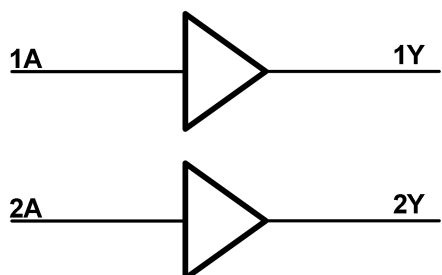


## GT74LVC2G34 Dual Buffer Gate

1 Features	2 Application
<ul style="list-style-type: none"> <li>- Low Power Consumption, 10-<math>\mu</math>A Max <math>I_{CC}</math></li> <li>- Supports 5 V <math>V_{CC}</math> Operation</li> <li>- Inputs Accept Voltages to 5.5 V</li> <li>- Max <math>t_{pd}</math> of 3.3 ns at 3.3 V</li> <li>- <math>\pm 24</math>-mA Output Drive at 3.3 V</li> <li>- <math>I_{off}</math> Supports Partial-Power-Down Mode</li> <li>- Typical <math>V_{OHV} &gt; 2</math> V at <math>V_{CC} = 3.3</math> V, <math>T_A = 25^\circ\text{C}</math></li> <li>- Typical <math>V_{OLP} &lt; 0.8</math> V at <math>V_{CC} = 3.3</math> V, <math>T_A = 25^\circ\text{C}</math></li> </ul>	<ul style="list-style-type: none"> <li>- AV Receivers</li> <li>- Audio Docks: Portable</li> <li>- Blu-ray Players and Home Theater</li> <li>- Embedded PC</li> <li>- MP3 Player/Recorder (Portable Audio)</li> <li>- Personal Digital Assistant (PDA)</li> <li>- Power: Telecom/Server AC/DC Supply</li> <li>- Solid State Drive (SSD): Client and Enterprise</li> <li>- TV: LCD/Digital and High-Definition (HDTV)</li> <li>- Tablet: Enterprise</li> <li>- Video Analytics: Server</li> <li>- Wireless Headset, Keyboard, and Mouse</li> </ul>

3 Description	Circuit Diagram
<p>The operating voltage range of the dual buffer gate is 1.65 V to 5.5 V.</p> <p>The GT74LVC2G34 device contains dual buffer and performs the Boolean function <math>Y=A</math>. The CMOS device has high output drive while maintaining low static power dissipation over a broad <math>V_{CC}</math> operating range.</p> <p>This device is fully specified for partial-power-down applications using <math>I_{off}</math>. The <math>I_{off}</math> circuitry disables the outputs, preventing damaging current backflow through the device when it is powered down.</p>	

## 4 Revision History

Revision	Date	Note
Rev. A1.0	2023. 08. 31	Original Version
Rev. A1.1	2023. 10. 24	1.Updated Package Qty 2.Added Tape and Reel Information 3. Added Application Note
Rev. A1.2	2023. 12. 26	1.Added Marking 2.Added MSL
Rev. A1.3	2024. 01. 26	Updated Part Name

The latest datasheet version should be checked on the GTIC official website, as the company does not actively inform customers about updates to the datasheet.

## 5 Device Summary, Pin and Packages

**Table 5-1. Device Summary<sup>(1)</sup>**

Serial Name	Part Name	Package	Body Size (Nom)	Marking <sup>(2)</sup>	MSL <sup>(3)</sup>	Package Qty
GT74LVC2G34	GT74LVC2G34S6	SOT23-6	2.90mm×1.60mm×1.10mm	2G34 XXXXX	3	Tape and Reel 3000
	GT74LVC2G34C6	SC70-6	2.10mm×1.25mm×1.00mm	2G34 XXXXX	3	Tape and Reel 3000

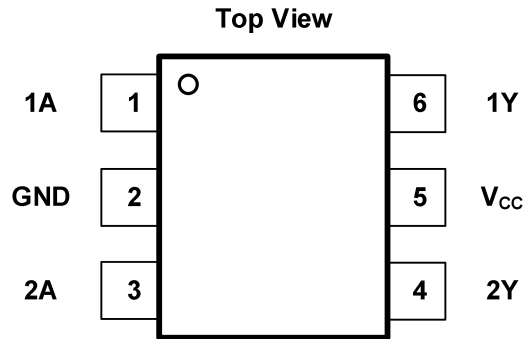
(1) For all available packages, please contact product sales.

