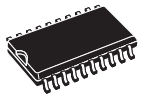
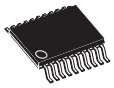
74ACT1284

HIGH SPEED IEEE1284 TRANSCEIVER

- HIGH SPEED:
  T_{PD} = 6.5 ns (Max. 85°C) at V_{CC} = 4.5V
- LOW POWER DISSIPATION:
  I_{CC} = 80 µA (MAX.) at V_{CC} = 5.5V T = 85 °C
- TTL COMPATIBLE INPUTS
  V_{IH} = 2V (Min.) V_{IL} = 0.8V (Max.)
- OPERATING VOLTAGE RANGE:
  V_{CC} (OPR.) = 4.5V to 5.5V
- A Port have standard 4mA totem pole output
- B Port high drive source/sink capability of 14mA
- Support IEEE Std 1284-I (level 1 type) and IEEE Std 1284-II (level 2 type) for bidirectional parallel communications between personal computer and printing peripherals.



SOP



TSSOP

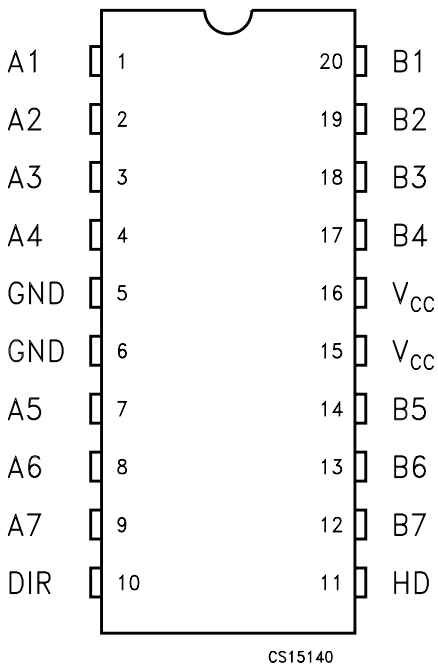
ORDER CODES

PACKAGE	TUBE	T & R
SOP	74ACT1284M	74ACT1284MTR
TSSOP		74ACT1284TTR

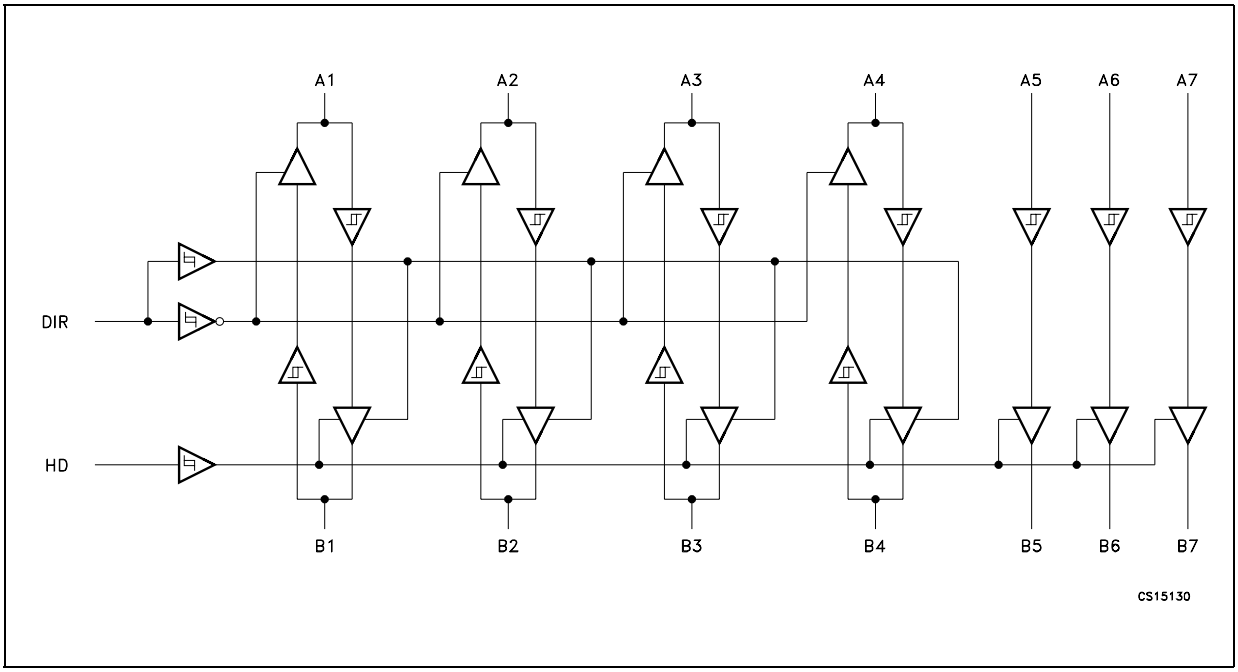
DESCRIPTION

The 74ACT1284 contains four high-speed non-inverting bidirectional buffers and three non-inverting buffers with open drain outputs fabricated in silicon gate C^2MOS technology.
It's intended to provide a standard signaling method for a bidirection parallel peripheral in an Extended Capabilities Port mode (ECP).
The HD (active High) input pin enables the B ports to switch from Open Drain to a high drive totem pole output, capable of sourcing 14mA on all seven buffers. The DIR input determines the direction of data flow on the bidirectional buffers.
DIR (active High) enables data flow from A Port to B Port. DIR (active Low) enables data flow from B Port to A Port.
