

钍地半导体
Tudi Semiconductor

Product Specification

TUDI-SN75ALS195N

QUADRUPLE DIFFERENTIAL LINE RECEIVERS

网址 www.sztdbdt.com

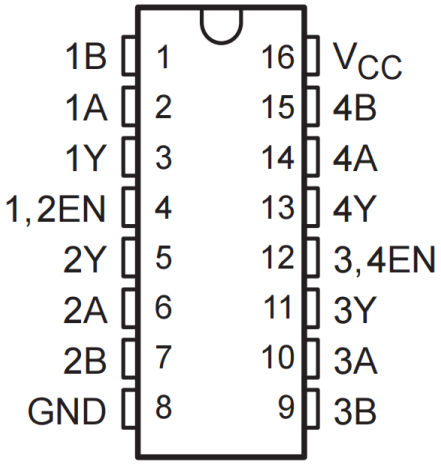
用芯智造·卓越品质

semiconductor device manufacturer

- Design
- research and development
- production
- and sales

Feature

- Meet or Exceed the Requirements of ANSI Standards EIA/TIA-422-B and EIA/TIA-423-A
- Meet ITU Recommendations V.10 and V.11
- Designed to Operate Up to 20 Mbaud
- – 7 V to 7 V Common-Mode Input Voltage Range With 200-mV Sensitivity
- 3-State TTL-Compatible Outputs
- High Input Impedance 12 kΩ Min
- Input Hysteresis... 120 mV Typ
- Single 5-V Supply Operation
- Low Supply Current Requirement 35 mA Max
- Improved Speed and Power Consumption Compared to MC3486



SN75ALS195

Description

The SN55ALS195 and SN75ALS195 are four differential line receivers with 3-state outputs designed using advanced low-power Schottky technology. This technology provides combined improvements in die design, tooling production, and wafer fabrication, which in turn, provide lower power consumption and permit much higher data throughput than other designs. The devices meet the specifications of ANSI Standards EIA/ TIA-422-B and EIA/TIA-423-A and ITU Recommendations V.10 and V.11. The 3-state outputs permit direct connection to a bus-organized system with a fail-safe design that ensures the outputs will always be high if the inputs are open.

The devices are optimized for balanced multipoint bus transmission at rates up to 20 megabits per second. The input features high input impedance, input hysteresis for increased noise immunity, and an input sensitivity of ±200 mV over a common-mode input voltage range of ± 7 V. The devices also feature an active-high enable function for each of two receiver pairs. The SN55ALS195 and SN75ALS195 are designed for optimum performance when used with the SN55ALS194 and SN75ALS194 quadruple differential line drivers.

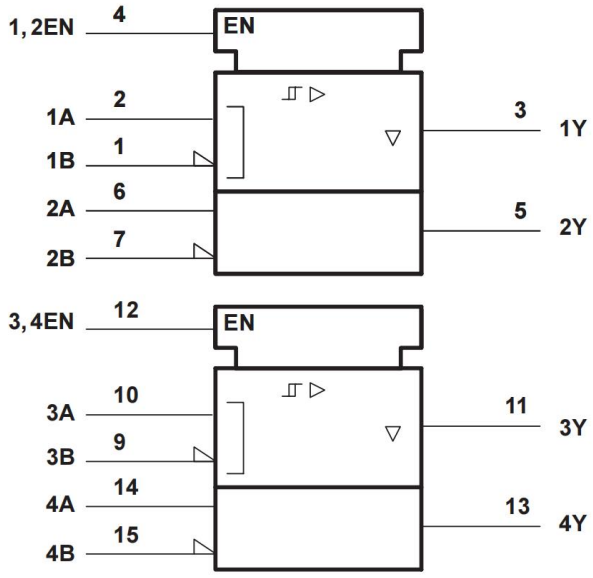
The SN55ALS195 is characterized for operation over the full military temperature range of – 55 ° C to 125 ° C. The SN75ALS195 is characterized for operation from 0 ° C to 70 ° C.

FUNCTION TABLE
(each receiver)

DIFFERENTIAL INPUTS A–B	ENABLE EN	OUTPUT Y
$V_{ID} \geq 0.2$ V	H	H
-0.2 V $< V_{ID} < 0.2$ V	H	?
$V_{ID} \leq -0.2$ V	H	L
X	L	Z
Open	H	H

H = high level, L = low level, X = irrelevant, ? = indeterminate, Z = high impedance (off)