(2) There may be additional marking, which relates to the lot trace code information (data code and vendor code), the logo or the environmental category on the device.

(3) MSL, The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications.

(4) "XXXXX" in Marking will be appeared as the batch code.

**5 Device Summary, Pin and Packages(Continued)**



**Fig.5-1. GT74LVC2G34:S6 (SOT23-6) Package  
GT74LVC2G34:C6 (SC70-6) Package**

**Table 5-2 S6/C6 Pin Definition**

Pin		Pin	Description
Name	S6 C6		
1A	1	I	Input 1
GND	2	—	Ground
2A	3	I	Input 2
2Y	4	O	Output 2
V <sub>cc</sub>	5	—	Positive Supply
1Y	6	O	Output 1

## 6 Voltage, Temperature, ESD and Thermal Ratings

### 6.1 Absolute Maximum Ratings

Parameters		Min	Max.	Unit
$V_{CC}$	Supply voltage range	-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	-0.5	6.5	V
$V_O$	Voltage range applied to any output in the high or low state	-0.5	$V_{CC}+0.5$	V
$I_{IK}$	Input clamp current		-50	mA
	$V_I < 0$			
$I_{OK}$	Output clamp current		-50	mA
	$V_O < 0$			
$I_O$	Continuous output current		$\pm 50$	mA
	Continuous current through $V_{CC}$ or GND		$\pm 100$	mA
$T_J$	Junction temperature under bias		150	$^{\circ}C$
$T_{stg}$	Storage temperature range	-65	150	$^{\circ}C$

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

### 6.2 ESD Ratings

ESD		VALUE	UNIT
$V(ESD)$	Electrostatic discharge	Human-body model (HBM)	4 K
		Charge device model (CDM)	2 K

(1) JEDEC document JEP155 states that 500-V HBM allows safe manufacturing with a standard ESD control process.

(2) JEDEC document JEP157 states that 250-V CDM allows safe manufacturing with a standard ESD control process.

## 6 Voltage, Temperature, ESD and Thermal Ratings(Continued)

### 6.3 Recommended Operating Conditions

Over operating free-air temperature range (unless otherwise noted)

SYMBOL	PARAMETER	MIN	MAX	UNIT
$V_{CC}$	Supply voltage	1.65	5.5	V
$V_I$	Input voltage	0	5.5	V
$V_O$	Output voltage	0	$V_{CC}$	V
$I_{OH}$	High-level output current	$V_{CC}=1.65V$	-4	mA
		$V_{CC}=2.3V$	-8	
		$V_{CC}=3V$	-16	
		$V_{CC}=4.5V$	-24	
$I_{OL}$	Low-level output current	$V_{CC}=1.65V$	4	mA
		$V_{CC}=2.3V$	8	
		$V_{CC}=3V$	16	
		$V_{CC}=4.5V$	24	
$T_A$	Operating free-air temperature	-40	125	°C

### 6.4 Thermal Information

Package Type	$\theta_{JA}$	$\theta_{JC}$	Unit
SOT23-6	250	81	°C/W
SC70-6	400	150	°C/W

## 7 Electrical Specifications

V<sub>CC</sub>=5.0V or 3.3V, FULL=-40°C to +125°C, Typical values are at T<sub>A</sub>=+25°C. (unless otherwise noted)

