74V2G07

TRIPLE BUFFER (OPEN DRAIN)

PRELIMINARY DATA

- HIGH SPEED: t_{PD} =3.7ns (TYP.) at V_{CC} = 5V
- LOW POWER DISSIPATION: I_{CC} = 1µA(MAX.) at T_A=25°C
- HIGH NOISE IMMUNITY: $V_{NIH} = V_{NIL}$ = 28% V_{CC} (MIN.)
- POWER DOWN PROTECTION ON INPUT
- OPERATING VOLTAGE RANGE: V_{CC}(OPR) = 2V to 5.5V
- IMPROVED LATCH-UP IMMUNITY

SOT23-8L

SOT323-8L

ORDER CODES

PACKAGE	T & R
SOT23-8L	74V2G07STR
SOT323-8L	74V2G07CTR

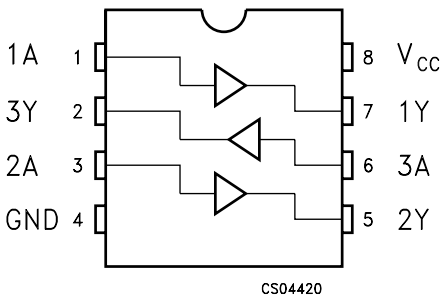
DESCRIPTION

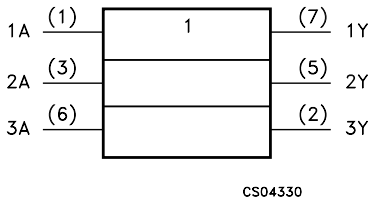
The 74V2G07 is an advanced high-speed CMOS TRIPLE BUFFER (OPEN DRAIN) fabricated with sub-micron silicon gate and double-layer metal wiring C^2MOS technology.

The internal circuit is composed of 2 stages including buffer output, which provide high noise immunity and stable output.

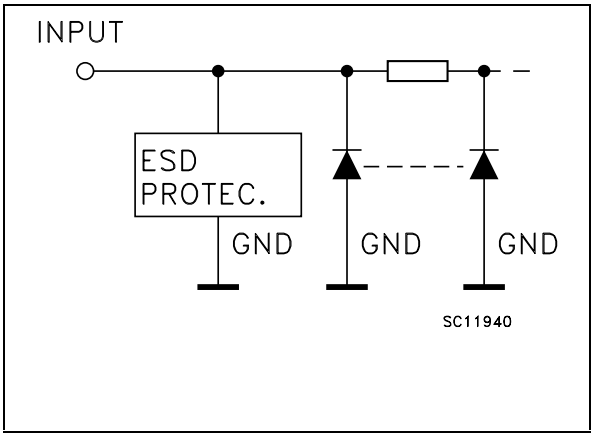
Power down protection is provided on input and 0 to 7V can be accepted on input with no regard to the supply voltage. This device can be used to interface 5V to 3V.

PIN CONNECTION AND IEC LOGIC SYMBOLS





INPUT EQUIVALENT CIRCUIT



PIN DESCRIPTION

PIN No	SYMBOL	NAME QND FUNCTION
1, 3, 6	1A, 2A, 3A	Data Inputs
7, 5, 2	1Y, 2Y, 3Y	Data Outputs
4	GND	Ground (0V)
8	V_{CC}	Positive Supply Voltage

TRUTH TABLE

A	Y
L	L
H	Z

Z: High Impedance

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 +7.0	V
V_O	DC Output Voltage	-0.5 to V_{CC} + 0.5	V
I_{IK}	DC Input Diode Current	- 20	mA
I_{OK}	DC Output Diode Current	± 20	mA
I_O	DC Output Current	± 25	mA
I_{CC} or I_{GND}	DC V_{CC} or Ground Current	± 50	mA
T_{stg}	Storage Temperature	-65 to +150	°C
T_L	Lead Temperature (10 sec)	260	°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	2 to 5.5	V
V_I	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} = 3.3 ± 0.3V) (V_{CC} = 5.0 ± 0.5V)	0 to 100 0 to 20	ns/V ns/V

