

74LVC2G17 Dual Schmitt-Trigger Buffer

1. General Description

1.1 Description

This dual Schmitt-trigger buffer is designed for 1.65-V to 5.5-V VCC operation.

The 74LVC2G17 device contains two buffers and performs the Boolean function $Y = A$. The device functions as two independent buffers, but because of Schmitt action, it may have different input threshold levels for positive-going(VT+) and negative-going(VT-)signals.

This device is fully specified for partial-power-down applications using I_{off} . The I_{off} circuitry disables the outputs, preventing damaging current backflow through the device when it is powered down.

1.2 Features

- Supports 5-V VCC Operation

- Inputs Accept Voltages to 5.5 V
- Low Power Consumption, 10- μ A Max ICC
- ± 24 -mA Output Drive at 3.3 V
- I_{off} Supports Live Insertion, Partial-Power-Down Mode, and Back-Drive Protection

1.3 Device Information

PART NUMBER	PACKAGE
74LVC2G17	SOT23(LT)
	SC70(CT)
	DSBGA(AG)
	DFN(BD)
	DFN(CD)

2. Connection Diagrams and Pin Description

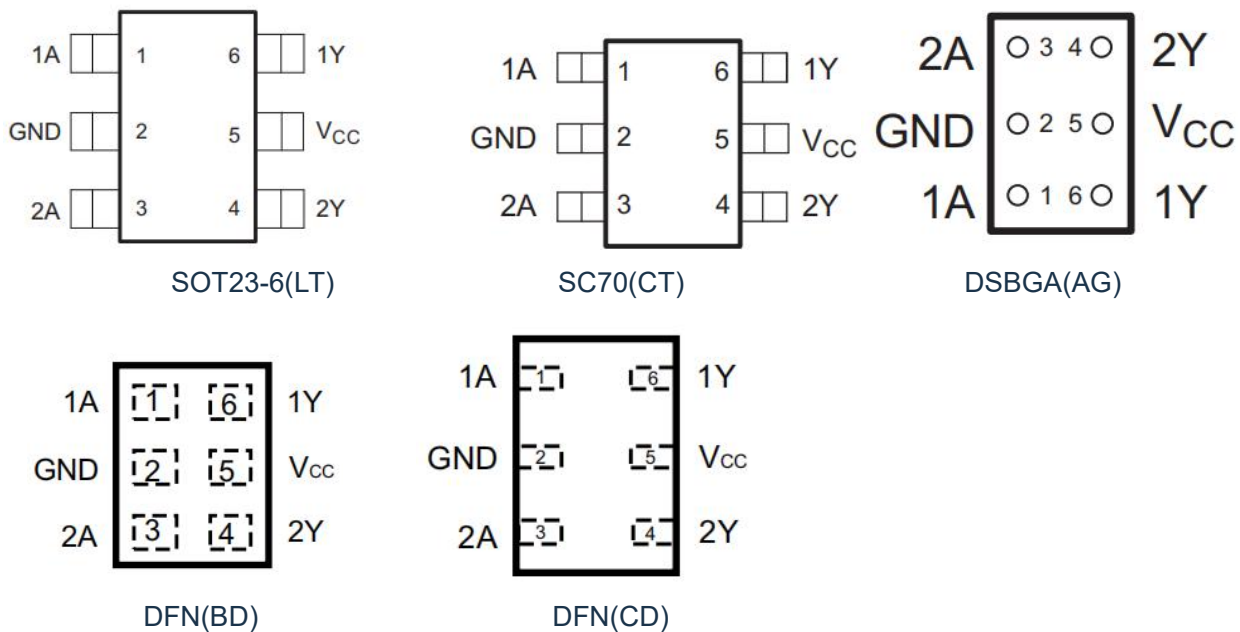


Figure 2.1 Top View



PIN		I/O	FUNCTION
NAME	No.		
1A	1	I	Input1
1Y	6	O	Output 1
2A	3	I	Input 2
2Y	4	O	Output 2
GND	2	-	Ground
VCC	5	-	Supply Voltage

