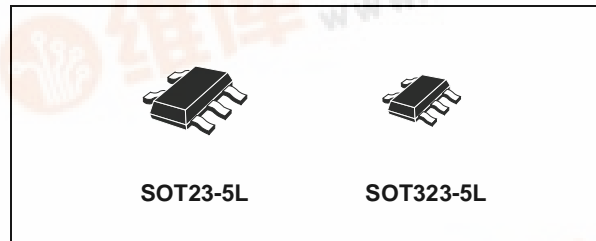




# 74V1G384

## SINGLE HIGH SPEED BUS SWITCH

- HIGH SPEED:  $t_{PD} = 0.5ns$  (TYP.) at  $V_{CC} = 5V$
- LOW POWER DISSIPATION:  
 $I_{CC} = 1\mu A$ (MAX.) at  $T_A=25^\circ C$
- LOW "ON" RESISTANCE at  $V_{CC}=5.0V$ :  
 $R_{ON} = 7\Omega$  (TYP),  $V_{IN}=0V$ ,  $I_{IO}=30mA$   
 $R_{ON} = 14\Omega$  (TYP),  $V_{IN}=2.4V$ ,  $I_{IO}=15mA$
- OPERATING VOLTAGE RANGE:  
 $V_{CC}$  (OPR.) = 3.0V TO 5.5V
- 5V TOLERANT ON CONTROL PIN
- HIGH NOISE IMMUNITY:  
 $V_{NIH} = V_{NIL} = 28\% V_{CC}$  (MIN.)



### ORDER CODES

PACKAGE	T & R
SOT23-5L	74V1G384STR
SOT323-5L	74V1G384CTR

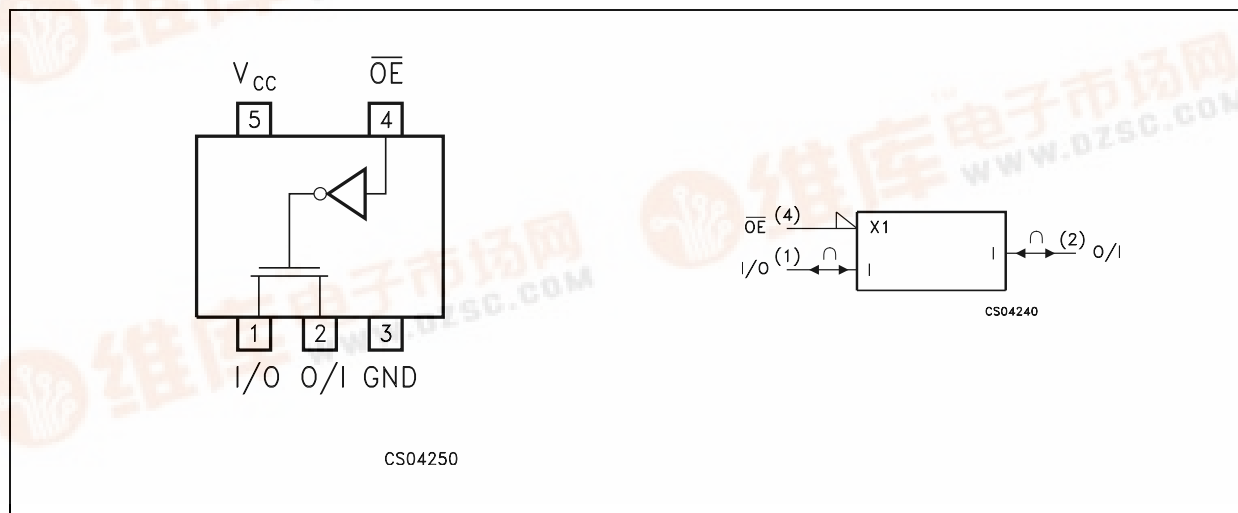
### DESCRIPTION

The 74V1G384 is an advanced high-speed CMOS SINGLE HIGH SPEED BUS SWITCH fabricated in silicon gate C<sup>2</sup>MOS technology. It's designed to operate from 3V to 5.5V, making this device ideal for portable applications. It's offers 7Ω Resistance typical value at  $V_{CC}=5V$ . Additional key feature are fast switching speed ( $t_{ON}=3.8ns$ ,  $t_{OFF}=3.3ns$  Typical) and Low Power Consumption.

