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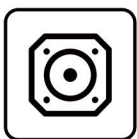
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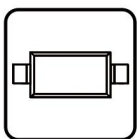
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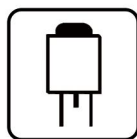
電源管理



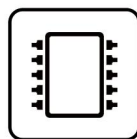
顯示驅動



二三極管



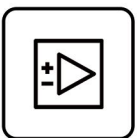
LDO穩壓器



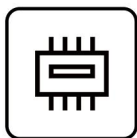
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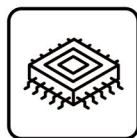
MOS管



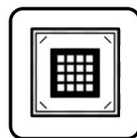
運算放大器



存儲芯片



MCU



串口通信

# 74LVC1G04DBVR-TD

產品規格說明書

74LVC1G04 Single Inverter Gate

1. General Description

1.1 Description

This single inverter gate is designed for 1.65-V to 5.5-V VCC operation. The 74LVC1G04 device performs the Boolean function  $Y = \overline{A}$ .

The CMOS device has high output drive while maintaining low static power dissipation over a broad VCC operating range.

1.2 Features

- Supports 5V VCC operation
- Inputs accept voltages to 5.5V
- Provides down translation to VCC

- Low power consumption, 10µA max ICC
- ±24mA output drive at 3.3V
- Ioff supports live insertion, partial-power-down mode, and back-drive protection

1.3 Device Information

| PART NUMBER | PACKAGE |
|-------------|---------|
| 74LVC1G04   | SOT23-5 |
|             | SC-70-5 |
|             | SOT5X3  |
|             | DFN     |
|             | DSBGA   |

2. Connection Diagrams and Pin Description

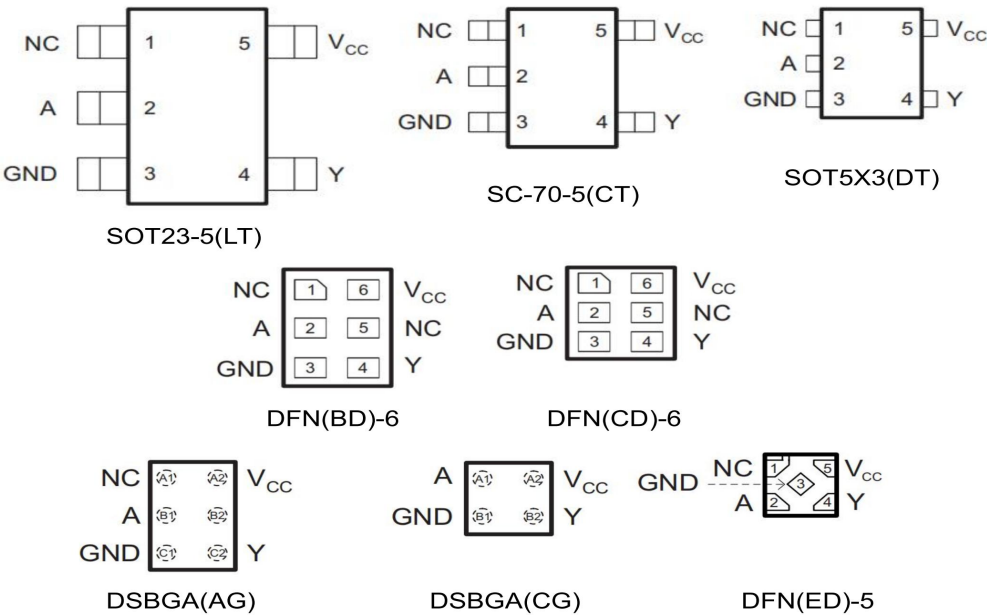


Figure 2.1: Top View

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

## 3. System Diagram

### 3.1 Logic Diagram

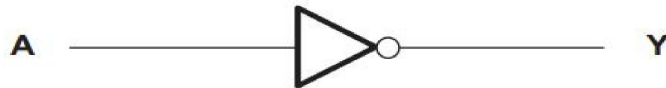


Figure 3.1: 74LVC1G04 Logic Diagram

### 3.2 Function Table

| Input | Output |
|-------|--------|
| A     | Y      |
| 1     | 0      |
| 0     | 1      |

