74LVC2G07 Dual Buffer and Driver With Open-Drain Outputs

1. General Description

1.1 Description

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

The output of the 74LVC2G07 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.

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.

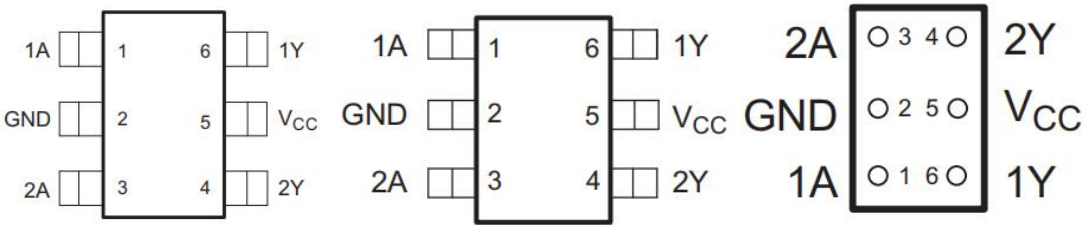
1.2 Features

- Dual Open-Drain Buffer Configuration
- Support Translation-Up and Down
- Low Power Consumption, 10-μA Max ICC
- Supports 5-V VCC Operation
- Inputs and Open-Drain Outputs Accept Voltages Up to 5.5 V
- ±24-mA Output Drive at 3.3 V
- I_{off} Supports Live Insertion, Partial-Power-Down Mode, and Back-Drive Protection

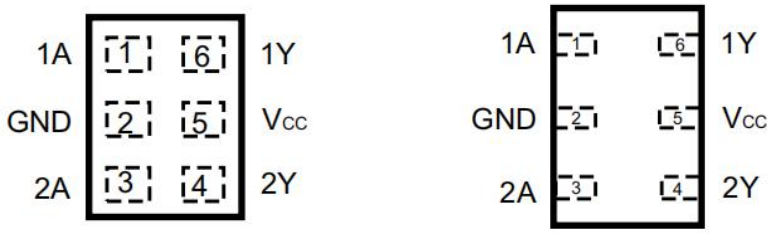
1.3 Device Information

PART NUMBER	PACKAGE
74LVC2G07	SOT23(LT)
	SC70(CT)
	DSBGA(AG)
	DFN(BD)
	DFN(CD)

2. Connection Diagrams and Pin Description



SOT23(LT) SC70(CT) DSBGA(AG)



DFN(BD) DFN(CD)

Figure 2.1 Pin Configuration

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

3. System Diagram

3.1 Logic Diagram

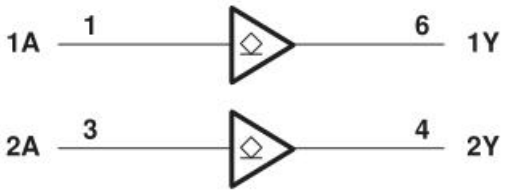


Figure 3.1：74LVC2G07 Logic Diagram

3.2 Function Table

Input	Output
A	Y
1	Z
0	0

X = don’t care, 1=High State, 0=Low State,Z=High Impedance

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	VCC + 0.5	V
I_O	Continuous Output Current		±50	mA
T_J	Junction Temperature		125	℃
T_{OP}	Operating Temperature	-40	85	℃

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℃, voltages are referenced to GND (ground=0V), unless otherwise specified)

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

Symbol	Parameter	Test Condition	MIN	TYP	MAX	Unit
V_{OL}	Low Level Output Voltage	V_{CC}=1.65V to 5.5V,I_{OH}=100uA	--	--	0.1	V
		V_{CC}=1.65V,I_O=4mA	--	0.09	--	V
		V_{CC}=2.3V,I_O=8mA	--	0.1	--	V
		V_{CC}=3V,I_O=16mA	--	0.15	--	V
		V_{CC}=3V,I_O=24mA	--	0.25	--	V
		V_{CC}=4.5V,I_O=32mA	--	0.25	--	V
I_I	Inputs Leakage Current	V_{CC}=0 to 5.5V,V_I=V_{CC} or GND	--	0	±1	uA
I_{off}	Power Off Leakage Current	V_{CC}=0V,V_I or V_O=5.5V	--	0	±10	uA
I_{OZ}	3-State Output OFF-State Current	V_{CC}=3.6V, V_O = 0 to 5.5V	--	0	10	uA
I_{CC}	Quiescent Supply Current	V_{CC}=1.65V to 5.5V,V_I=V_{CC} or GND,I_O=0	--	0	10	uA
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	uA

