

GT74LVC2G66

4.5Ω Dual Bilateral SPST Analog Switch

1 Features	2 Application
- Bandwidth: 300MHz - High Speed, Typically 30ns - Supply Range: +1.65V to +5.5V - Low ON-State Resistance: 4.5Ω(TYP) - Rail-to-Rail Operation	- Wireless Devices - Audio and Video Signal Routing - Portable Computing - Wearable Devices - Signal Gating, Chopping, Modulation or Demodulation (Modem)

3 Description	Circuit Diagram
The GT74LVC2G66 is a bidirectional 2-channel single-pole single-throw (SPST) analog switch, which is designed to operate from 1.65V to 5.5V. The GT74LVC2G66 device can handle both analog and digital signals. It features bandwidth (300 MHz) and low on resistance (4.5Ω TYP). Each switch section has its own enable-input control (SEL). A high-level voltage applied to SEL turns on the associated switch section. Applications include signal gating, chopping, modulation or demodulation (modem), and signal multiplexing for analog-to-digital and digital-to-analog conversion systems.	The circuit diagram illustrates the internal structure of the GT74LVC2G66. It shows two identical switch sections. Each section has an enable input (SEL1 and SEL2) connected to an inverter. The output of the inverter controls a switch (S1 and S2) that connects an input/output signal to a data input/output (D1 and D2). The switches are controlled by the enable inputs, allowing for bidirectional signal flow.

4 Device Summary, Pin and Packages

Table 4-1. Device Summary ⁽¹⁾

Serial Name	Part Name	Package	Body Size (Nom)	Marking ⁽²⁾	MSL ⁽³⁾	Package Qty
GT74LVC2G66	GT74LVC2G66M8	MSOP8	3.0mm×3.0mm×0.75mm	2G66 XXXXX	3	4000
GT74LVC2G66	GT74LVC2G66DP8	DFN2X3-8	2.0mm×3.0mm×0.75mm	2G66 XXXX	3	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.

4 Device Summary, Pin and Packages (Continued)

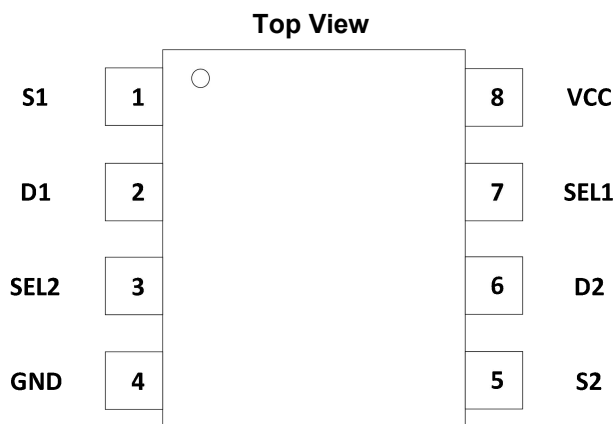


Fig.4-1. GT74LVC2G66:M8(MSOP8) Package

GT74LVC2G66:DP8(DFN2×3-8) Package

Table 4-2 Pin Definition

Name	Pin	I/O	Description
	M8/DP8		
S1	1	I/O	Bidirectional signal to be switched
D1	2	I/O	Bidirectional signal to be switched
SEL2	3	I	Controls the switch (L = OFF, H = ON)
GND	4	-	Ground
S2	5	I/O	Bidirectional signal to be switched
D2	6	I/O	Bidirectional signal to be switched
SEL1	7	I	Controls the switch (L = OFF, H = ON)
V _{CC}	8	-	Power Supply

* It is suggested to leave the unconnected pins floating

Table 4-3 Truth Table

SEL1/SEL2	Function
High	All Switches ON
Low	All Switches OFF

5 Voltage, Temperature, ESD and Thermal Ratings

5.1 Absolute Maximum Ratings

Parameters		Min	Max	Unit
Supply Voltage		-0.3	6.0	V
Select Input Voltage ⁽¹⁾⁽²⁾		-0.3	6.0	
Switch I/O Voltage ⁽²⁾⁽³⁾⁽⁴⁾		-0.3	V _{CC} +0.3	
Control input clamp current	V _I <0		-50	mA
I/O port diode current	V _{I/O} <0 or V _{I/O} >V _{CC}		-50	
On-state switch current	V _{I/O} =0 to V _{CC}	-50	50	
Continuous current through V _{CC} or GND		-100	100	
Package thermal impedance ⁽⁵⁾	MSOP8		170	°C/W
	DFN2×3-8		215	
Junction Temperature ⁽⁶⁾		-40	150	°C
Storage temperature		-65	150	

(1) Stresses above these ratings may cause permanent damage. Exposure to absolute maximum conditions for extended periods may degrade device reliability. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those specified is not implied.