3. System Diagram

3.1 Logic Diagram

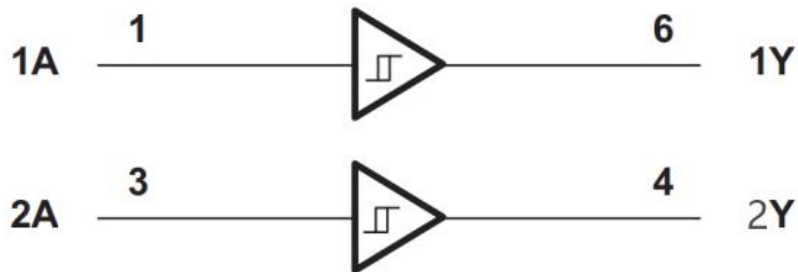


Figure 3.1: 74LVC2G17 Logic Diagram

3.2 Function Table

Input	Output
A	Y
1	1
0	0

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 Recommended Operating Conditions

Symbol	Parameter		MIN	MAX	Unit
V_{CC}	Supply Voltage		1.65	5.5	V
I_{OH}	High-level output current	$V_{CC} = 1.65\text{ V}$	--	-4	mA
		$V_{CC} = 2.3\text{ V}$	--	-8	
		$V_{CC} = 3\text{ V}$	--	-16	
			--	-24	
		$V_{CC} = 4.5\text{ V}$	--	-32	
I_{OL}	Low-level output current	$V_{CC} = 1.65\text{ V}$	--	4	mA
		$V_{CC} = 2.3\text{ V}$	--	8	
		$V_{CC} = 3\text{ V}$	--	16	
			--	24	
		$V_{CC} = 4.5\text{ V}$	--	32	



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	MIN	TYP	MAX	Unit
V_{T+}	Positive-going input threshold voltage	$V_{CC}=1.65\text{V}$	0.76	--	1.13	V
		$V_{CC}=2.3\text{V}$	1.08	--	1.56	V
		$V_{CC}=3\text{V}$	1.48	--	1.92	V
		$V_{CC}=4.5\text{V}$	2.19	--	2.74	V
		$V_{CC}=5.5\text{V}$	2.65	--	3.33	V
V_{T-}	Negative-going input threshold voltage	$V_{CC}=1.65$	0.38	--	0.62	V
		$V_{CC}=2.3\text{V}$	0.59	--	0.91	V
		$V_{CC}=3\text{V}$	0.85	--	1.15	V
		$V_{CC}=4.5\text{V}$	1.35	--	1.85	V
		$V_{CC}=5.5\text{V}$	1.75	--	2.25	V
ΔV_T	Hysteresis ($V_{T+}-V_{T-}$)	$V_{CC}=1.65\text{V}$	0.35	--	0.65	V
		$V_{CC}=2.3\text{V}$	0.45	--	0.8	V
		$V_{CC}=3\text{V}$	0.5	--	0.9	V
		$V_{CC}=4.5\text{V}$	0.65	--	1.05	V
		$V_{CC}=5.5\text{V}$	0.8	--	1.2	V

Symbol	Parameter	Test Condition	MIN	TYP	MAX	Unit
V_{OL}	Low Level Output Voltage	$V_{CC}=1.65V$ to $4.5V, I_{OL}=100\mu A$	--	--	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
V_{OH}	High Level Output Voltage	$V_{CC}=1.65V$ to $4.5V, I_{OH}=100\mu A$	$V_{CC}-0.1$	--	--	V
		$V_{CC}=1.65V, I_{OH}=4mA$	--	1.47	--	V
		$V_{CC}=2.3V, I_{OH}=8mA$	--	2.15	--	V
		$V_{CC}=3V, I_{OH}=16mA$	--	2.8	--	V
		$V_{CC}=3V, I_{OH}=24mA$	--	2.7	--	V
		$V_{CC}=4.5V, I_{OH}=32mA$	--	4.2	--	V
I_I	A Inputs Leakage Current	$V_{CC}=0$ to $5.5V, V_I=5.5V$ or GND	--	--	± 5	μA
I_{off}	Power Off Leakage Current	$V_{CC}=0V, V_I$ or $V_O=5.5V$	--	--	± 10	μA
I_{CC}	Quiescent Supply Current	$V_{CC}=1.65V$ to $5.5V, V_I=5.5V$ or GND, $I_O=0$	--	--	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