1) V_{IN} from 30% to 70% of V_{CC}

DC SPECIFICATIONS

Symbol	Parameter	Test Condition		Value							Unit
		V_{CC} (V)		T_A = 25°C			-40 to 85°C		-55 to 125°C		
				Min.	Typ.	Max.	Min.	Max.	Min.	Max.	
V_{IH}	High Level Input Voltage	2.0		1.5			1.5		1.5		V
		3.0 to 5.5		$0.7V_{CC}$			$0.7V_{CC}$		$0.7V_{CC}$		
V_{IL}	Low Level Input Voltage	2.0				0.5		0.5		0.5	V
		3.0 to 5.5				$0.3V_{CC}$		$0.3V_{CC}$		$0.3V_{CC}$	
V_{OL}	Low Level Output Voltage	2.0	I_O=50 µA		0.0	0.1		0.1		0.1	V
		3.0	I_O=50 µA		0.0	0.1		0.1		0.1	
		4.5	I_O=50 µA		0.0	0.1		0.1		0.1	
		3.0	I_O=4 mA			0.36		0.44		0.55	
		4.5	I_O=8 mA			0.36		0.44		0.55	
I_{OZ}	High Impedance Output Leakage Current	5.5	$V_I = V_{IH}$ or V_{IL} $V_O = V_{CC}$ or GND			± 0.25		± 2.5		± 5	µA
I_I	Input Leakage Current	0 to 5.5	V_I = 5.5V or GND			± 0.1		± 1		± 1	µA
I_{CC}	Quiescent Supply Current	5.5	$V_I = V_{CC}$ or GND			1		10		20	µA

AC ELECTRICAL CHARACTERISTICS (Input $t_r = t_f$ = 3ns)

Symbol	Parameter	Test Condition			Value						Unit
		V_{CC} (V)	C_L (pF)		T_A = 25°C			-40 to 85°C		-55 to 125°C	
					Min.	Typ.	Max.	Min.	Max.	Min.	Max.	
t_{PZL}	Propagation Delay Time	3.3(*)	15			4.8	7.7	1.0	9.0	1.0	10.0	ns
		3.3(*)	50			5.3	8.5	1.0	10.0	1.0	11.0	
		5.0(**)	15			3.7	5.5	1.0	6.5	1.0	7.5	
		5.0(**)	50			4.2	7.5	1.0	8.5	1.0	9.5	
t_{PLZ}	Propagation Delay Time	3.3(*)	50			7.5	10.5	1.0	11.5	1.0	12.5	ns
		5.0(**)	50			4.7	7.5	1.0	8.5	1.0	9.5	

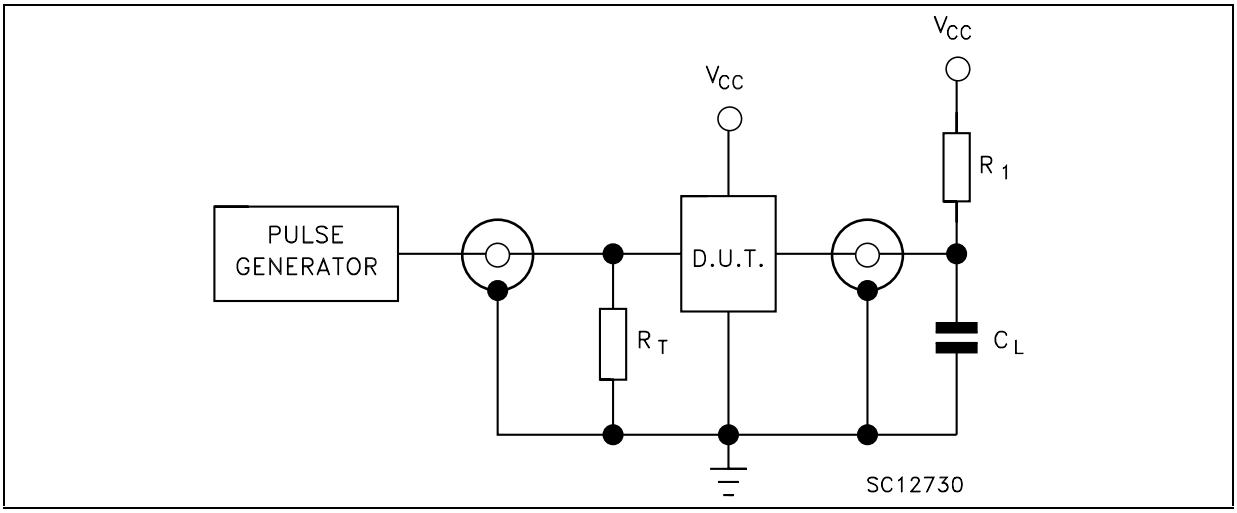
(*) Voltage range is 3.3V ± 0.3V
(**) Voltage range is 5.0V ± 0.5V