(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.

(5) The package thermal impedance is calculated in accordance with JESD-51.

(6) The maximum power dissipation is a function of T_{J(MAX)}, R_{θJA}, and T_A. The maximum allowable power dissipation at any ambient temperature is P_D = (T_{J(MAX)} - T_A) / R_{θJA}. All numbers apply for packages soldered directly onto a PCB.

5.2 ESD Ratings

ESD			Value	Unit
V(ESD) ⁽¹⁾⁽²⁾	Electrostatic Discharge	Human-Body Model (HBM)	±2000	V
		Machine Model (MM)	±300	V

(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.

5.3 Recommended Operating Conditions

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

Symbol	Parameters	Min	Max	Unit
V _{CC}	Single-Supply, V _S =(V ₊) - (V ₋)	1.65	5.5	V
T _A	Operating Temperature	-40	125	°C

6 Electrical Specifications

$V_{CC} = 5.0\text{ V}$ or 3.3 V , FULL = -40°C to $+125^{\circ}\text{C}$, Typical values are at $T_A = +25^{\circ}\text{C}$. (unless otherwise noted)

DC Electrical Characteristics

Symbol	Parameter	Conditions	V_{CC} (V)	T_A	Min	Typ	Max	Unit
$I_{D(OFF)}, I_{S(OFF)}$	Source, Drain OFF Leakage Current	$V_D=0.3, V_{CC}/2, V_S=V_{CC}/2, 0.3\text{ V}$	1.8 to 5.5V	FULL			1	μA
$I_{D(ON)}, I_{S(ON)}$	Channel ON Leakage Current	$V_D=0.3, \text{OPEN}, V_S=\text{OPEN}, 0.3\text{ V}$	1.8 to 5.5V	FULL			1	μA
I_{IN}	Control Input Leakage	$V_{IN} = \text{GND}$ or V_{IO}	1.8 to 5.5V	FULL			1	μA
I_{CC}	Quiescent Supply Current	$V_{IN} = \text{GND}$ or V_{CC}	5.5V	FULL			1	μA
V_{IH}	Input Voltage High		5V	FULL	1.5			V
			3.3V	FULL	1.3			
V_{IL}	Input Voltage Low		5V	FULL			0.6	V
			3.3V	FULL			0.5	
R_{ON}	On-Resistance	$V_{SW}=V_{CC}/2, I_{ON}=-10\text{ mA}, \text{Switch ON}$	5V	+25°C		4.5	8	Ω
				FULL			8.5	
			3.3V	+25°C		7	10	
				FULL			10.5	
ΔR_{ON}	Delta R_{ON}	$V_{SW}=V_{CC}/2, I_{ON}=-10\text{ mA}, \text{Switch ON}$	5V	+25°C		0.15	0.3	Ω
				FULL			0.4	
			3.3V	+25°C		0.15	0.3	
				FULL			0.4	
$R_{FLAT(ON)}$	On-Resistance Flatness	$0 \leq (V_S) \leq V_{CC}/2, I_{ON}=-10\text{ mA}, \text{Switch ON}$	5V	+25°C		2	3	Ω
				FULL			3.3	
			3.3V	+25°C		3	4	
				FULL			4.3	

6 Electrical Specifications (Continued)

AC Electrical Characteristics

Symbol	Parameter	Conditions	Vcc (V)	Min	Typ	Max	Units
O _{IRR}	Off Isolation	R _L =50Ω	f=10MHz	3.3	-52		dB
			f=1MHz	3.3	-71		
BW	-3 db Bandwidth	C _L =0pF, R _T =50Ω	5		300		MHz
t _{ON}	Turn-On Time	C _L =35pF, V _{SW} =V _{CC}	5		30		ns
			3.3		40		
t _{OFF}	Turn-Off Time	C _L =5pF, V _{SW} =V _{CC}	5		25		ns
			3.3		30		