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) <sup>(1)</sup> | -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                                                                    |      | $\pm 50$       | mA   |
| $T_J$    | Junction Temperature                                                                         |      | 125            | °C   |
| $T_{OP}$ | Operating Temperature                                                                        | -40  | 85             | °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    |
|          |                           | $V_{CC}=3\text{V to }5.5\text{V}$     | $0.7V_{CC}$  | --  | --           | 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    |
| $I_{OH}$ | High 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   |
| $I_{OL}$ | 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    |
|-----------------|---------------------------------------------------|--------------------------------------------------------------------------------------|--------------|------|----------|---------|
| $V_{OH}$        | High Level Output Voltage                         | $V_{CC}=1.65V$ to $5.5V, I_{OH}=-100\mu A$                                           | $V_{CC}-0.1$ | --   | --       | V       |
|                 |                                                   | $V_{CC}=1.65V, I_O=-4mA$                                                             | --           | 1.47 | --       | V       |
|                 |                                                   | $V_{CC}=2.3V, I_O=-8mA$                                                              | --           | 2.15 | --       | V       |
|                 |                                                   | $V_{CC}=3V, I_O=-16mA$                                                               | --           | 2.8  | --       | V       |
|                 |                                                   | $V_{CC}=3V, I_O=-24mA$                                                               | --           | 2.7  | --       | V       |
|                 |                                                   | $V_{CC}=4.5V, I_O=-32mA$                                                             | --           | 4.2  | --       | V       |
| $V_{OL}$        | Low Level Output Voltage                          | $V_{CC}=1.65V$ to $5.5V, I_{OH}=100\mu A$                                            | --           | --   | 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       |
| $I_I$           | A Input Leakage Current                           | $V_{CC}=0$ to $5.5V, V_I=V_{CC}$ or GND                                              | --           | 0    | $\pm 1$  | $\mu A$ |
| $I_{off}$       | Power Off Leakage Current                         | $V_{CC}=0V, V_I$ or $V_O=5.5V$                                                       | --           | 0    | $\pm 10$ | $\mu A$ |
| $I_{CC}$        | Quiescent Supply Current                          | $V_{CC}=1.65V$ to $5.5V, V_I=V_{CC}$ or GND, $I_O=0$                                 | --           | 0    | 10       | $\mu A$ |
| $\Delta I_{CC}$ | 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      | $\mu A$ |