Parameter	Test Conditions	V <sub>CC</sub>	-40°C to 85°C			-40°C to 125°C			Unit
			Min	Typ	Max	Min	Typ	Max	
V <sub>OH</sub>	I <sub>OH</sub> =- 100 μA	1.65 V to 5.5 V	V <sub>CC</sub> -0.1			V <sub>CC</sub> -0.1			V
	I <sub>OH</sub> =- 4 mA	1.65 V	1.2			1.2			
	I <sub>OH</sub> =- 8 mA	2.3 V	1.9			1.9			
	I <sub>OH</sub> =- 16 mA	3 V	2.4			2.4			
	I <sub>OH</sub> =-24 mA		2.3			2.3			
	I <sub>OH</sub> =-32 mA	4.5 V	3.8			3.8			
V <sub>OL</sub>	I <sub>OL</sub> =100 μA	1.65 V to 5.5 V			0.1			0.1	V
	I <sub>OL</sub> =4 mA	1.65 V			0.45			0.45	
	I <sub>OL</sub> =8 mA	2.3 V			0.3			0.3	
	I <sub>OL</sub> =16 mA	3 V			0.4			0.4	
	I <sub>OL</sub> =24 mA				0.55			0.55	
	I <sub>OL</sub> =32 mA	4.5 V			0.55			0.55	
I <sub>I</sub>	A input	V <sub>I</sub> =5.5 V or GND			±5			±5	μA
I <sub>off</sub>		V <sub>I</sub> or V <sub>O</sub> =5.5 V			±10			±10	μA
I <sub>CC</sub>		V <sub>I</sub> =5.5 V or GND, I <sub>O</sub> =0			10			10	μA
ΔI <sub>CC</sub>		One input at V <sub>CC</sub> - 0.6 V, Other inputs at V <sub>CC</sub> or GND			500			500	μA
C <sub>i</sub>		V <sub>I</sub> =V <sub>CC</sub> or GND		5			5		pF

(1) All unused digital inputs of the device must be held at V<sub>CC</sub> or GND to ensure proper device operation

## 7 Electrical Specifications (Continued)

V<sub>CC</sub>=5.0V or 3.3V, FULL=-40°C to +125°C, Typical values are at T<sub>A</sub>=+25°C. (unless otherwise noted)

Parameter	From (Input)	To (Output)	-40°C to 125°C								UNIT
			V <sub>CC</sub> =1.8 V ± 0.15 V		V <sub>CC</sub> =2.5 V ± 0.2 V		V <sub>CC</sub> =3.3 V ± 0.3 V		V <sub>CC</sub> =5 V ± 0.5 V		
			Min	Max	Min	Max	Min	Max	Min	Max	
t <sub>pd</sub>	A	Y	3.9	9.5	1.4	4.5	1	3.3	1	3.0	ns

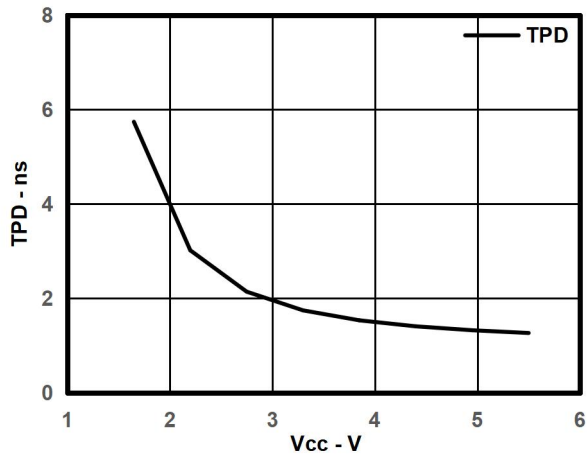
T<sub>A</sub>=25°C

Parameter		Test Conditions	V <sub>CC</sub> =1.8 V	V <sub>CC</sub> =2.5 V	V <sub>CC</sub> =3.3 V	V <sub>CC</sub> =5 V	Unit
			Typ	Typ	Typ	Typ	
C <sub>pd</sub>	Power dissipation capacitance	f=10 MHz	17	28	33	47	pF