Capacitance

Symbol	Parameter	Conditions	Min	Typ	Max	Units
C _{S(ON)} , C _{D(ON)}	Source, Drain OFF Capacitance	V _S = V _{CC} /2 or GND, Switch OFF		5		pF
C _{S(OFF)} , C _{D(OFF)}	Source, Drain ON Capacitance	V _S = V _{CC} /2 or GND, Switch ON		15		pF

7 Measurement Information

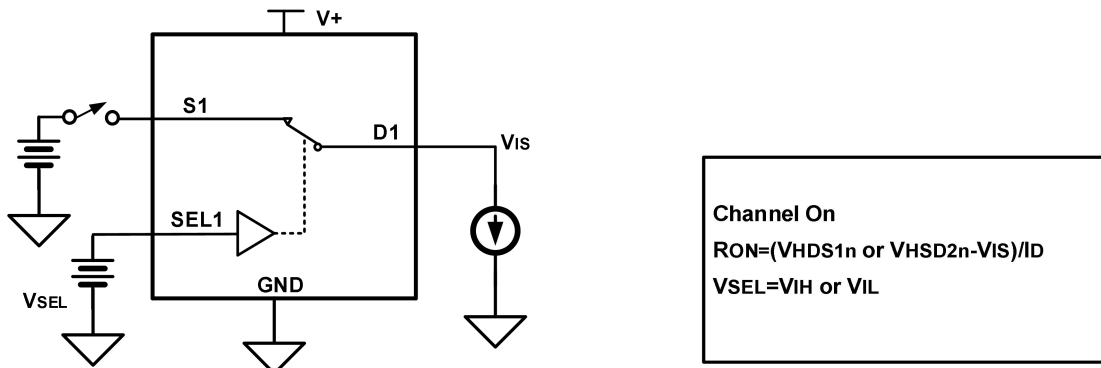


Fig.7-1. ON-State Resistance (R_{ON})

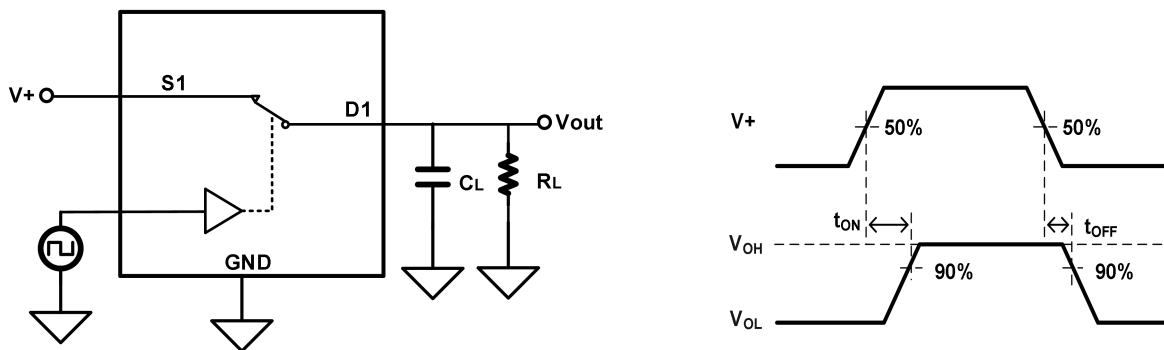


Fig.7-2. Turn-On (t_{ON}) and Turn-Off Time (t_{OFF})

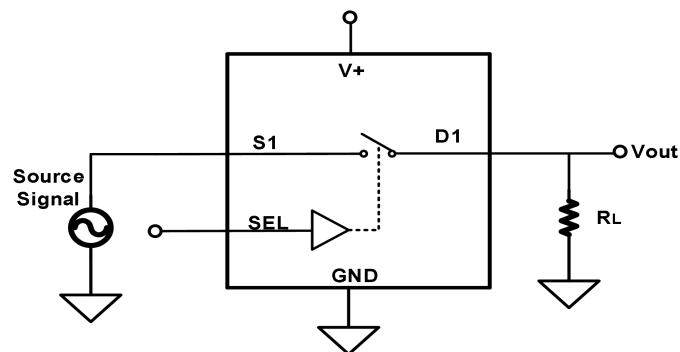


Fig.7-3. Off Isolation (O_{IRR})