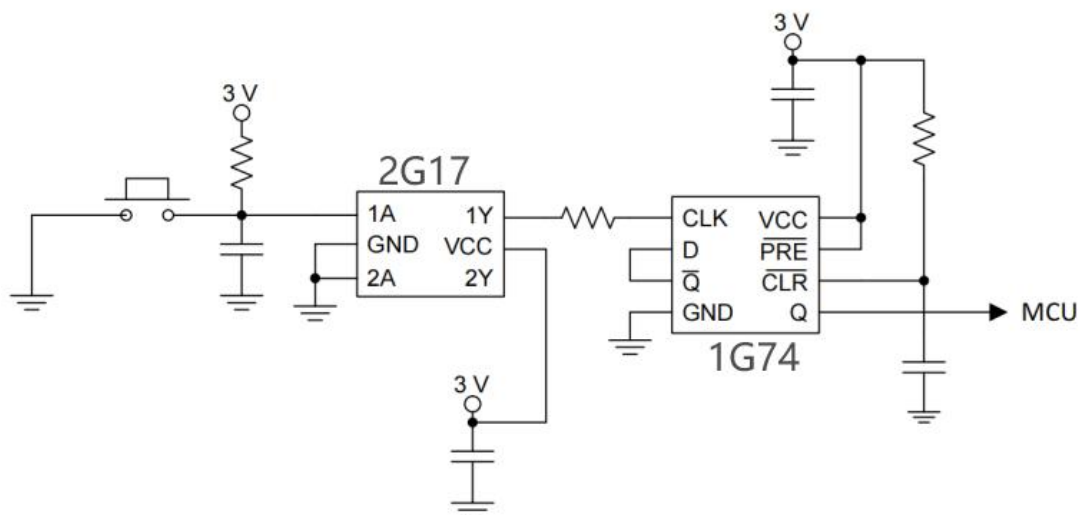


Figure 5.1: Application Schematic

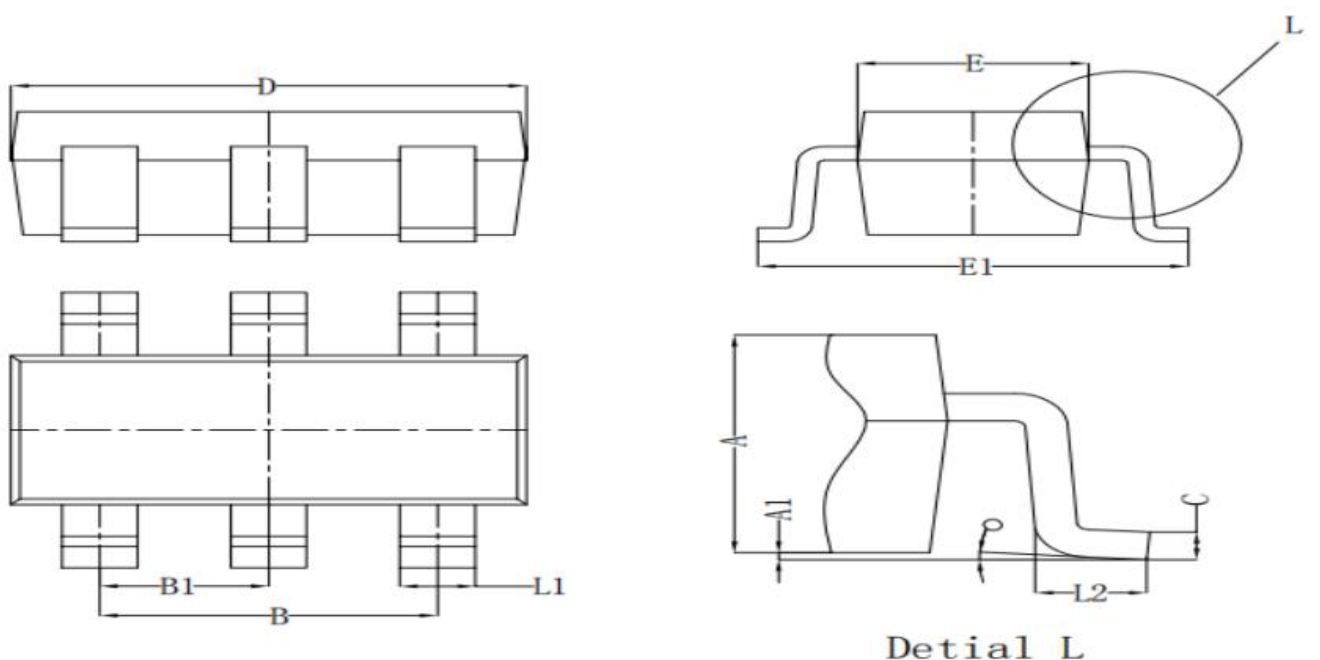


6. Ordering Information

Orderable Device	Package Type	Pins	Packing	Package Qty
74LVC2G17LT06ARCQ	SOT23	6	Tape & Reel	3000
74LVC2G17CT06ARCQ	SC70	6	Tape & Reel	3000
74LVC2G17AG06ARCQ	DSBGA	6	Tape & Reel	3000
74LVC2G17BD06AREQ	DFN(BD)	6	Tape & Reel	5000
74LVC2G17CD06AREQ	DFN(CD)	6	Tape & Reel	5000