ESD protection is greater than 2000V per Method 3015.7 of MIL-STD-883B. It's available in the commercial temperature ranges.

PIN CONNECTION



LOGIC DIAGRAM



PIN DESCRIPTION

PIN N.	SYMBOL	NAME AND FUNCTION
1 - 4	A1 - A4	Side A Input or Output
5, 6	GND	Ground
7 - 9	A5 - A7	Side A Input
10	DIR	Direction Control Input
11	HD	High Drive Enable Input
12 - 14	B5 - B7	Side B Output
15, 16	V_{CC}	Power Supply

TRUTH TABLE

INPUT		FUNCTION	OUTPUTS
DIR	HD		
L	L	B1 - B4 Data to A1 - A4 A5 - A7 Data to B5 - B7	B5 - B7 Open Drain
L	H		B5 - B7 Totem Pole
H	L	A1 - A7 Data to B1 - B7	B1 - B7 Open Drain
H	H		B1 - B7 Totem Pole

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CC}	Supply Voltage	-0.5 to +7	V
V_{IA}	DC Input Voltage A Side	-0.5 to V_{CC} + 0.5	V
V_{IB}	DC Input Voltage B Side	-2 to +7 (1)	V
V_{OA}	DC Output Voltage A Side	-0.5 to V_{CC} + 0.5	V
V_{OB}	DC Output Voltage B Side	-2 to +7 (1)	V
I_{IK}	DC Input Diode Current	± 20	mA
I_{OK}	DC Output Diode Current	± 50	mA
I_O	DC Output Current	± 50	mA
I_{CC} or I_{GND}	DC V_{CC} or Ground Current	± 200	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.
(1) The AC input voltage pulse width is limited to 20ns if the input voltage goes more negative than -0.5V.

RECOMMENDED OPERATING CONDITIONS

Symbol	Parameter	Value	Unit
V_{CC}	Supply Voltage	4.5 to 5.5	V
V_I	Input Voltage	0 to V_{CC}	V
V_O	Output Voltage HD = LOW	0 to 5.5	V
T_{op}	Operating Temperature	-40 to 85	°C