7 Measurement Information (Continued)

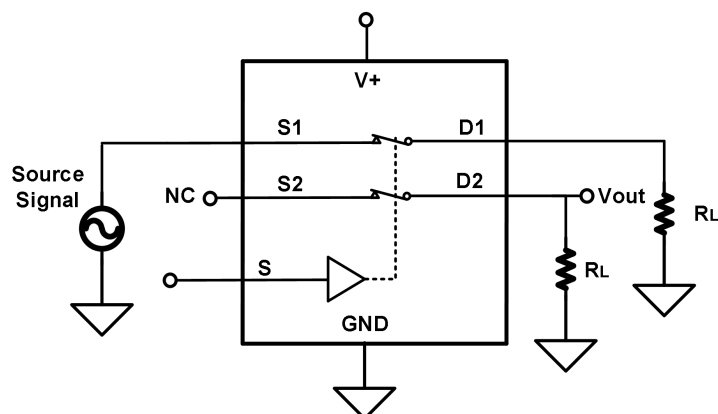


Fig.7-4. Channel-to-Channel Crosstalk

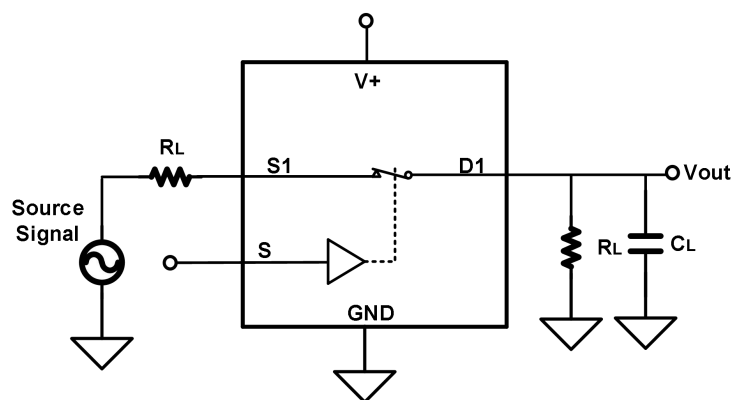
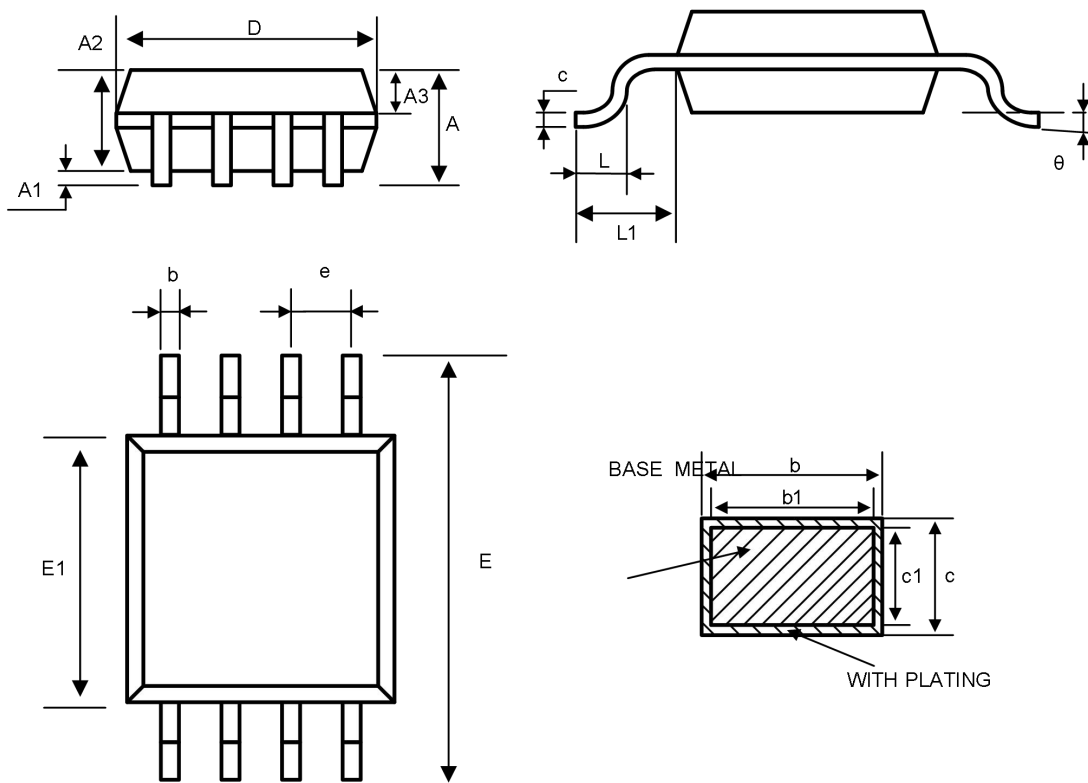