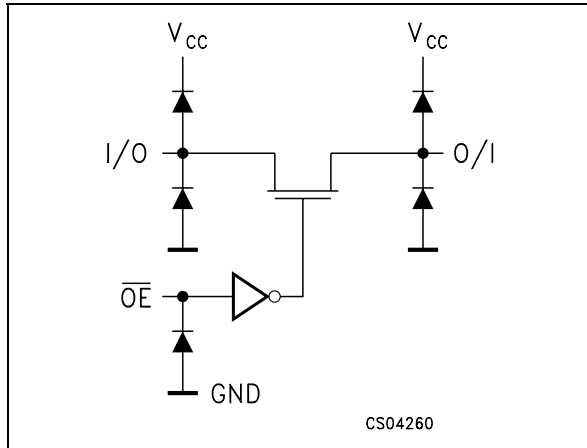
The  $\overline{OE}$  input is provided to control the switch; the switch is ON when the  $\overline{OE}$  input is held low and OFF when  $\overline{OE}$  is held high.

It's available in the commercial and extended temperature range in SOT23-5L and SC-70-5L package.

### PIN CONNECTION AND IEC LOGIC SYMBOLS



## INPUT EQUIVALENT CIRCUIT



## PIN DESCRIPTION

PIN N°	SYMBOL	NAME AND FUNCTION
1	I/O	Independent Input/Output
2	O/I	Independent Output/Input
4	$\overline{OE}$	Enable Input (Active HIGH)
3	GND	Ground (0V)
5	$V_{CC}$	Positive Supply Voltage

## TRUTH TABLE

$\overline{OE}$	SWITCH FUNCTION
L	ON
H	OFF *

\* High Impedance State

## ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
$V_{CC}$	Supply Voltage	-0.5 to +7.0	V
$V_I$	DC Input Voltage	-0.5 to $V_{CC} + 0.5$	V
$V_{IC}$	DC Control Input Voltage	-0.5 to +7.0	V
$V_O$	DC Output Voltage	-0.5 to $V_{CC} + 0.5$	V
$I_{IK}$	DC Input Diode Current	$\pm 20$	mA
$I_{IK}$	DC Control Input Diode Current	-20	mA
$I_{OK}$	DC Output Diode Current	$\pm 20$	mA
$I_O$	DC Output Current	$\pm 50$	mA
$I_{CC}$ or $I_{GND}$	DC $V_{CC}$ or Ground Current	$\pm 50$	mA
$T_{stg}$	Storage Temperature	-65 to +150	°C
$T_L$	Lead Temperature (10 sec)	300	°C

Absolute Maximum Ratings are those values beyond which damage to the device may occur. Functional operation under these conditions is not implied.

## RECOMMENDED OPERATING CONDITIONS

Symbol	Parameter	Value	Unit
$V_{CC}$	Supply Voltage	3 to 5.5	V
$V_I$	Input Voltage	0 to $V_{CC}$	V
$V_{IC}$	Control Input Voltage	0 to 5.5	V
$V_O$	Output Voltage	0 to $V_{CC}$	V
$T_{op}$	Operating Temperature	-55 to 125	°C
dt/dv	Input Rise and Fall Time (note 1) $V_{CC} = 5.0V$	0 to 20	ns/V