CAPACITIVE CHARACTERISTICS

Symbol	Parameter	Test Condition	Value							Unit
			T_A = 25°C			-40 to 85°C		-55 to 125°C		
			Min.	Typ.	Max.	Min.	Max.	Min.	Max.	
C_{IN}	Input Capacitance			4	10		10		10	pF
C_{OUT}	Output Capacitance			5	10		10		10	pF
C_{PD}	Power Dissipation Capacitance (note 1)			3						pF

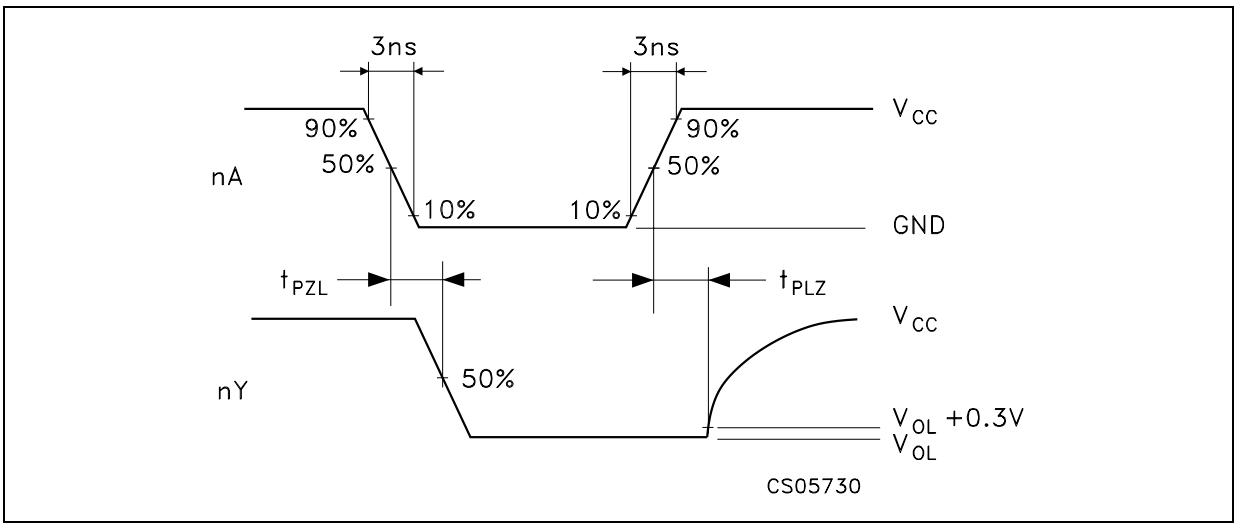
1) C_{PD} is defined as the value of the IC's internal equivalent capacitance which is calculated from the operating current consumption without load. (Refer to Test Circuit). Average operating current can be obtained by the following equation. $I_{CC(opr)} = C_{PD} \times V_{CC} \times f_{IN} + I_{CC}$