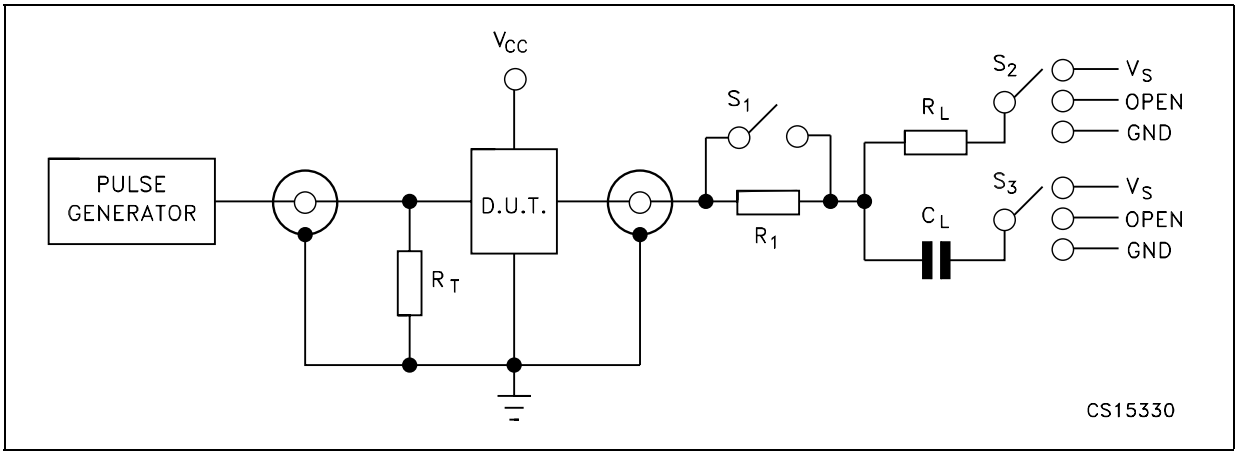
DC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Test Condition		Value					Unit
		V_{CC} (V)		T_A = 25°C			-40 to 85°C		
				Min.	Typ.	Max.	Min.	Max.	
V_{IH}	High Level Input Voltage	4.5 to 5.5		2.0			2.0		V
V_{IL}	Low Level Input Voltage	4.5 to 5.5				0.8		0.8	V
V_{OHB}	High Level Output Voltage B Port	4.5	I_{OH} = -14mA	3.86			3.76		V
V_{OHA}	High Level Output Voltage A Port	4.5	I_O = -50µA	4.4			4.4		V
			I_O = -4mA	3.86			3.76		
V_{OLB}	Low Level Output Voltage B Port	4.5	I_{OH} = 14mA			0.4		0.4	V
V_{OLA}	Low Level Output Voltage A Port	4.5	I_O = 50µA			0.1		0.1	V
			I_O = 4mA			0.36		0.44	
I_I	Input Current	5.5	$V_I = V_{CC}$ or GND (DIR,A5,A6,A7,HD)			± 0.1		± 1	µA
I_{CCT}	Max I_{CC}/Input	5.5	$V_I = V_{CC}$ - 2.1V		0.6			1.5	mA
I_{CC}	Quiescent Supply Current	5.5	$V_I = V_{CC}$ or GND			8		80	µA
I_{OZ}	Output Leakage Current	5.5	$V_O = V_{CC}$ or GND			± 0.5		± 5	µA
I_{OFF}	B Side Power Down Leakage Current	0	V_O = 5.25V			4		40	µA
V_{HYS}	Input Hysteresls	5.0	$V_T^+ = V_T$		0.4		0.35		V
Z_O	Output Impedance B Port	5.0	$V_B = V_{OH}$	8				24	Ω

AC ELECTRICAL CHARACTERISTICS (f = 1MHz, $t_r = t_f$ = 2.5ns)

Symbol	Parameter	Test Condition		Value					Unit
		V_{CC} (V)		T_A = 25°C			-40 to 85°C		
				Min.	Typ.	Max.	Min.	Max.	
t_{PLH}	Propagation Delay Time A1 - A7 to B1 - B7	4.5 to 5.5	R_L=500Ω, C_L=50pF (fig. 1-2)	1		5.6	1	6.5	ns
t_{PHL}				1		5.6	1	6.5	
t_{PLH}	Propagation Delay Time B1 - B4 to A1 - A4	4.5 to 5.5	R_L=500Ω, C_L=50pF (fig. 3)	1		7.5	1	8.5	ns
t_{PHL}				1		7.5	1	8.5	
t_{EN}	Enable Delay Time HD to B1 - B7	4.5 to 5.5	R_S=33Ω, R_L=62Ω C_L=50pF (fig. 2)	1		7.5	1	8.5	ns
t_{DIS}	Disable Delay Time HD to B1 - B7			1		7.5	1	8.5	ns
t_r, t_f	t_{rise}, t_{fall} B1 - B7 Open Drain	4.5 to 5.5	R_{PULL_UP}=500Ω C_L=50pF (fig. 4)			120		120	ns
C_I	Control Input Capacitance (HD, DIR, A5 - A7)	Open			4				pF
$C_{I/O}$	I/O Pin Capacitance	5.0			12				pF