1)  $V_{IN}$  from 30% to 70% of  $V_{CC}$  on control pin

## DC SPECIFICATIONS

Symbol	Parameter	Test Condition		Value						Unit	
		V <sub>CC</sub> (V)		T <sub>A</sub> = 25°C			-40 to 85°C		-55 to 125°C		
				Min.	Typ.	Max.	Min.	Max.	Min.		Max.
V <sub>IH</sub>	High Level Input Voltage	2.0		1.5			1.5		1.5		V
		3.0 to 5.5		0.7V <sub>CC</sub>			0.7V <sub>CC</sub>		0.7V <sub>CC</sub>		
V <sub>IL</sub>	Low Level Input Voltage	2.0				0.5		0.5		0.5	V
		3.0 to 5.5				0.3V <sub>CC</sub>		0.3V <sub>CC</sub>		0.3V <sub>CC</sub>	
R <sub>ON</sub>	ON Resistance	3.0	V <sub>IC</sub> = V <sub>IL</sub> V <sub>I/O</sub> = GND I <sub>I/O</sub> ≤ 30 mA		9			13		20	Ω
		4.5	V <sub>IC</sub> = V <sub>IL</sub> V <sub>I/O</sub> = GND I <sub>I/O</sub> ≤ 30 mA		7			10		15	Ω
R <sub>ON</sub>	ON Resistance	3.0	V <sub>IC</sub> = V <sub>IL</sub> V <sub>I/O</sub> = 1.5V I <sub>I/O</sub> ≤ 15 mA		20			40		60	Ω
		4.5	V <sub>IC</sub> = V <sub>IL</sub> V <sub>I/O</sub> = 2.4V I <sub>I/O</sub> ≤ 15 mA		14			28		40	Ω
I <sub>OFF</sub>	Input/Output Leakage Current (SWITCH OFF)	5.5	V <sub>OS</sub> = V <sub>CC</sub> to GND V <sub>IS</sub> = V <sub>CC</sub> to GND V <sub>IC</sub> = V <sub>IL</sub>			±0.1		± 1		± 10	μA
I <sub>IN</sub>	Control Input Leakage Current	0 to 5.5	V <sub>IC</sub> = 5.5V or GND			± 0.1		± 1.0		± 1.0	μA
I <sub>CC</sub>	Quiescent Supply Current	5.5	V <sub>I</sub> = V <sub>CC</sub> or GND			1		10		20	μA

AC ELECTRICAL CHARACTERISTICS (C<sub>L</sub> = 50pF, Input t<sub>r</sub> = t<sub>f</sub> = 3ns)

Symbol	Parameter	Test Condition		Value						Unit	
		V <sub>CC</sub> (V)		T <sub>A</sub> = 25°C			-40 to 85°C		-55 to 125°C		
				Min.	Typ.	Max.	Min.	Max.	Min.		Max.
t <sub>PD</sub>	Delay Time	3.3 <sup>(*)</sup>	t <sub>r</sub> = t <sub>f</sub> = 6ns		0.8	1.2		1.5		2.0	ns
		5.0 <sup>(**)</sup>	t <sub>r</sub> = t <sub>f</sub> = 6ns		0.5	0.8		1.0		1.5	
t <sub>PLZ</sub> t <sub>PHZ</sub>	Output Disable Time	3.3 <sup>(*)</sup>	R <sub>1</sub> = 500Ω V <sub>IN</sub> = 1.5V		8.5	12.0		14.0		16.0	ns
		5.0 <sup>(**)</sup>	R <sub>1</sub> = 500Ω V <sub>IN</sub> = 2.4V		3.8	6.5		9.0		10.0	
t <sub>PZL</sub> t <sub>PZH</sub>	Output Enable Time	3.3 <sup>(*)</sup>	R <sub>1</sub> = 1KΩ V <sub>IN</sub> = 1.5V		7.3	12.0		14.0		16.0	ns
		5.0 <sup>(**)</sup>	R <sub>1</sub> = 1KΩ V <sub>IN</sub> = 2.4V		3.3	5.0		7.5		8.5	