Fig.7-5. -3dB Bandwidth

8 Package Outline Dimension

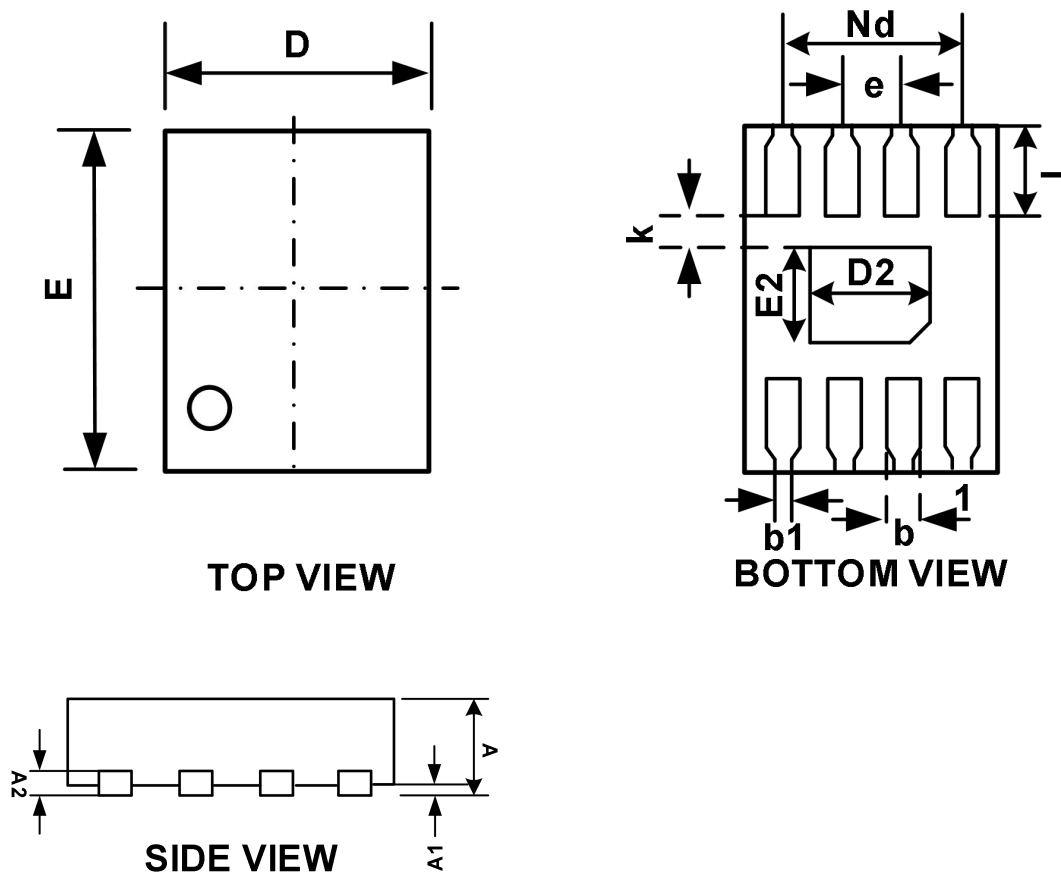
MSOP8



Symbol	Dimensions in Millimeters			Dimensions in Inches		
	Min.	Nom.	Max.	Min.	Nom.	Max.
A	0.82	—	1.10	0.032	—	0.043
A1	0.02	—	0.15	0.001	—	0.006
A2	0.75	0.85	0.95	0.030	0.033	0.037
A3	0.30	0.35	0.40	0.012	0.014	0.016
b	0.28	—	0.36	0.011	—	0.014
b1	0.27	0.30	0.33	0.010	0.012	0.013
c	0.15	—	0.19	0.006	—	0.007
c1	0.14	0.15	0.16	0.006	0.006	0.006
D	2.90	3.00	3.10	0.114	0.12	0.122
E	4.70	4.90	5.10	0.185	0.193	0.201
E1	2.90	3.00	3.10	0.114	0.118	0.122
e	0.65BSC			0.026BSC		
L	0.40	—	0.70	0.016	—	0.028
L1	0.95REF			0.037REF		
θ	0	—	8°	0	—	8°

8 Package Outline Dimension (Continued)

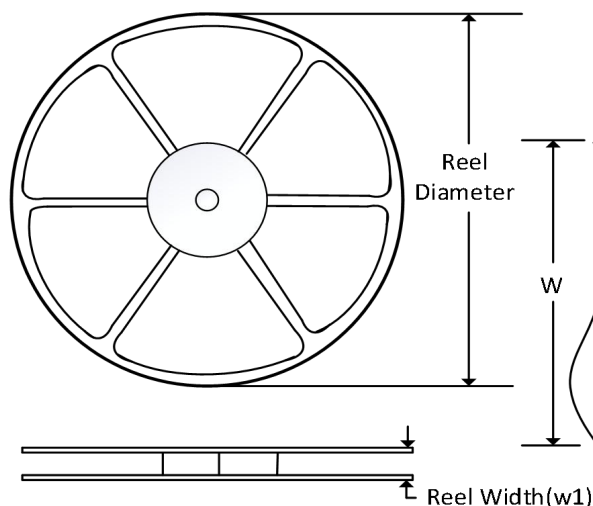
DFN2×3-8



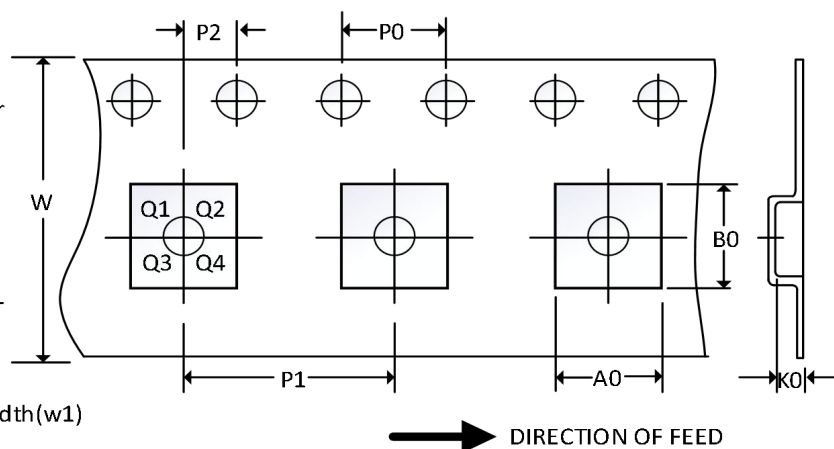
Symbol	Dimensions in Millimeters			Dimensions in Inches		
	Min.	Nom.	Max.	Min.	Nom.	Max.
A	0.50	0.55	0.60	0.020	0.022	0.024
A1	—	0.02	0.05	—	0.001	0.002
b	0.20	0.25	0.30	0.008	0.010	0.012
b1	0.10	0.15	0.20	0.004	0.006	0.008
A2	0.203 REF			0.008 REG		
D	1.90	2.00	2.10	0.075	0.079	0.083
D2	1.40	1.50	1.60	0.055	0.059	0.063
Nd	1.50 BSC			0.059 BSC		
e	0.50 BSC			0.020 BSC		
E	2.90	3.00	3.10	0.114	0.118	0.122
E2	1.30	1.40	1.5	0.051	0.055	0.059
k	0.35	0.40	0.45	0.014	0.016	0.018
L	0.35	0.40	0.45	0.014	0.016	0.018

9 Type and Reel Information

Reel Dimensions



Reel Dimensions



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
MSOP8	13"	12.4	5.20	3.30	1.50	4.0	8.0	2.0	12.0	Q1
DFN2X3-8	7"	8.3	2.30	3.30	0.95	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.