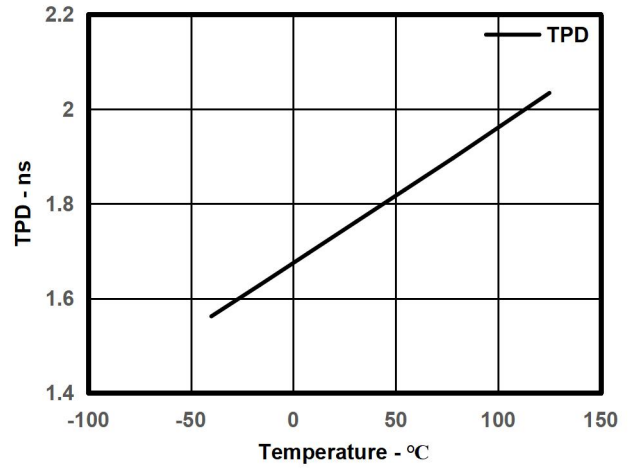


## 8 Typical Characteristics

Over recommended operating free-air temperature range,  $C_L=30$  pF or 50 pF (unless otherwise noted).

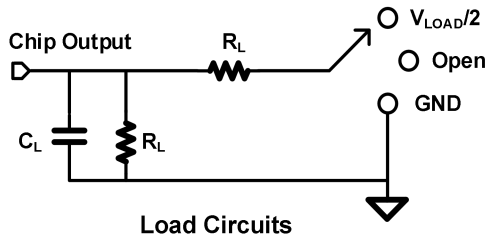


**Fig.8-1. Typical Tpd vs Vcc**



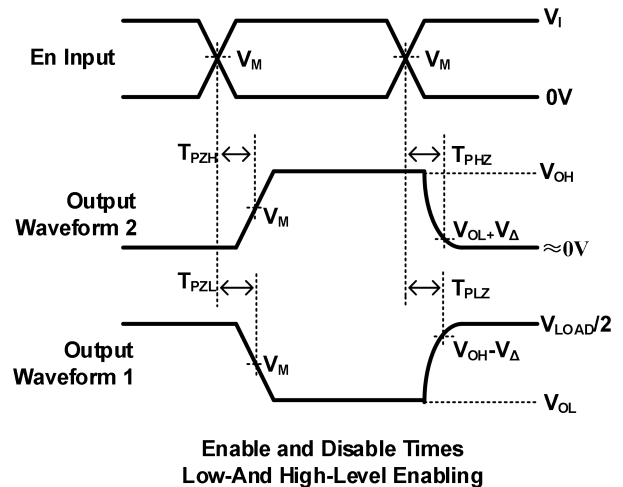
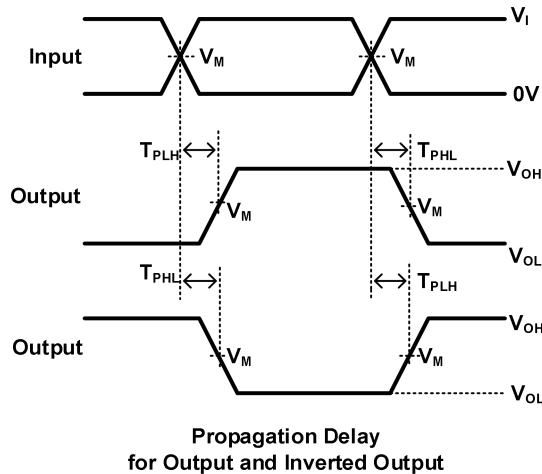
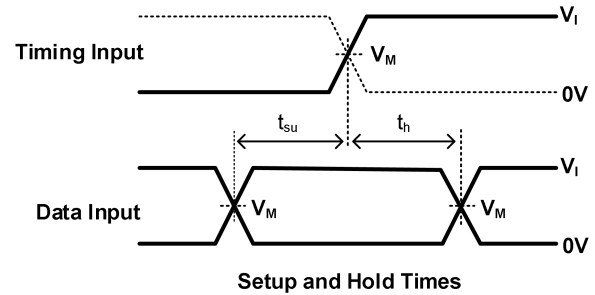
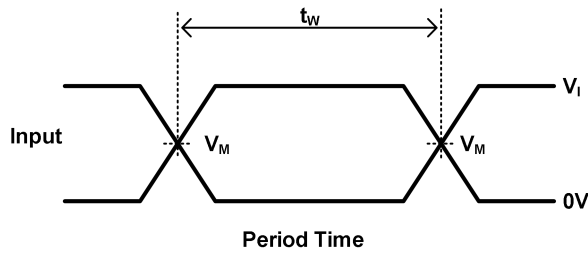
**Fig.8-2. Typical Tpd vs Temp**