(\*) Voltage range is 3.3V ± 0.3V

(\*\*) Voltage range is 5.0V ± 0.5V

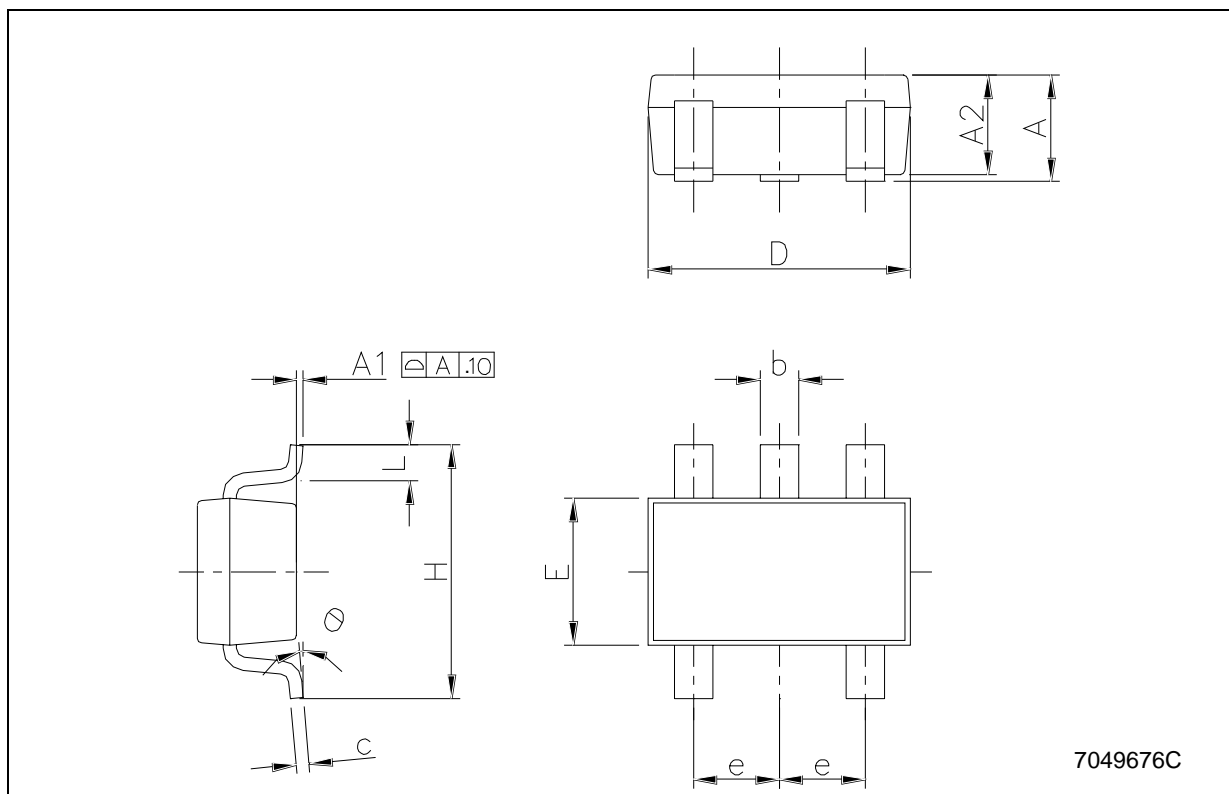
## CAPACITIVE CHARACTERISTICS

Symbol	Parameter	Test Condition		Value						Unit	
				T <sub>A</sub> = 25°C			-40 to 85°C		-55 to 125°C		
		V <sub>CC</sub> (V)		Min.	Typ.	Max.	Min.	Max.	Min.		Max.
C <sub>IN</sub>	Input Capacitance				4	10		10		10	pF
C <sub>I/O</sub>	Output Capacitance				7						pF
C <sub>PD</sub>	Power Dissipation Capacitance (note 1)	3.3			2.5						pF
		5.0			3						

1) C<sub>PD</sub> is defined as the value of the IC's internal equivalent capacitance which is calculated from the operating current consumption without load. (Refer to Test Circuit). Average operating current can be obtained by the following equation.  $I_{CC(opr)} = C_{PD} \times V_{CC} \times f_{IN} + I_{CC}$