TEST CIRCUIT



TEST	S1	S2	S2
t_{PHL} (A1-A7 to B1-B7) $R_L = 62\Omega$, $R_1 = 33\Omega$ (see waveform 1)	OPEN	V_{CC}	V_{CC}
t_{PLH} (A1-A7 to B1-B7) $R_L = 62\Omega$ (see waveform 1)	CLOSED	GND	GND
t_{PHL}, t_{PLH} (B1-B4 to A1-A4) $R_L = 500\Omega$ (see waveform 2)	CLOSED	GND	GND
t_r, t_f (A1-A7 to B1-B7) $R_L = 500\Omega$ (see waveform 1)	CLOSED	V_{CC}	V_{CC}
t_{EN} (HD to B1-B7) $R_L = 62\Omega$, $R_1 = 33\Omega$ (see waveform 3)	OPEN	GND	GND
t_{DIS} (HD to B1-B7) $R_L = 62\Omega$ (see waveform 3)	CLOSED	GND	GND

C_L = 50 pF or equivalent (includes jig and probe capacitance)
$R_T = Z_{OUT}$ of pulse generator (typically 50Ω)

Figure 1 : Propagation Delay Time

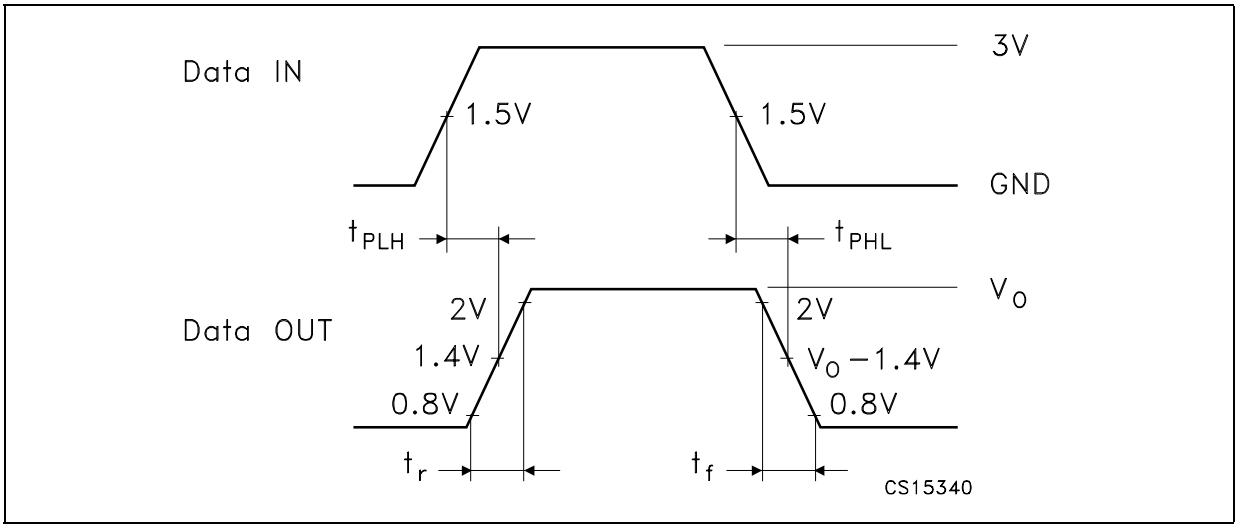
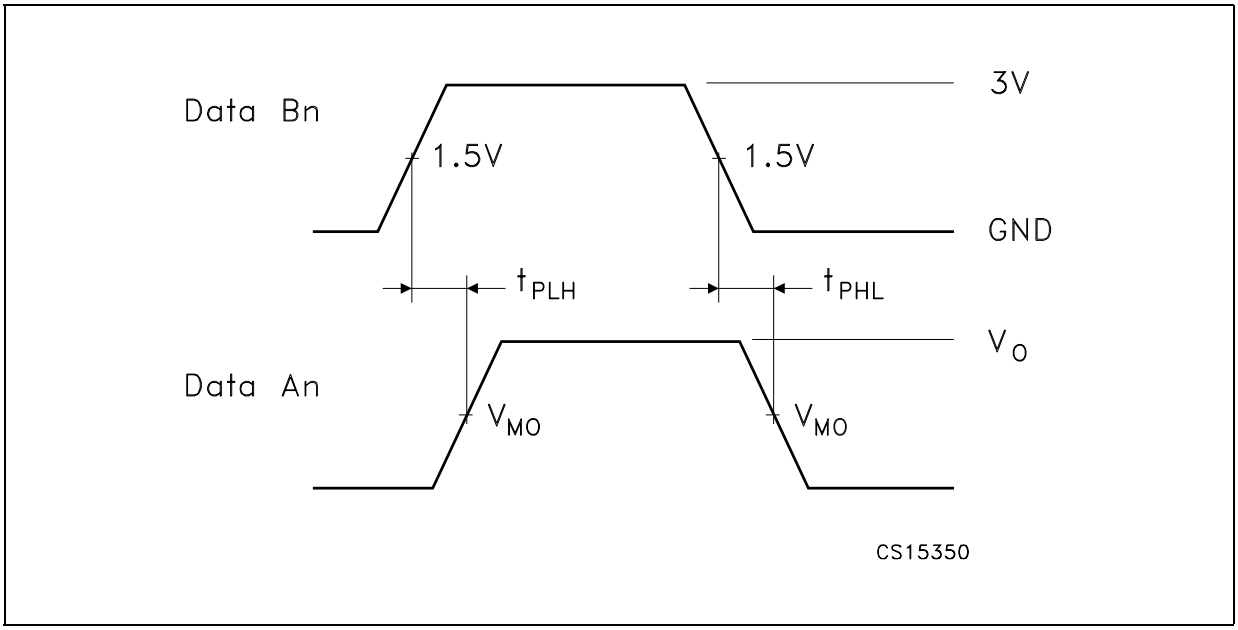
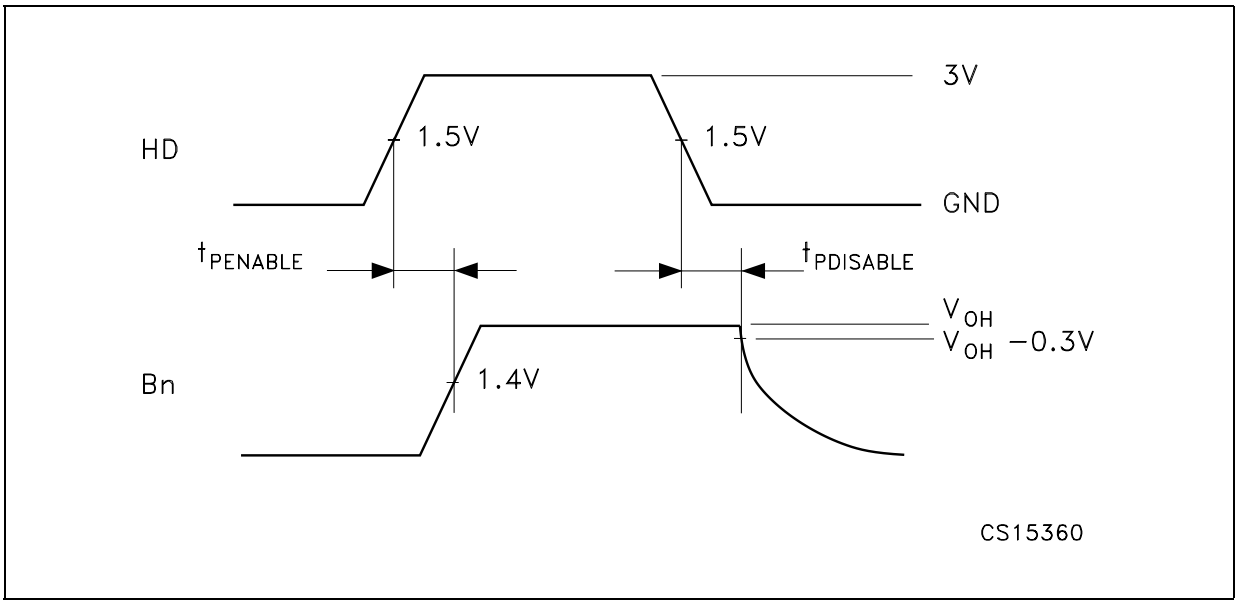


