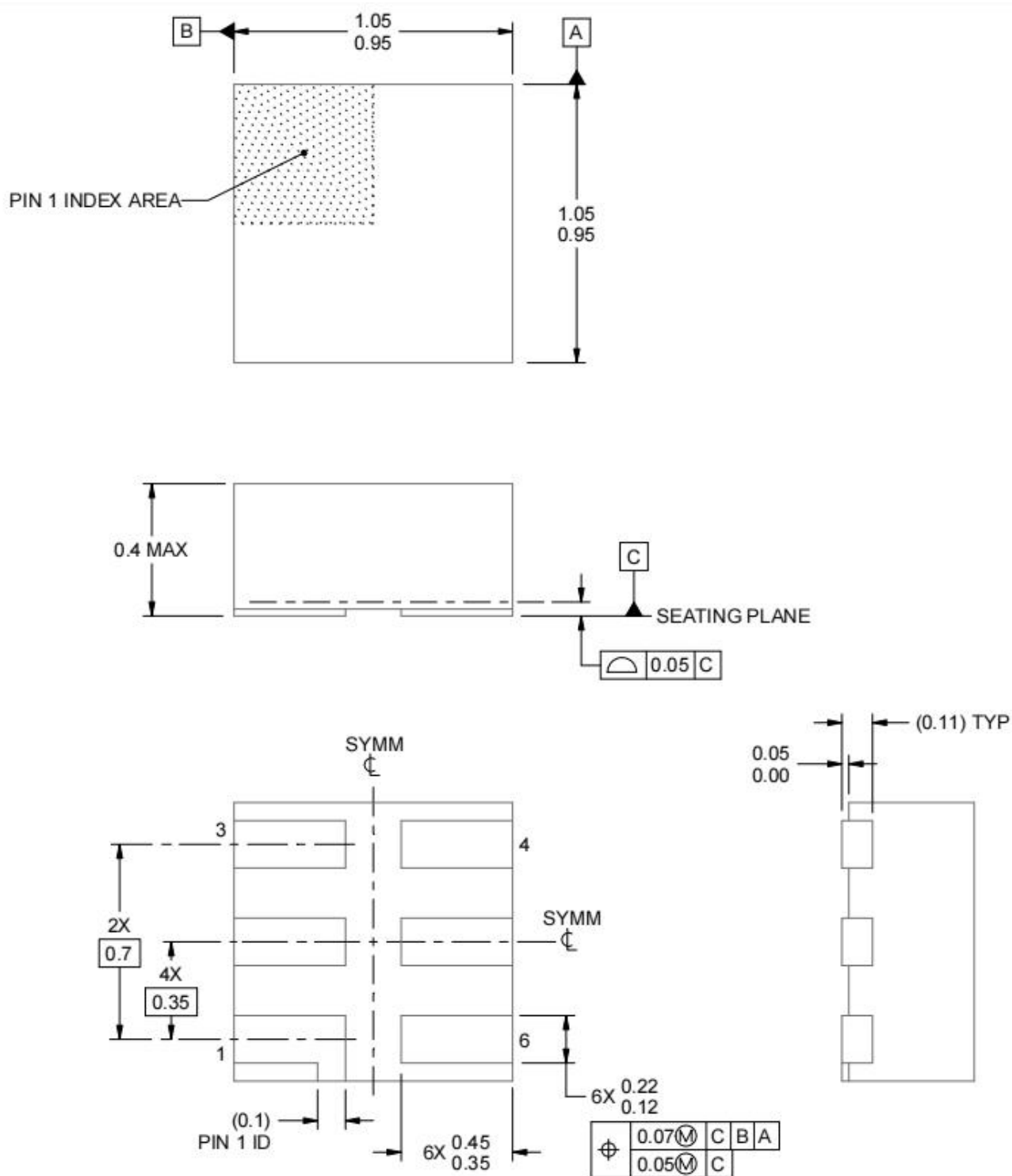
7.3 SOT5X3



7.4 DFN(BD)-6



7.5 DFN(CD)-6



7.6 DSBGA