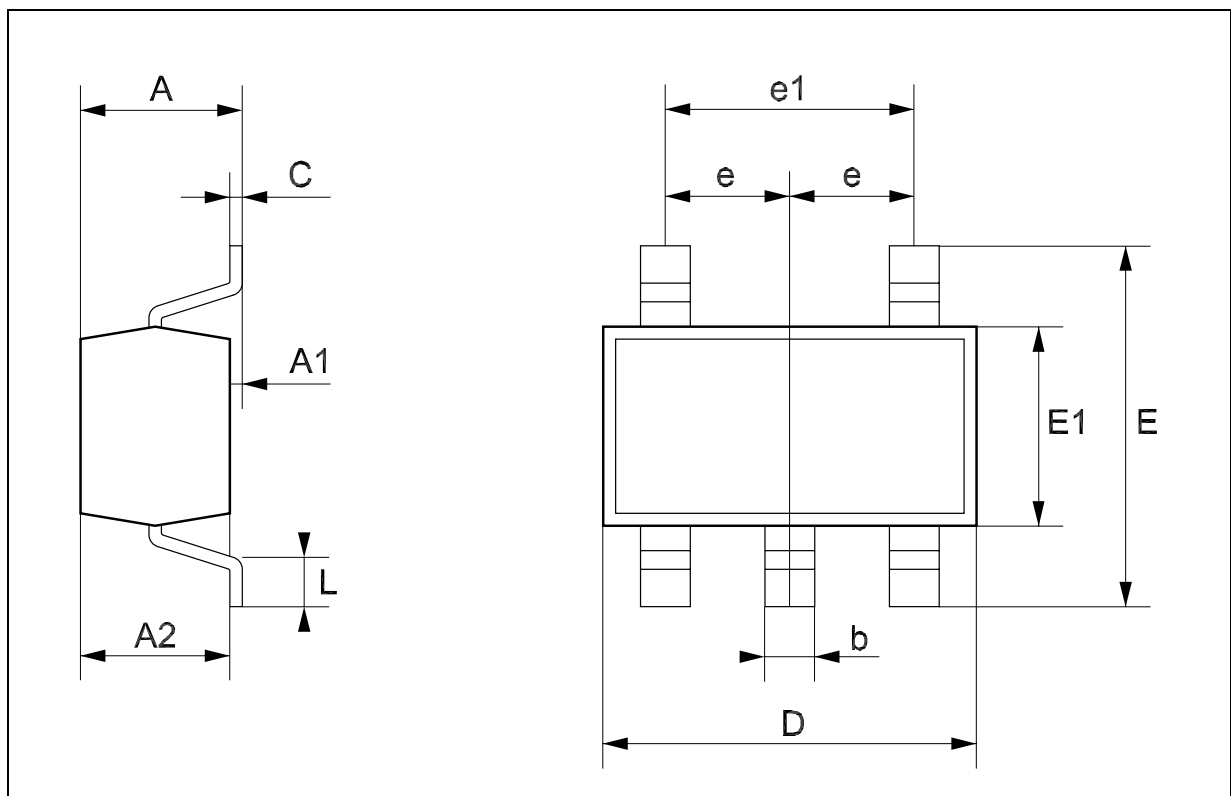
<b>SOT23-5L MECHANICAL DATA</b>
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DIM.	mm.			mils		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A	0.90		1.45	35.4		57.1
A1	0.00		0.10	0.0		3.9
A2	0.90		1.30	35.4		51.2
b	0.35		0.50	13.7		19.7
C	0.09		0.20	3.5		7.8
D	2.80		3.00	110.2		118.1
E	1.50		1.75	59.0		68.8
e		0.95			37.4	
H	2.60		3.00	102.3		118.1
L	0.10		0.60	3.9		23.6