Figure 2 : Propagation Delay Time



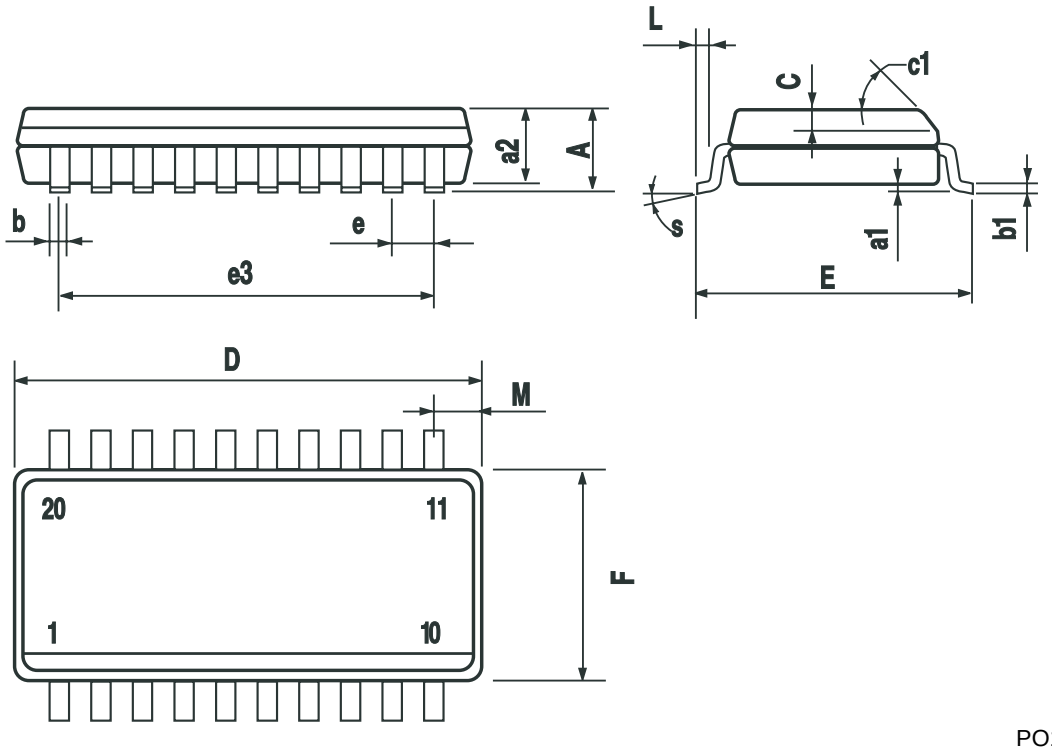
$V_{MO} = 50\%V_{CC}$

Figure 3 : Enable and Disable Time



SO-20 MECHANICAL DATA

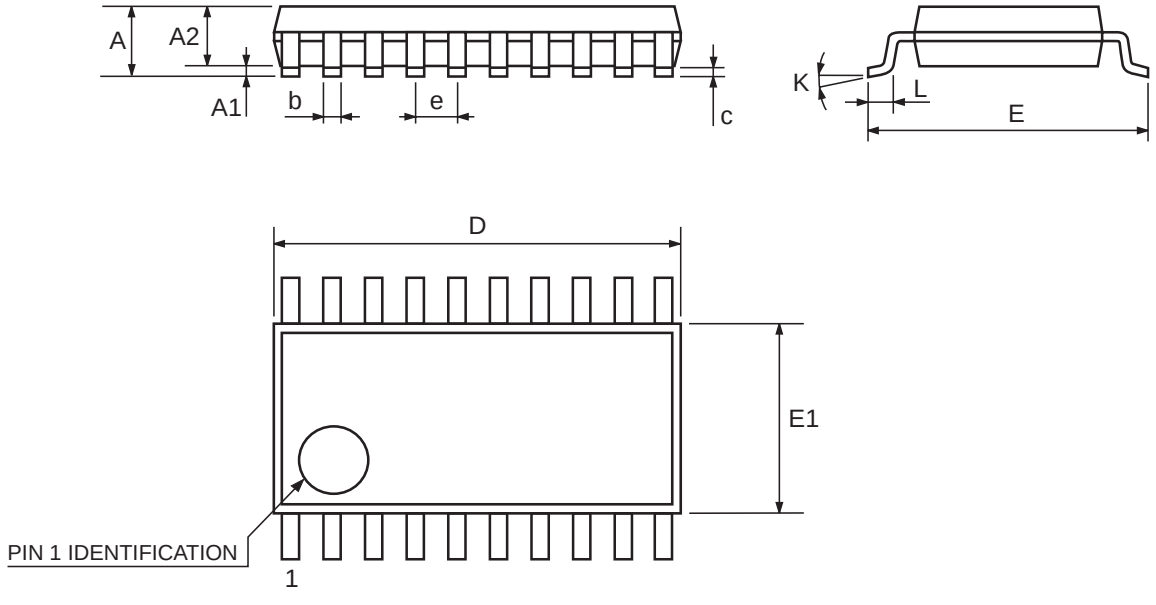
DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A			2.65			0.104
a1	0.1		0.2	0.004		0.008
a2			2.45			0.096
b	0.35		0.49	0.014		0.019
b1	0.23		0.32	0.009		0.012
C		0.5			0.020	
c1	45° (typ.)					
D	12.60		13.00	0.496		0.512
E	10.00		10.65	0.393		0.419
e		1.27			0.050	
e3		11.43			0.450	
F	7.40		7.60	0.291		0.300
L	0.50		1.27	0.020		0.050
M			0.75			0.029
S	8° (max.)					