5. Application Information

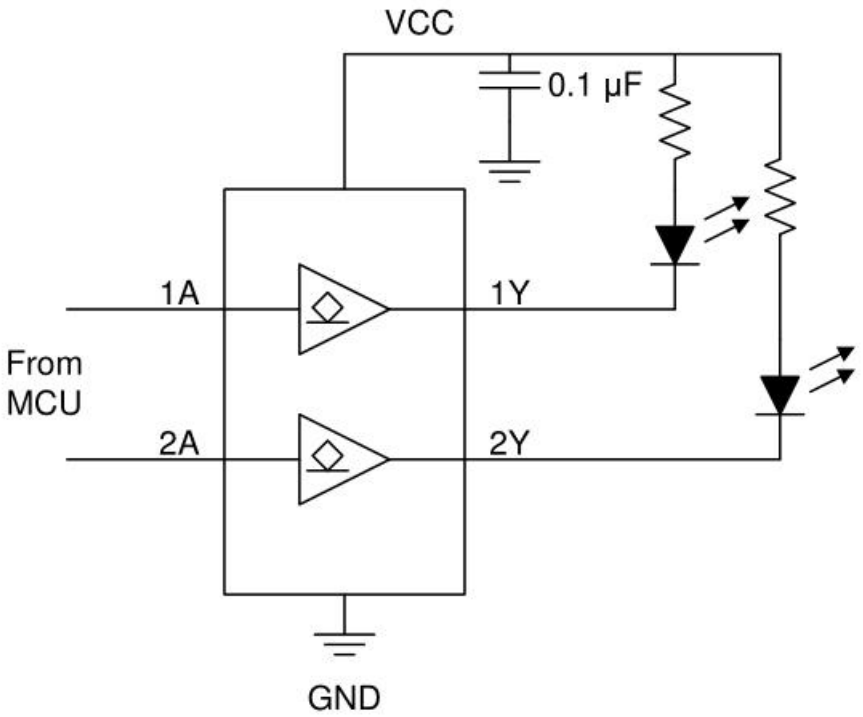


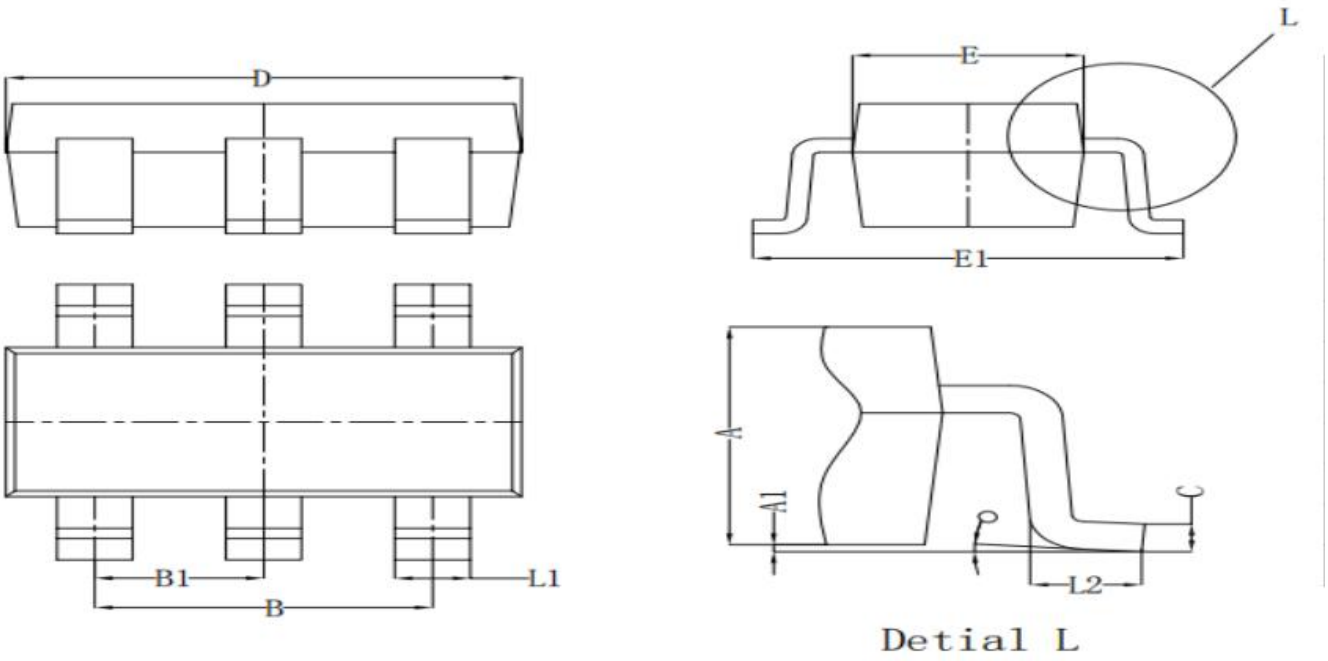
Figure 5.1：Application Schematic

6. Ordering Information

Orderable Device	Package Type	Pins	Packing	Package Qty
74LVC2G07LT06ARCQ	SOT23	6	Tape & Reel	3000
74LVC2G07CT06ARCQ	SC70	6	Tape & Reel	3000
74LVC2G07AG06ARCQ	DSBGA	6	Tape & Reel	3000
74LVC2G07BD06AREQ	DFN(BD)	6	Tape & Reel	5000
74LVC2G07CD06AREQ	DFN(CD)	6	Tape & Reel	5000