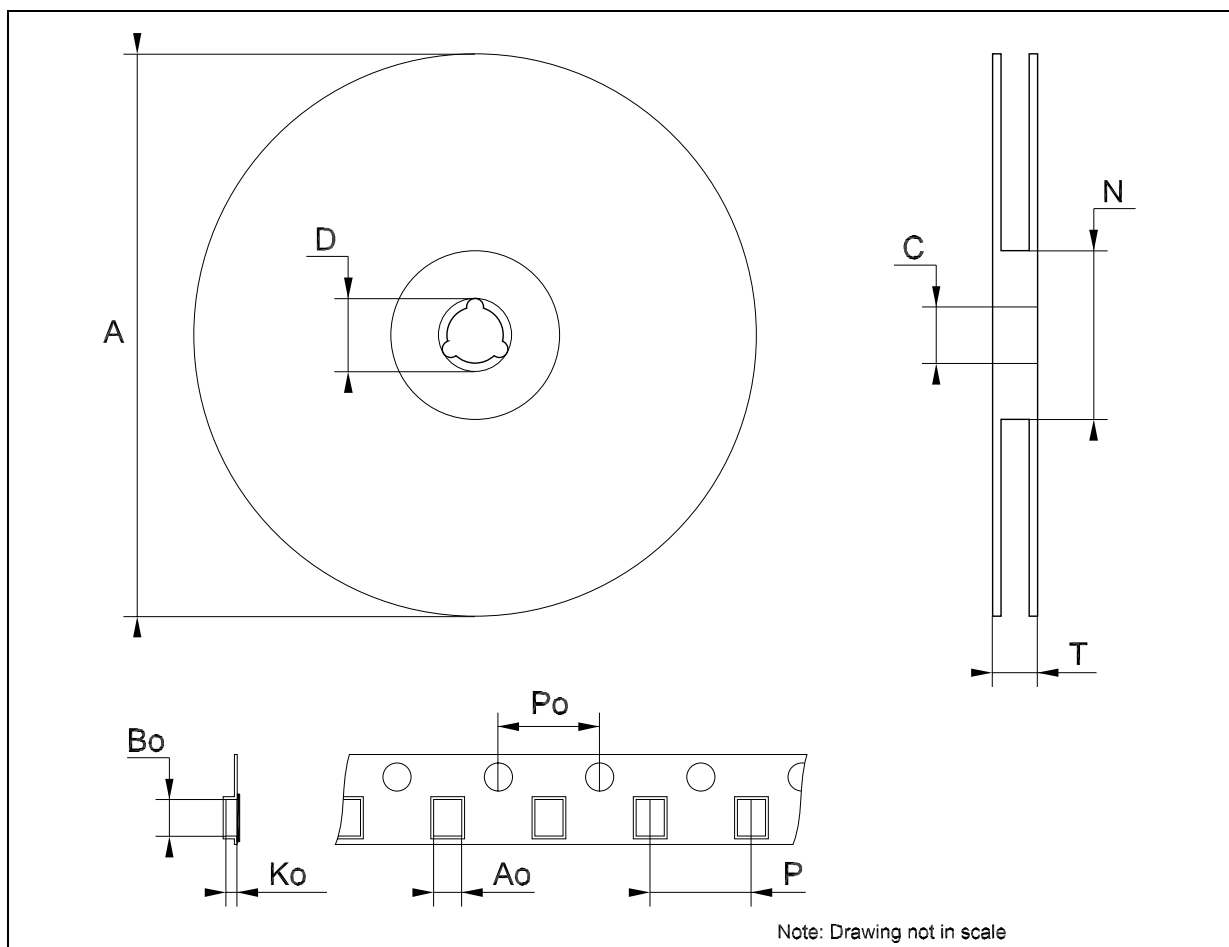
## SOT323-5L MECHANICAL DATA

DIM.	mm.			mils		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	0.80		1.10	31.5		43.3
A1	0.00		0.10	0.0		3.9
A2	0.80		1.00	31.5		39.4
b	0.15		0.30	5.9		11.8
C	0.10		0.18	3.9		7.1
D	1.80		2.20	70.9		86.6
E	1.80		2.40	70.9		94.5
E1	1.15		1.35	45.3		53.1
e		0.65			25.6	
e1		1.3			51.2	
L	0.10		0.30	3.9		11.8