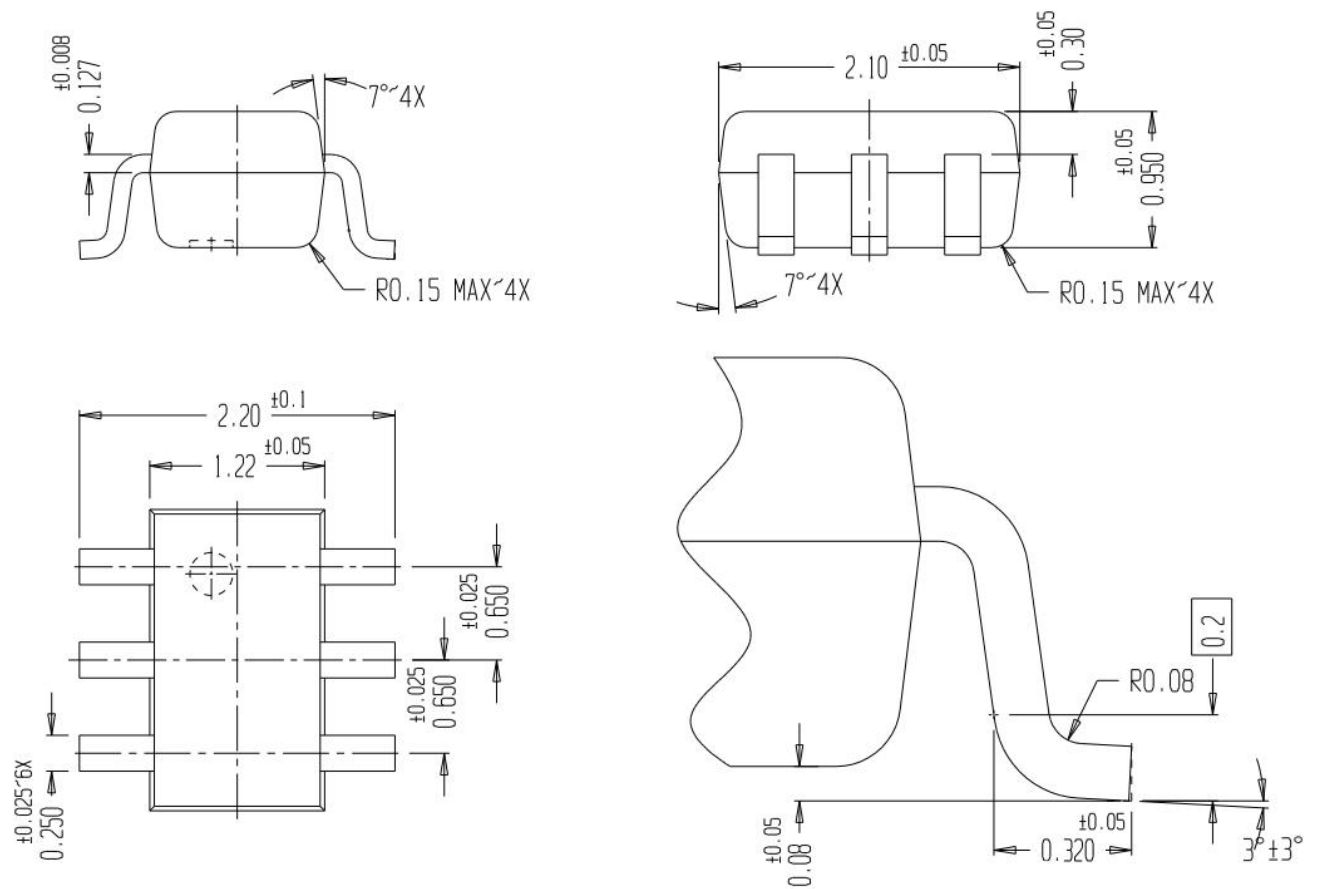
7. Package Information

7.1 SOT23-6

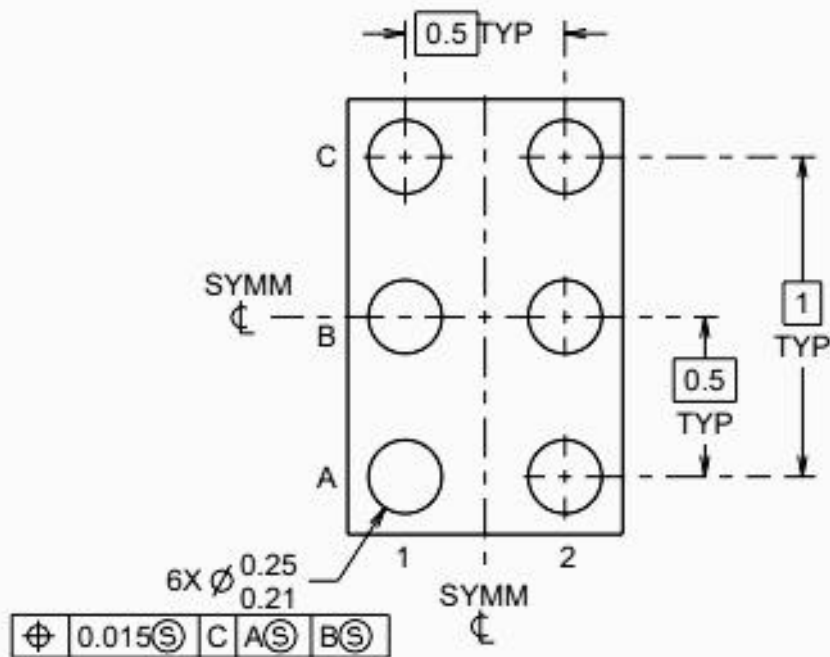