## 5. Application Information

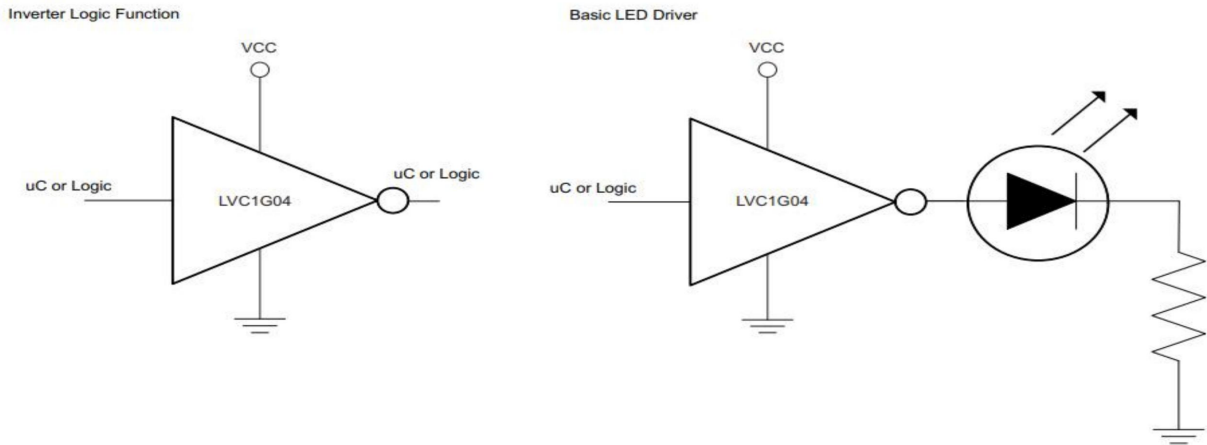


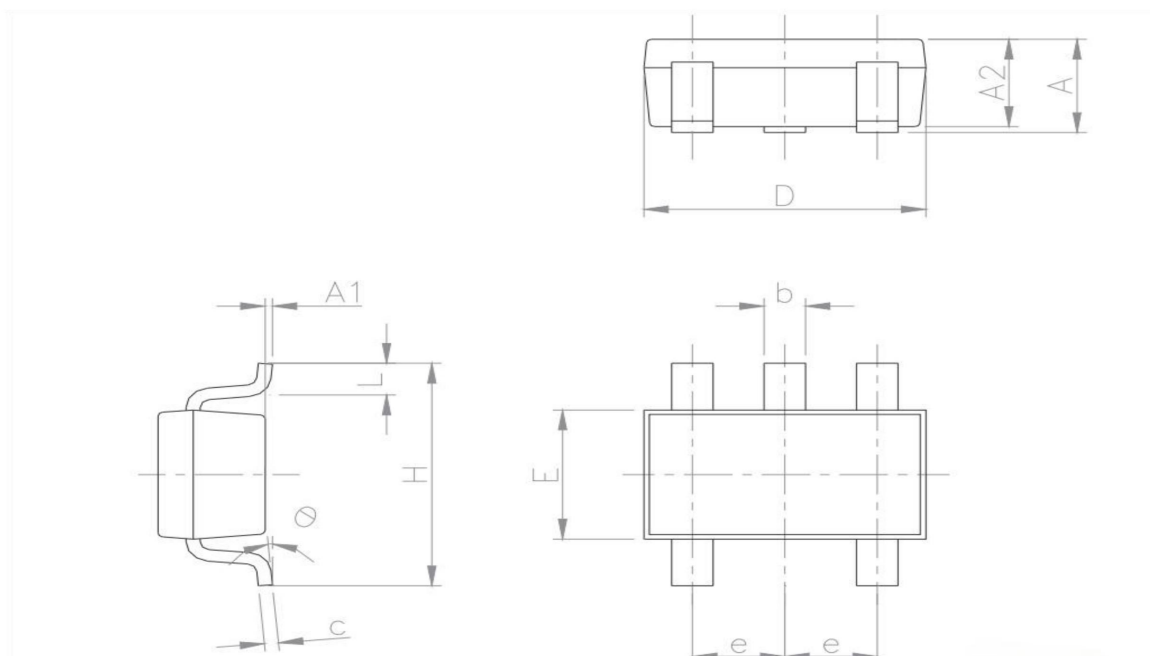
Figure 5.1: Application Schematic

## 6. Ordering Information

| Orderable Device  | Package Type | Pins | Packing     | Package Qty |
|-------------------|--------------|------|-------------|-------------|
| 74LVC1G04LT05ARCQ | SOT23        | 5    | Tape & Reel | 3000        |
| 74LVC1G04CT05ARCQ | SC70         | 5    | Tape & Reel | 3000        |
| 74LVC1G04DT05ARDQ | SOT5x3       | 5    | Tape & Reel | 4000        |
| 74LVC1G04BD06AREQ | DFN(BD)      | 6    | Tape & Reel | 5000        |
| 74LVC1G04CD06AREQ | DFN(CD)      | 6    | Tape & Reel | 5000        |
| 74LVC1G04ED05ARCQ | DFN          | 5    | Tape & Reel | 3000        |
| 74LVC1G04AG05ARCQ | DSBGA        | 5    | Tape & Reel | 3000        |
| 74LVC1G04CG04ARCQ | DSBGA        | 4    | Tape & Reel | 3000        |