## 9 Parameter Measurement Information



TEST	S1
$T_{PHL}/T_{PLH}$	OPEN
$T_{PLZ}/T_{PZL}$	$V_{LOAD}$
$T_{PHZ}/T_{PZH}$	GND

$V_{CC}$	INPUTS		$V_M$	$V_{LOAD}$	$C_L$	$R_L$	$V_{\Delta}$
	$V_i$	$T_r/T_f$					
$1.8V \pm 0.15V$	$V_{CC}$	$\leq 2ns$	$V_{CC}/2$	$2 \times V_{CC}$	30pF	1k $\Omega$	0.15V
$2.5V \pm 0.15V$	$V_{CC}$	$\leq 2ns$	$V_{CC}/2$	$2 \times V_{CC}$	30pF	500 $\Omega$	0.15V
$3.3V \pm 0.15V$	3V	$\leq 2.5ns$	1.5V	6V	50pF	500 $\Omega$	0.3V
$5V \pm 0.15V$	$V_{CC}$	$\leq 2.5ns$	$V_{CC}/2$	$2 \times V_{CC}$	50pF	500 $\Omega$	0.3V



Notes: A.  $C_L$  includes probe and jig capacitance.

B. Waveform 1 is for an output with internal conditions such that the output is low, except when disabled by the output control. Waveform 2 is for an output with internal conditions such that the output is high, except when disabled by the output control.

C. All input pulses are supplied by generators having the following characteristics: PRR 10 MHz, Z = 50.

D. The outputs are measured one at a time, with one transition per measurement.

E.  $t_{PLZ}$  and  $t_{PHZ}$  are the same as  $t_{dis}$ .

F.  $t_{PZL}$  and  $t_{PZH}$  are the same as  $t_{en}$ .

G.  $t_{PLH}$  and  $t_{PHL}$  are the same as  $t_{pd}$ .

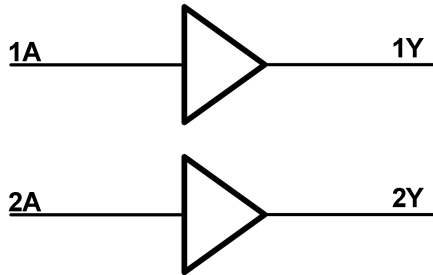
H. All parameters and waveforms are not applicable to all device.

## 10 Detailed Description

### 10.1 Overview

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

### 10.2 Functional Block Diagram



### 10.3 Feature Description

The GT74LVC2G34 device contains dual buffer gate device and performs the Boolean function  $Y = A$ . 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.