TEST CIRCUIT



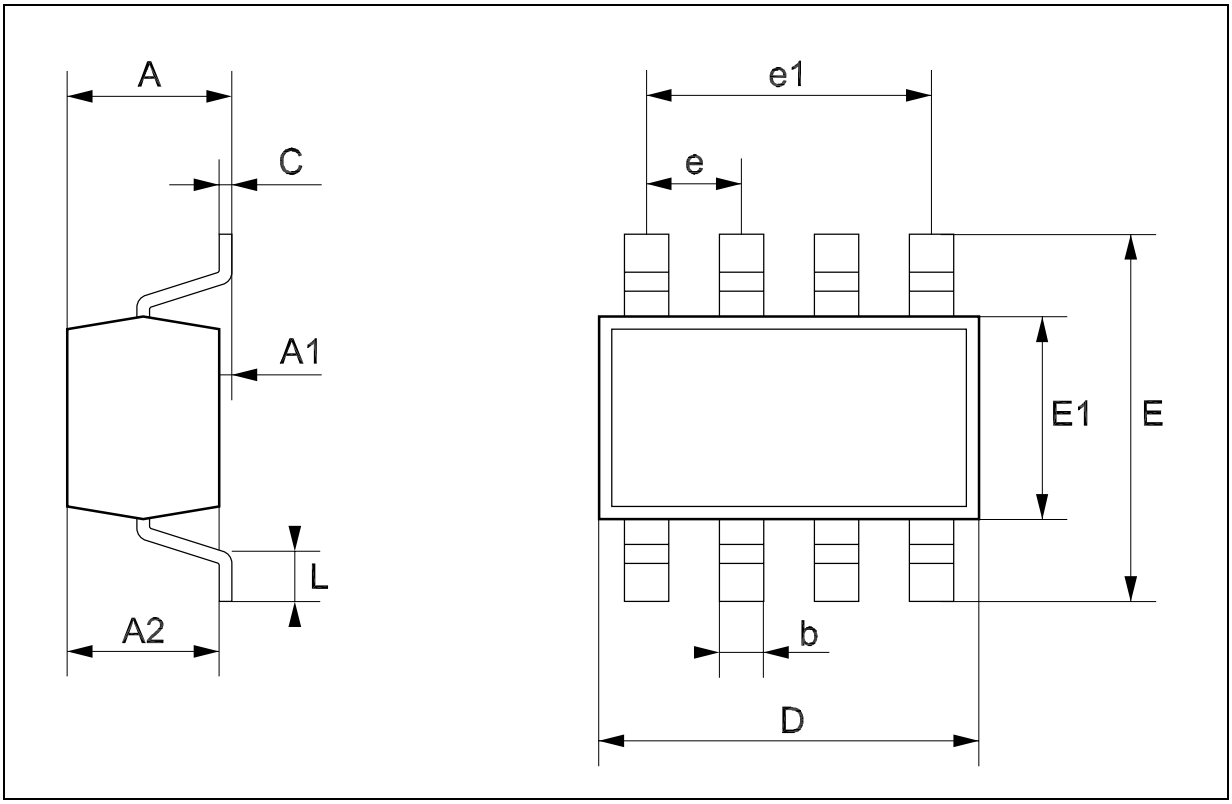
C_L = 15/50pF or equivalent (includes jig and probe capacitance)
R_1 = 1KΩ or equivalent
R_T = Z_{OUT} of pulse generator (typically 50Ω)

WAVEFORM: PROPAGATION DELAY (f=1MHz; 50% duty cycle)