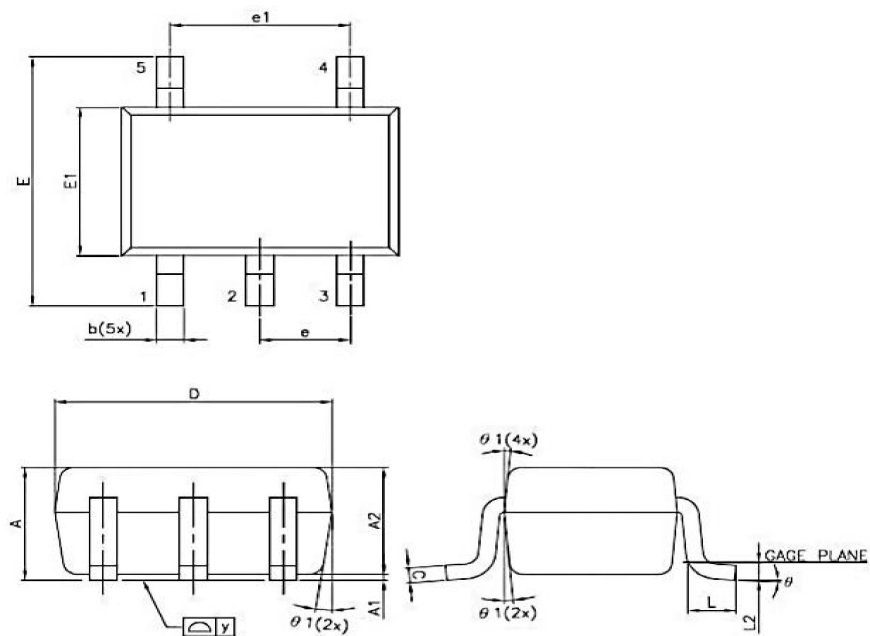
## 7. Package Information

### 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 |
| $\theta$ | 0 degrees   | -    | 10 degrees | -      | -     | -     |