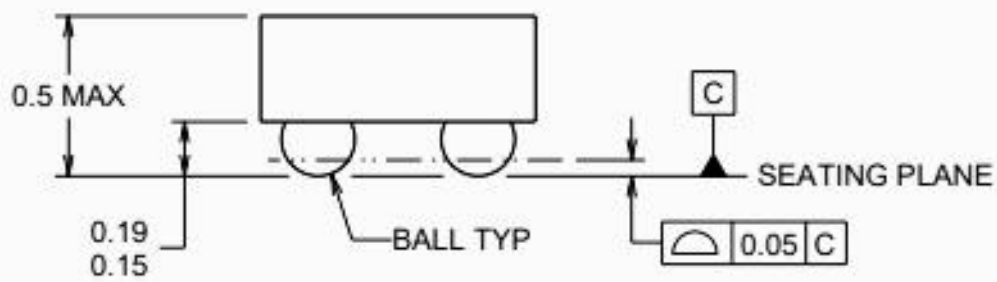
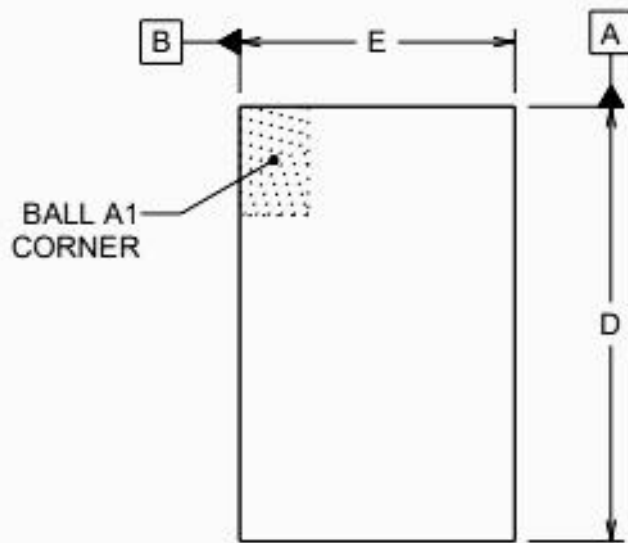