### 10.4 Device Functional Modes

**Table 10-1 Function Table**

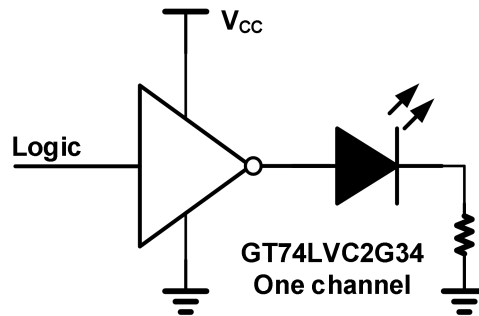
Input A	Output Y
H	H
L	L

## 11 Application Note

### 11.1 Application Information

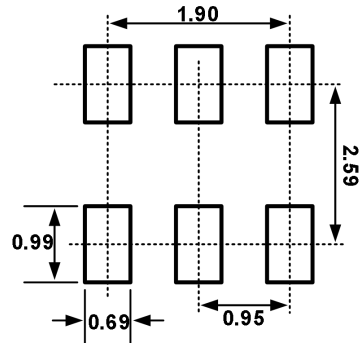
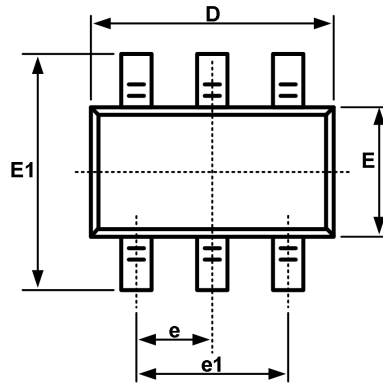
The GT74LVC2G34 is a high drive CMOS device that can be used for implementing inversion logic with a high output drive, such as an LED application. It can produce 24 mA of drive current at 3.3 V making it ideal for driving multiple outputs and good for high-speed applications up to 100 MHz. The inputs are 5.5 V tolerant allowing it to translate down to  $V_{CC}$ .

### 11.2 Typical Application

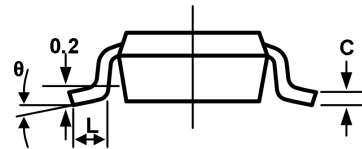
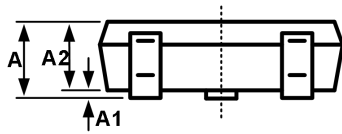


**12 Package Outline Dimension**

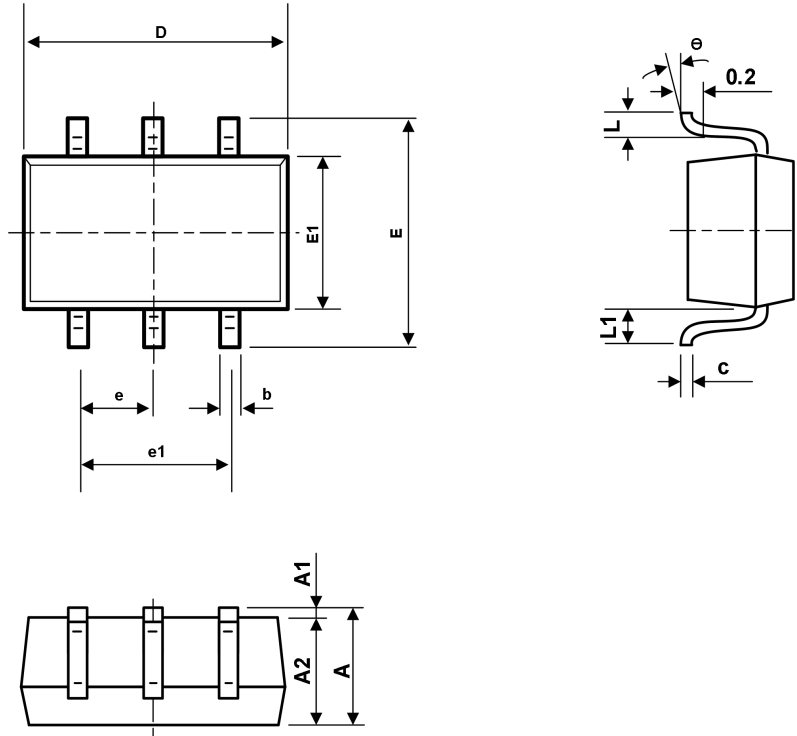
SOT23-6



Recommended Land Pattern (Unit: mm)