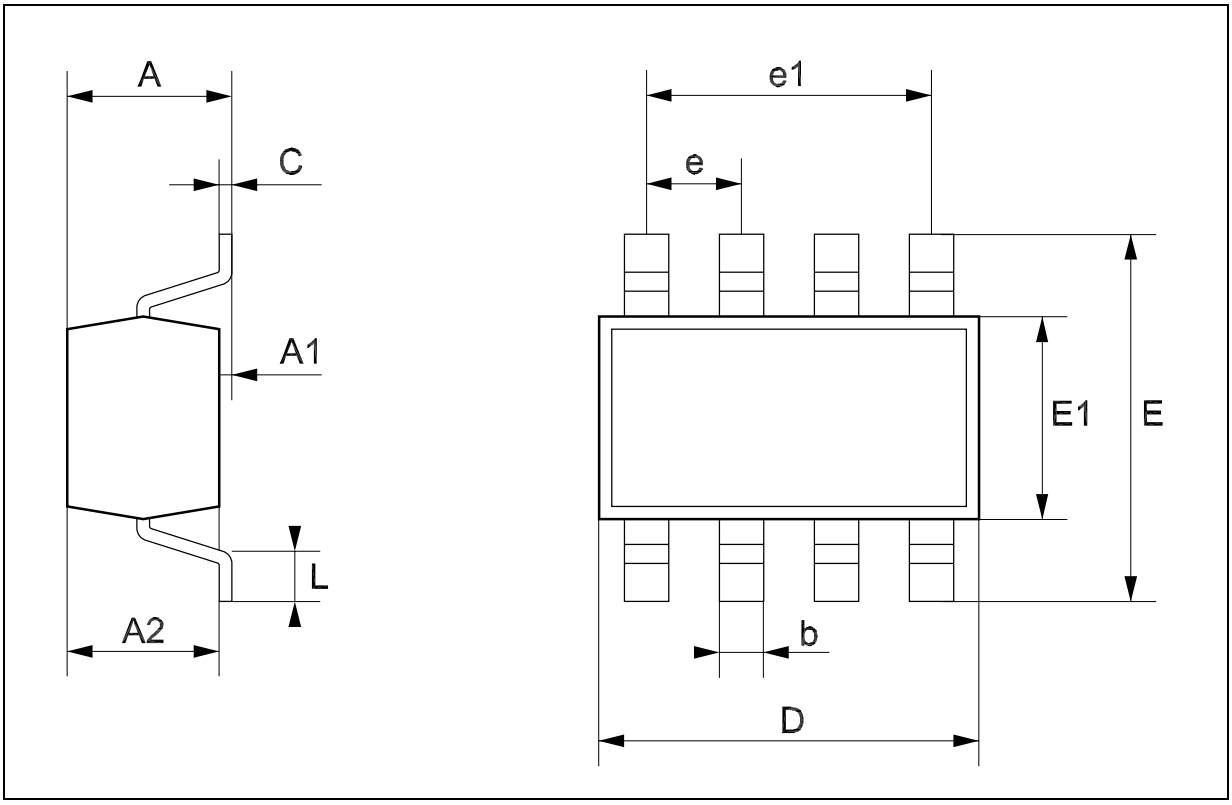
SOT23-8L MECHANICAL DATA

DIM.	mm.			mils		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A	0.90		1.45	35.4		57.1
A1	0.00		0.15	0.0		5.9
A2	0.90		1.30	35.4		51.2
b	0.22		0.38	8.6		14.9
C	0.09		0.20	3.5		7.8
D	2.80		3.00	110.2		118.1
E	2.60		3.00	102.3		118.1
E1	1.50		1.75	59.0		68.8
e	0	.65			25.6	
e1		1.95			76.7	
L	0.35		0.55	13.7		21.6