Symbol	Dim in mm		
	Min	Nor	Max
A	1.050	1.100	1.150
A1	0.000	0.050	0.100
L1	0.300	0.400	0.500
C	0.100	0.150	0.200
D	2.820	2.920	3.020
E	1.500	1.600	1.700
E1	2.650	2.800	2.950
B	1.800	1.900	2.000
B1	0.950 TYP		
L2	0.300	0.450	0.600
o	0°	4°	8°

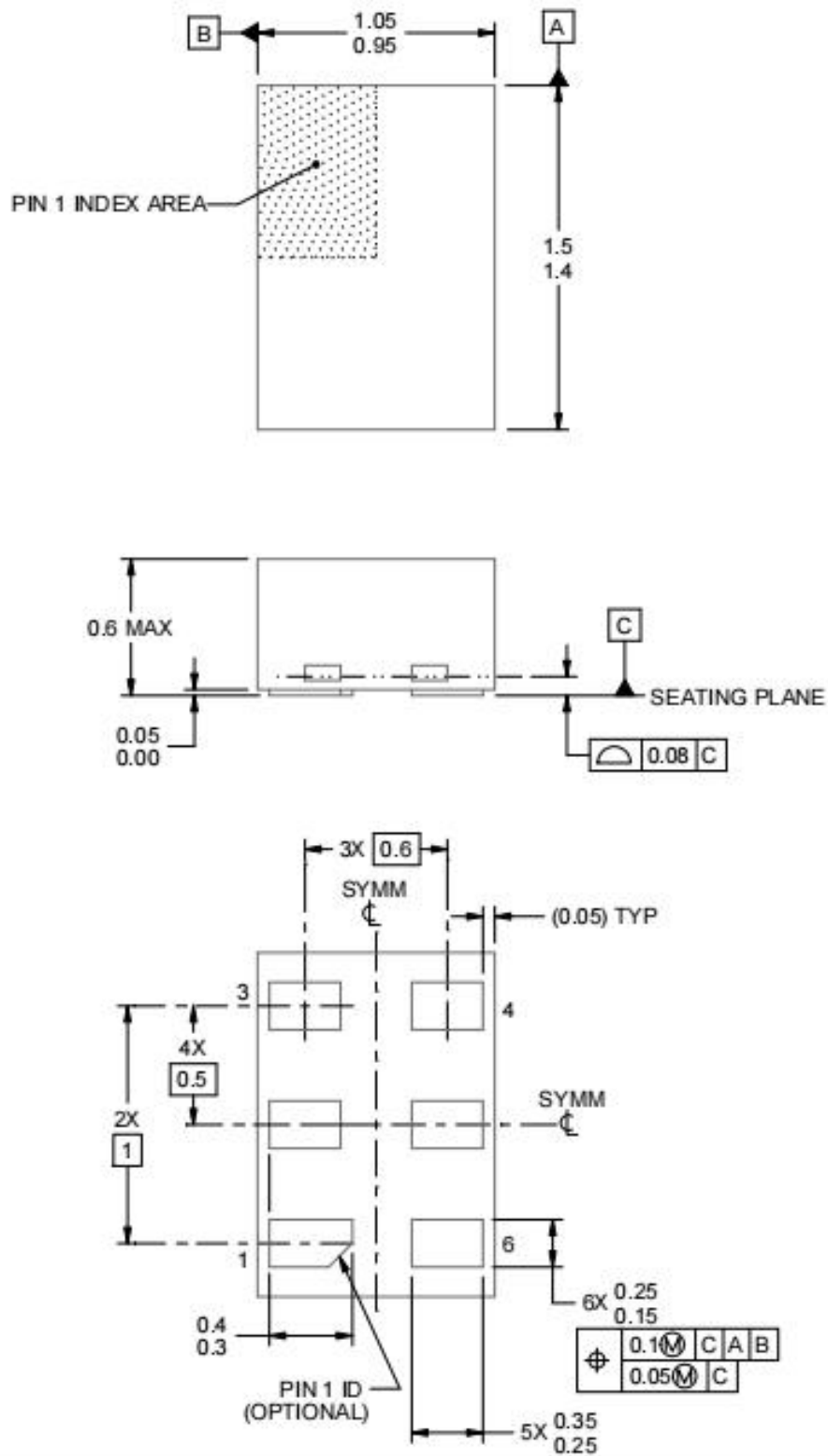
7.2 SC70-6



7.3 DSBGA(AG)-6



7.4 DFN(BD)-6



7.5 DFN(CD)-6