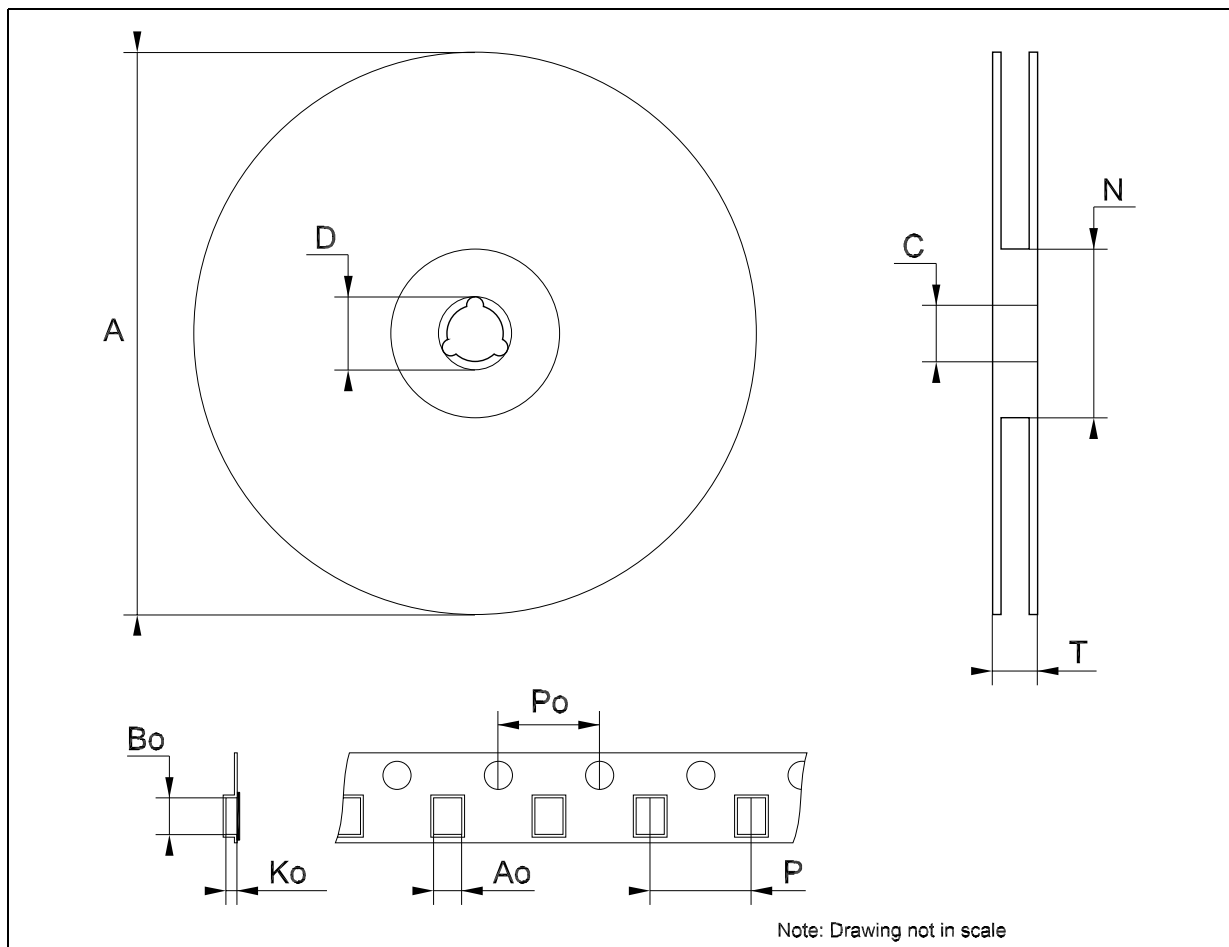
## Tape &amp; Reel SOT23-xL MECHANICAL DATA

DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A			180			7.086
C	12.8	13.0	13.2	0.504	0.512	0.519
D	20.2			0.795		
N	60			2.362		
T			14.4			0.567
Ao	3.13	3.23	3.33	0.123	0.127	0.131
Bo	3.07	3.17	3.27	0.120	0.124	0.128
Ko	1.27	1.37	1.47	0.050	0.054	0.058
Po	3.9	4.0	4.1	0.153	0.157	0.161
P	3.9	4.0	4.1	0.153	0.157	0.161



## Tape &amp; Reel SOT323-xL MECHANICAL DATA

DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A	175	180	185	6.889	7.086	7.283
C	12.8	13	13.2	0.504	0.512	0.519
D	20.2			0.795		
N	59.5	60	60.5		2.362	
T			14.4			0.567
Ao		2.25			0.088	
Bo		2.7			0.106	
Ko		1.2			0.047	
Po	3.9	4	4.1	0.153	0.157	0.161
P	3.8	4	4.2	0.149	0.157	0.165



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