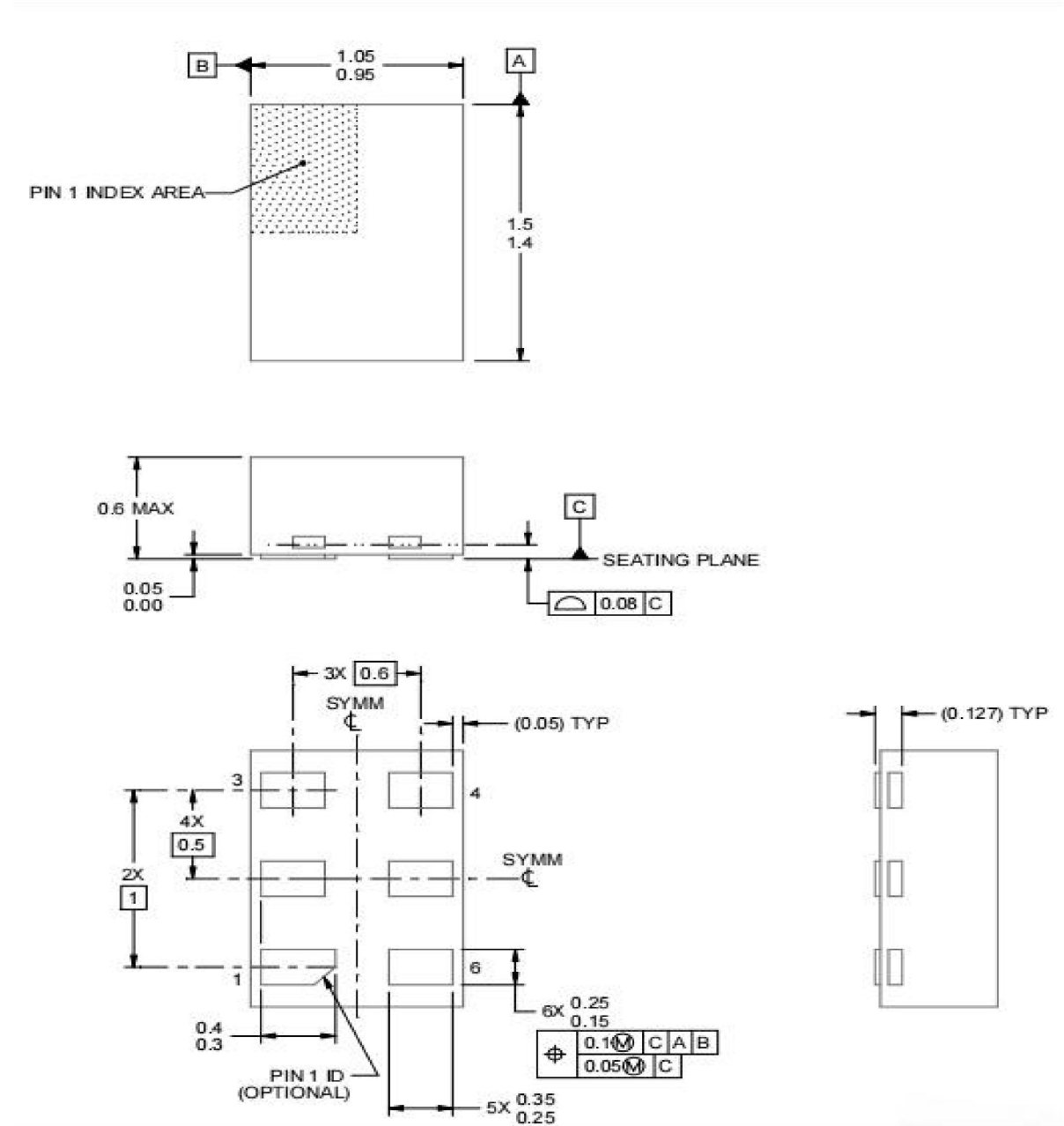
**7.2 SC70**



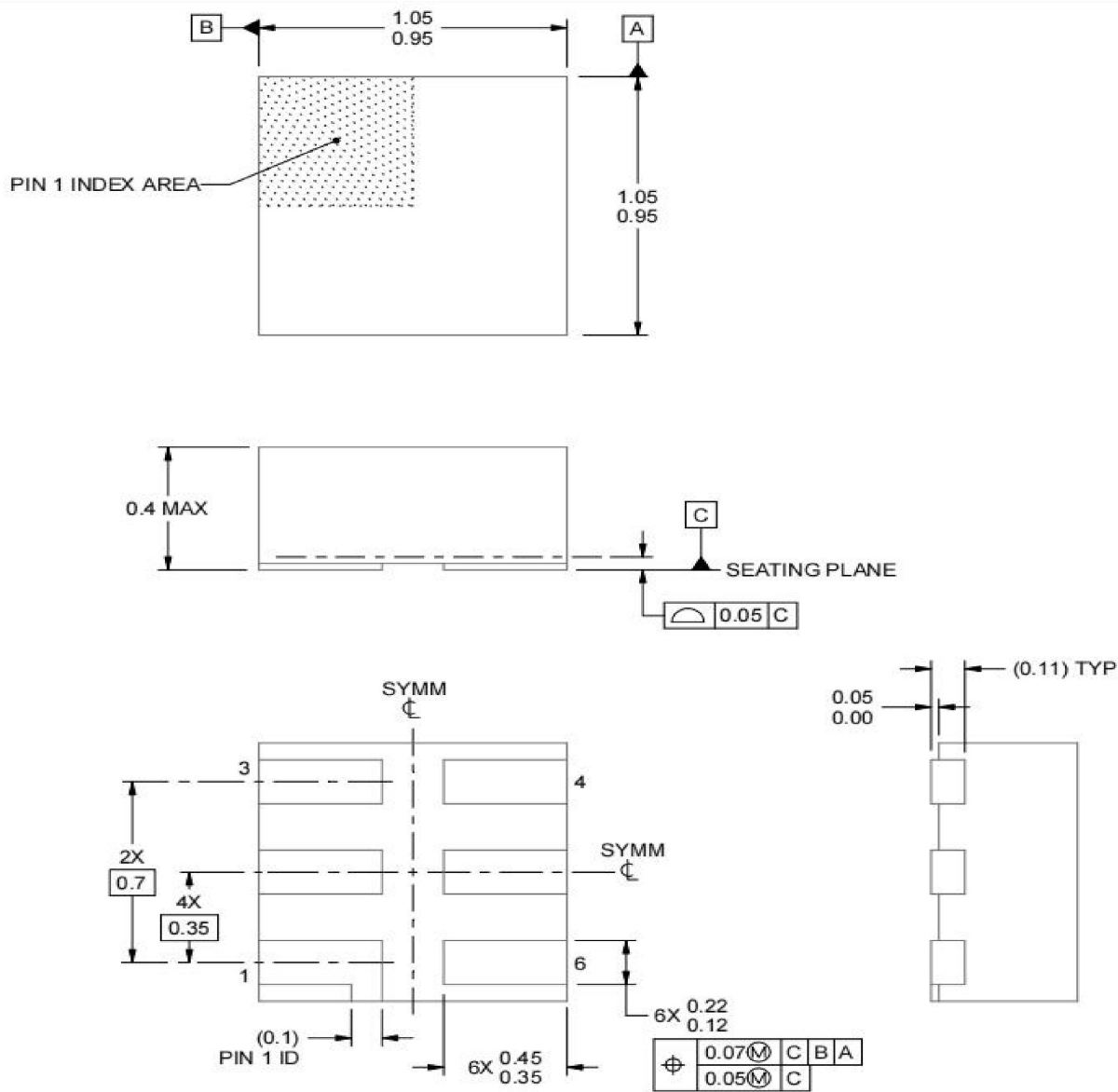
| Symbol | Dim in mm |      |      |
|--------|-----------|------|------|
|        | MIN       | TYP  | MAX  |
| A      | 0.90      | 1.00 | 1.10 |
| A1     | 0.00      | 0.05 | 0.10 |
| A2     | 0.90      | 0.95 | 1.00 |
| b      | 0.15      | 0.25 | 0.35 |
| C      | 0.10      | 0.12 | 0.15 |
| D      | 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°  |