PO13L

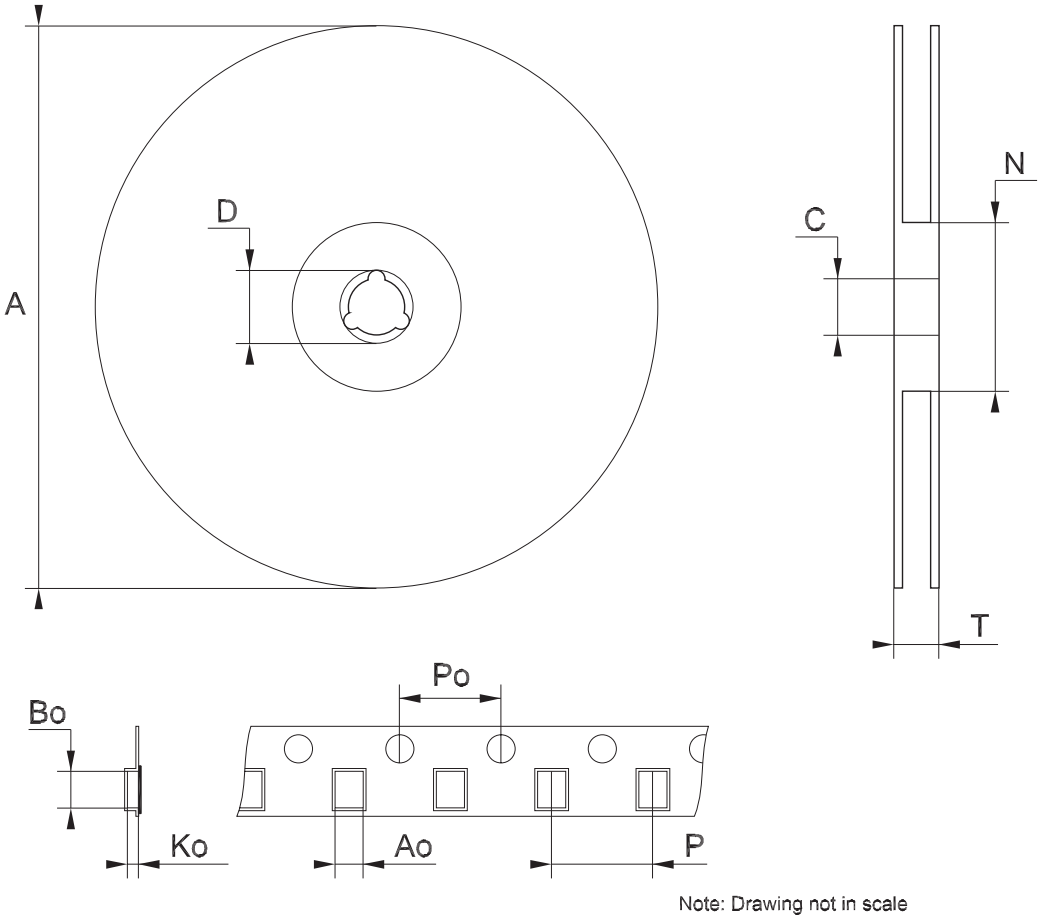
TSSOP20 MECHANICAL DATA

DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A			1.2			0.047
A1	0.05		0.15	0.002	0.004	0.006
A2	0.8	1	1.05	0.031	0.039	0.041
b	0.19		0.30	0.007		0.012
c	0.09		0.20	0.004		0.0079
D	6.4	6.5	6.6	0.252	0.256	0.260
E	6.2	6.4	6.6	0.244	0.252	0.260
E1	4.3	4.4	4.48	0.169	0.173	0.176
e		0.65 BSC			0.0256 BSC	
K	0°		8°	0°		8°
L	0.45	0.60	0.75	0.018	0.024	0.030