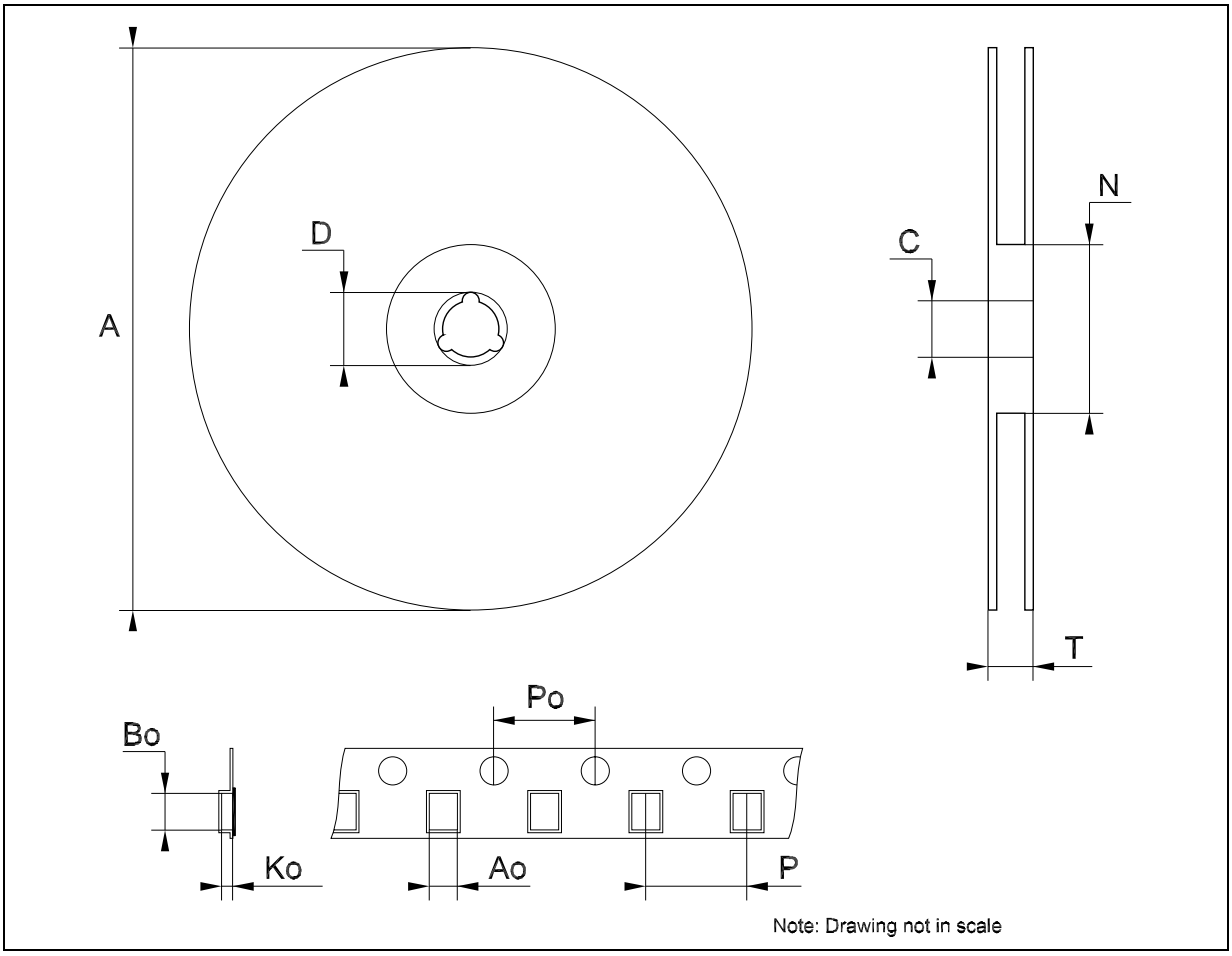
SOT323-8L MECHANICAL DATA

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		34.9
b	0.13		0.28	5.1		11.0
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		0.5			19.7	
e1		1.5			59.0	
L	0.10		0.30	3.9		11.8