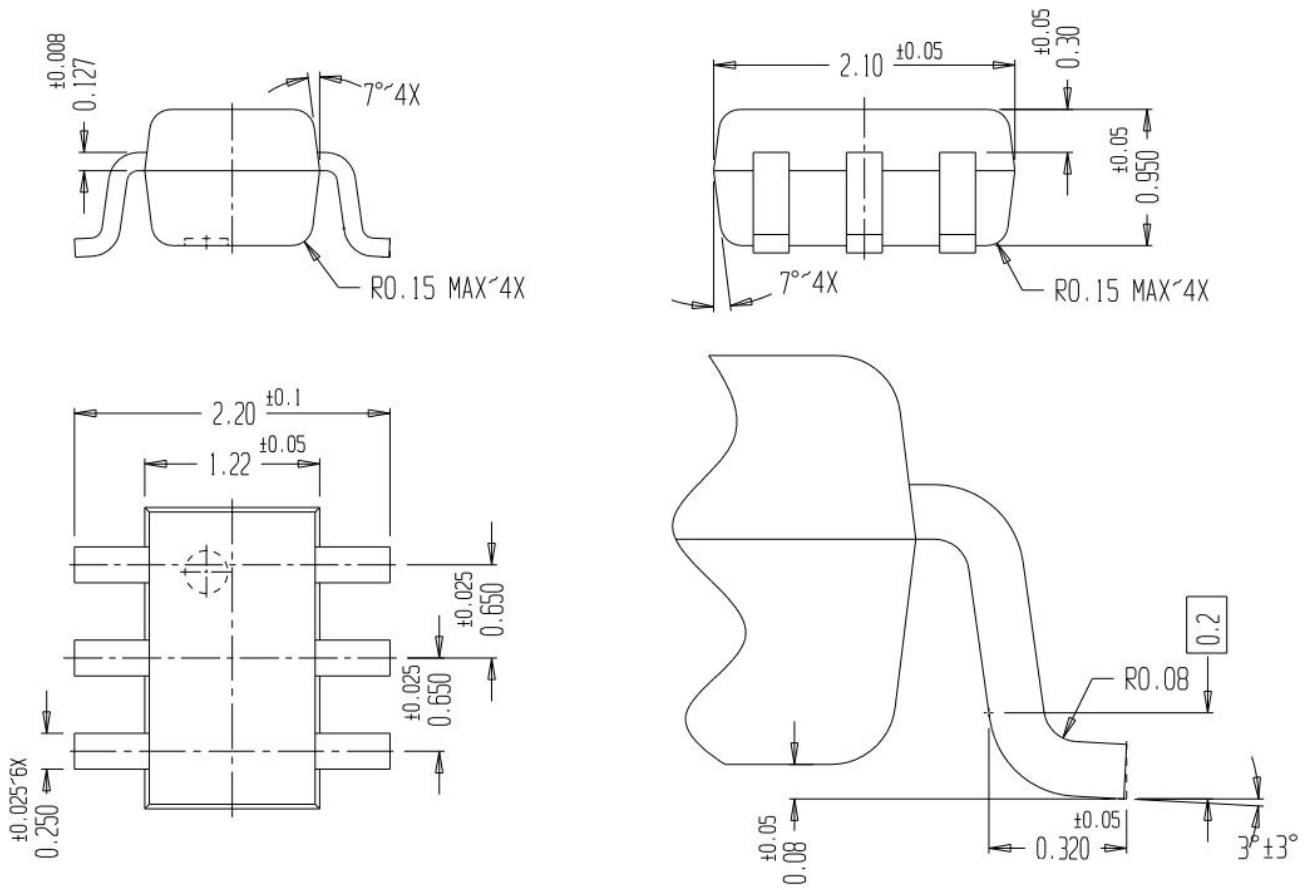
7. Package Information

7.1 SOT23-6

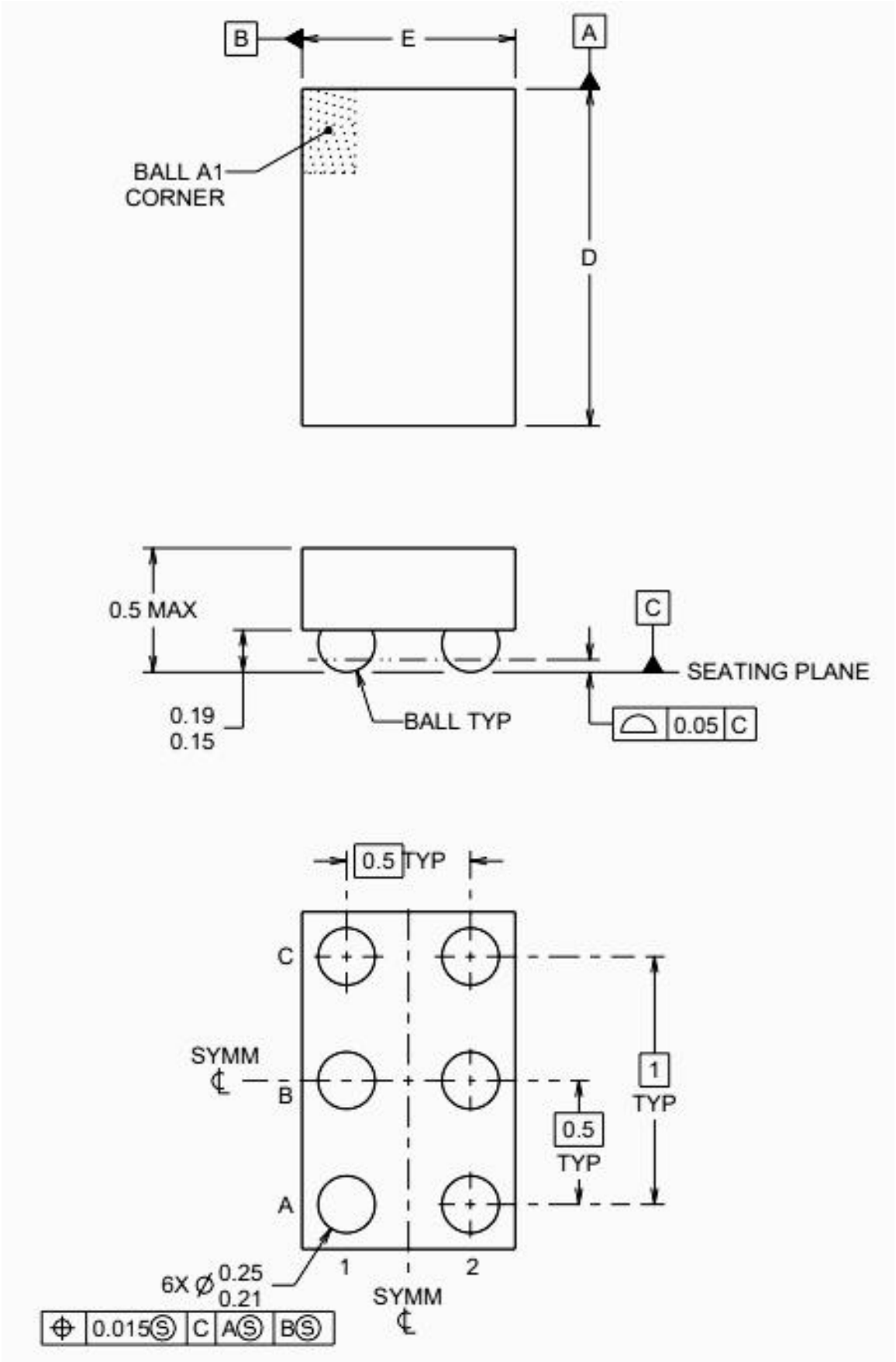


Symbol	Dim in mm		
	Min	Nor	Max
A	1.050	1.100	1.150
A1	0.000	0.050	0.100
L1	0.300	0.400	0.500
C	0.100	0.150	0.200
D	2.820	2.920	3.020
E	1.500	1.600	1.700
E1	2.650	2.800	2.950
B	1.800	1.900	2.000
B1	0.950 TYP		
L2	0.300	0.450	0.600
o	0°	4°	8°