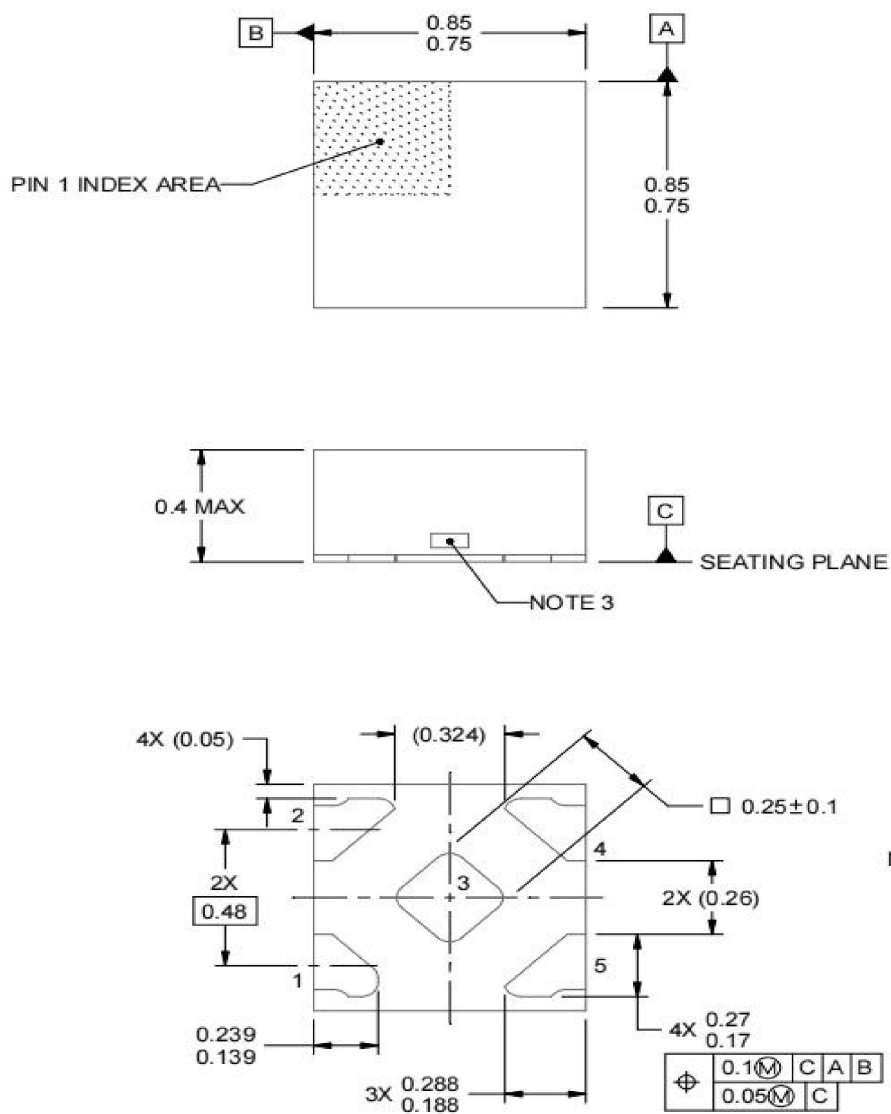
7.4 DFN(BD)-6



7.5 DFN(6)-6



## 7.6 DFN5





## 7.8 DSBGA(CG)