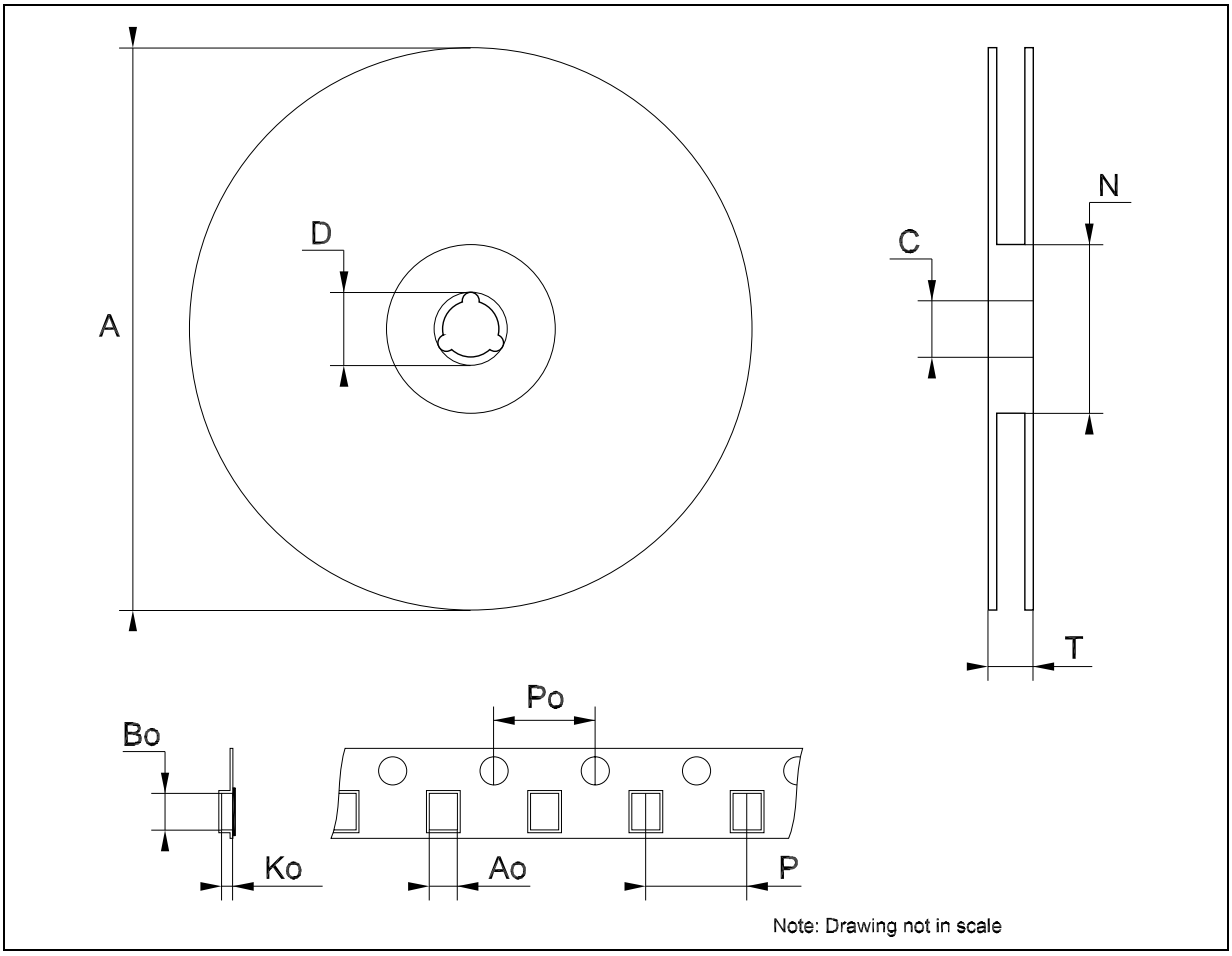
Tape & Reel SOT23-xL MECHANICAL DATA

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	0.0.58
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 & 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	3.98	4	4.2	0.156	0.157	0.165
P	3.98	4	4.2	0.156	0.157	0.165



Note: Drawing not in scale