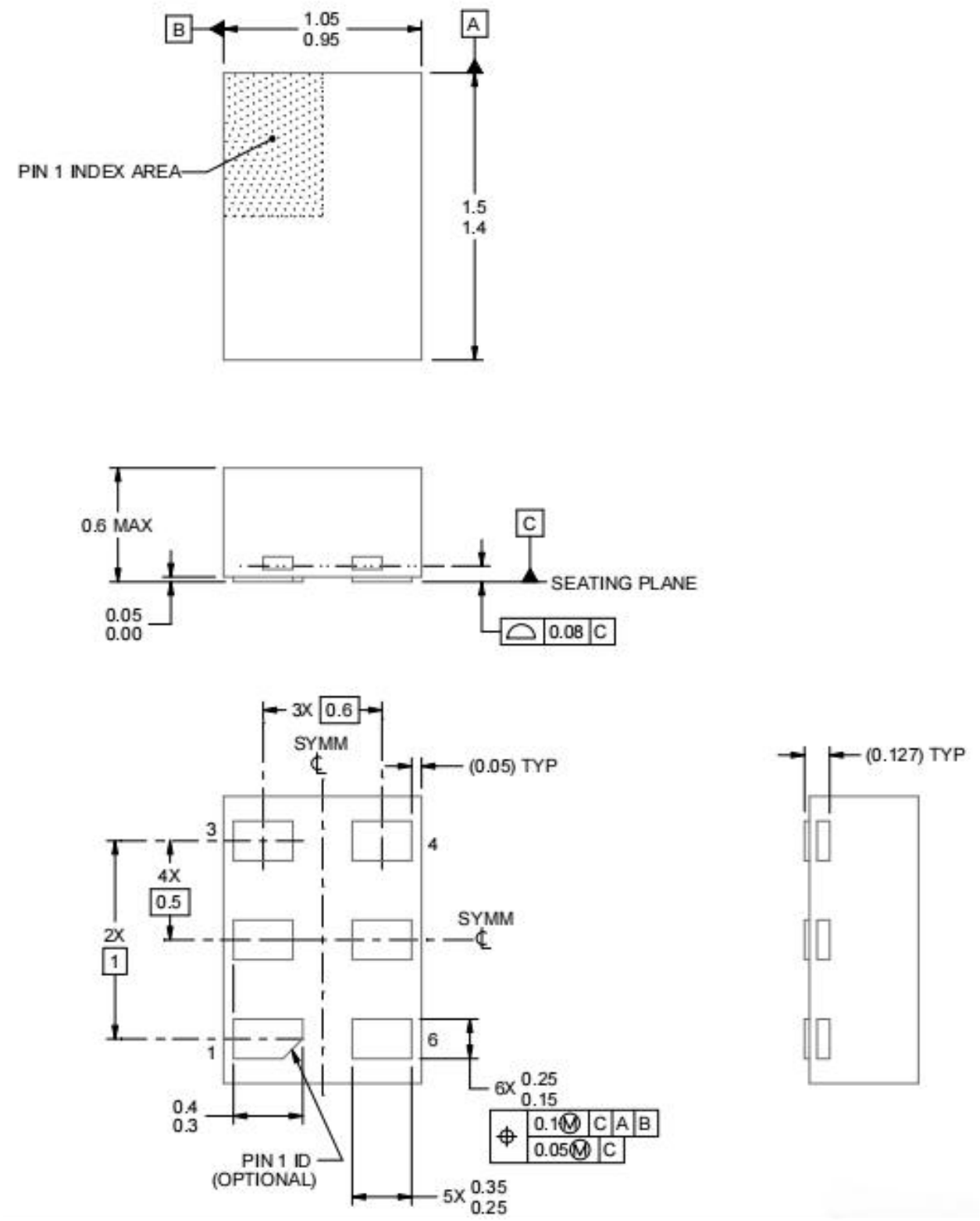
7.2 SC70-6


±0.008
0.127
7°~4X
R0.15 MAX~4X
2.10 ±0.05
±0.05
0.30
±0.05
0.950
7°~4X
R0.15 MAX~4X
2.20 ±0.1
1.22 ±0.05
±0.025
0.650
±0.025
0.650
±0.025~6X
0.250
0.2
R0.08
±0.05
0.08
±0.05
0.320
3°±3°