Tape & Reel SO-20 MECHANICAL DATA

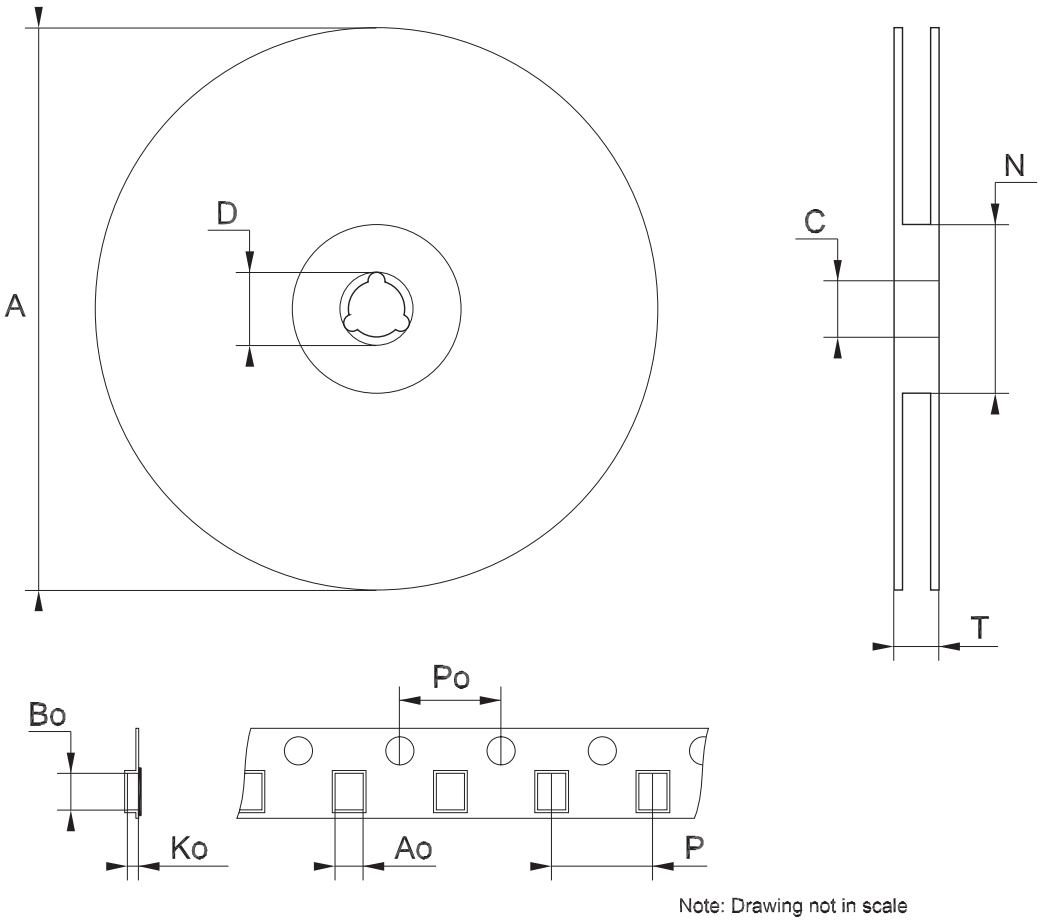
DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A			330			12.992
C	12.8		13.2	0.504		0.519
D	20.2			0.795		
N	60			2.362		
T			30.4			1.197
Ao	10.8		11	0.425		0.433
Bo	13.2		13.4	0.520		0.528
Ko	3.1		3.3	0.122		0.130
Po	3.9		4.1	0.153		0.161
P	11.9		12.1	0.468		0.476



Note: Drawing not in scale

Tape & Reel TSSOP20 MECHANICAL DATA

DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A			330			12.992
C	12.8		13.2	0.504		0.519
D	20.2			0.795		
N	60			2.362		
T			22.4			0.882
Ao	6.8		7	0.268		0.276
Bo	6.9		7.1	0.272		0.280
Ko	1.7		1.9	0.067		0.075
Po	3.9		4.1	0.153		0.161
P	11.9		12.1	0.468		0.476



Note: Drawing not in scale

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