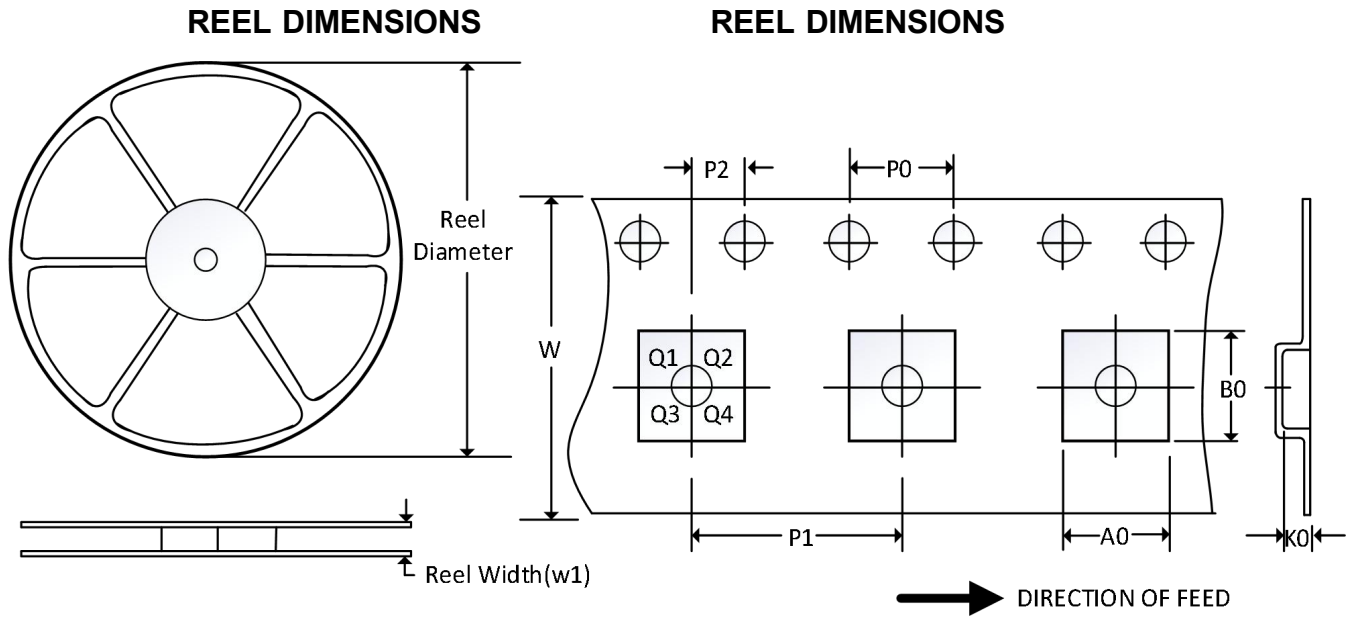


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950BSC		0.037BSC	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

**12 Package Outline Dimension(continued)**
**SC70-6**


symbol	Dimension In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.150	0.350	0.006	0.014
c	0.110	0.175	0.004	0.007
D	2.000	2.200	0.079	0.087
E	2.150	2.450	0.085	0.096
E1	1.150	1.350	0.045	0.053
e	0.650TYP		0.026TYP	
e1	1.200	1.400	0.047	0.055
L	0.260	0.460	0.010	0.018
L1	0.525REF		0.021REF	
e	0°	8°	0°	8°

**13 TAPE AND REEL INFORMATION**



NOTE: The picture is only for reference. Please make the object as the standard.

**KEY PARAMETER LIST OF TAPE AND REEL**

Package Type	Reel Diameter	Reel Width (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P0 (mm)	P1 (mm)	P2 (mm)	W (mm)	Pin1 Quadrant
SOT23-6	7"	9.5	3.17	3.23	1.37	4	4	2	8	Q3
SC70-6	7"	9.5	2.25	2.55	1.20	4.0	4.0	2.0	8.0	Q3

- NOTE:
1. All dimensions are nominal.
  2. Plastic or metal protrusions of 0.15mm maximum per side are not included.