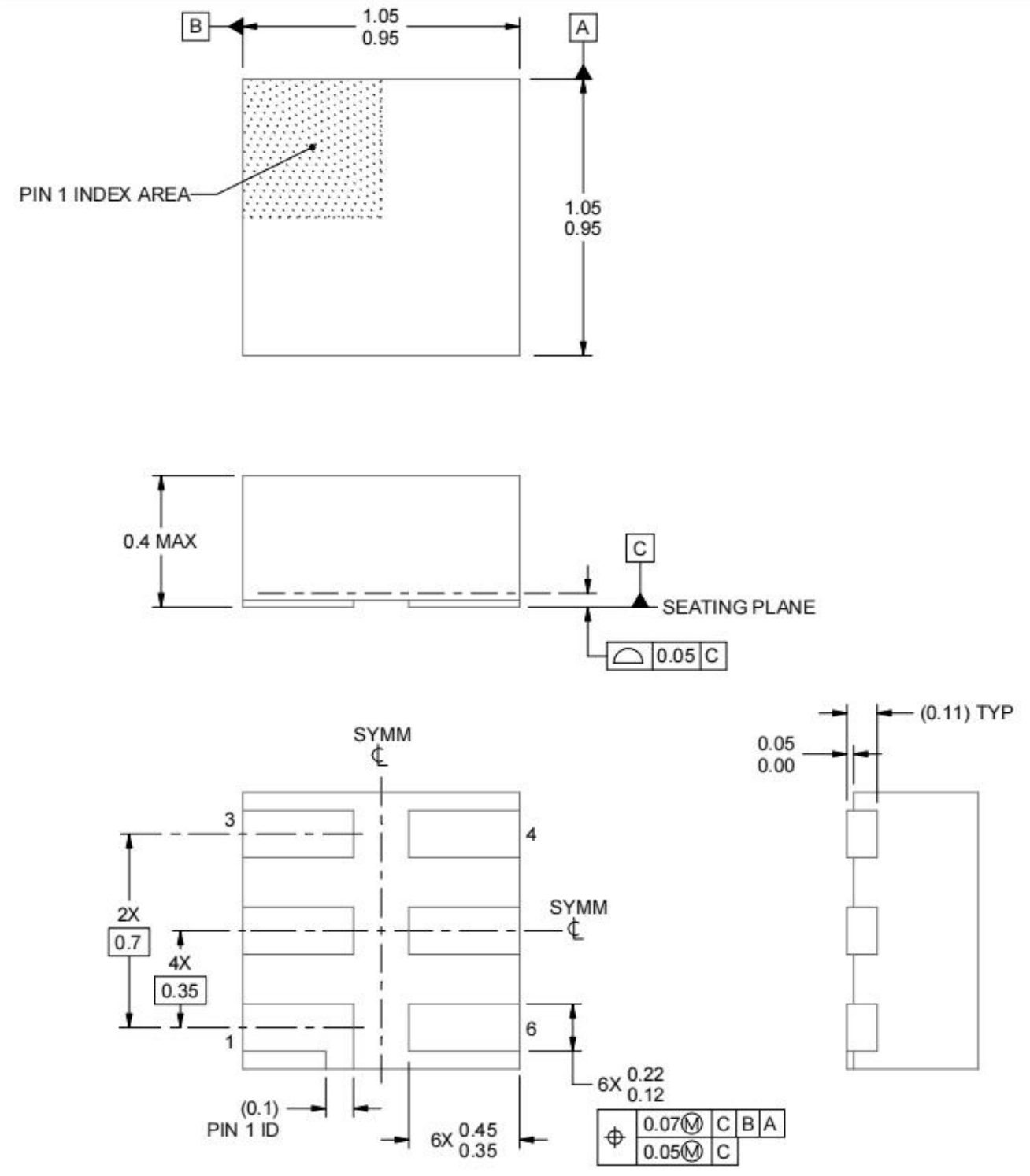
7.3 DSBGA(AG)-6


B
E
A
BALL A1
CORNER
D
0.5 MAX
C
SEATING PLANE
0.19
0.15
BALL TYP
0.05 C
0.5 TYP
C
SYMM
B
A
1
TYP
0.5
TYP
1
2
6X Ø 0.25
0.21
SYMM
0.015 S C A S B S

7.4 DFN(BD)-6


B
1.05
0.95
A
PIN 1 INDEX AREA
1.5
1.4
0.6 MAX
C
SEATING PLANE
0.05
0.00
0.08 C
3X 0.6
SYMM
(0.05) TYP
3
4
4X
0.5
SYMM
2X
1
1
6
6X 0.25
0.15
0.1 M C A B
0.05 M C
0.4
0.3
PIN 1 ID
(OPTIONAL)
5X 0.35
0.25
(0.127) TYP

7.5 DFN(CD)-6


B
1.05
0.95
A
PIN 1 INDEX AREA
1.05
0.95
0.4 MAX
C
SEATING PLANE
0.05 C
SYMM
3
4
2X
0.7
4X
0.35
SYMM
1
6
6X 0.22
0.12
(0.1)
PIN 1 ID
6X 0.45
0.35
0.07 M C B A
0.05 M C
(0.11) TYP
0.05
0.00