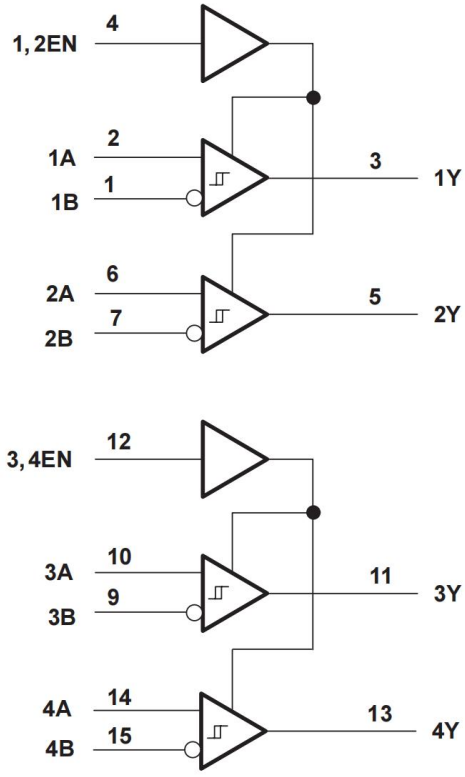
logic symbol†



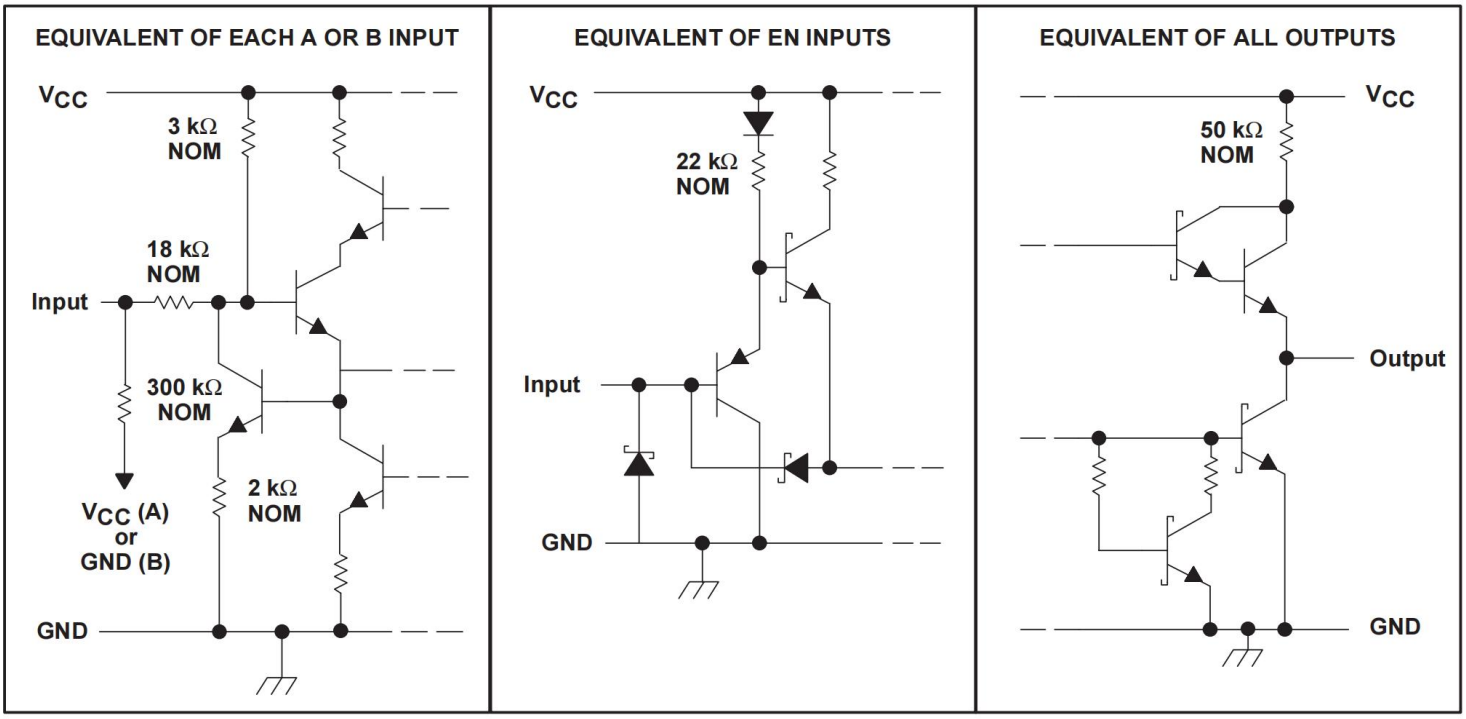
† This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.

Pin numbers shown are for the J, N, and W packages.

logic diagram



schematics of inputs and outputs



absolute maximum ratings over operating free-air temperature range (unless otherwise noted)†

Supply voltage, V_{CC} (see Note 1) . . . . . 7 V
Input voltage, A or B inputs, V_I . . . . . ±15 V
Differential input voltage, V_{ID} (see Note 2) . . . . . ±15 V
Enable input voltage, V_I . . . . . 7 V
Low-level output current, I_{OL} . . . . . 50 mA
Continuous total dissipation . . . . . See Dissipation Rating Table
Operating free-air temperature range, T_A: SN55ALS195 . . . . . – 55°C to 125°C
SN75ALS195 . . . . . 0°C to 70°C
Storage temperature range, T_{stg} . . . . . – 65°C to 150°C
Case temperature for 60 seconds, T_C: FK package . . . . . 260°C
Lead temperature 1,6 mm (1/16 inch) from case for 60 seconds: J, N, or W package . . . . . 300°C

† 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 conditons is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

NOTES: 1. All voltage values, except differential input voltage, are with respect to network ground terminal.
2. Differential-input voltage is measured at the noninverting input with respect to the corresponding inverting input.

DISSIPATION RATING TABLE

PACKAGE	$T_A \le 25°C$ POWER RATING	DERATING FACTOR ABOVE $T_A = 25°C$	$T_A = 70°C$ POWER RATING	$T_A = 125°C$ POWER RATING
FK	1375 mW	11.0 mW/°C	880 mW	275 mW
J (SN55ALS195)	1375 mW	11.0 mW/°C	880 mW	275 mW
J (SN75ALS195)	1025 mW	8.2 mW/°C	656 mW	N/A
N	1150 mW	9.2 mW°C	736 mW	N/A
W	1000 mW	8.0 mW/°C	640 mW	200 mW

recommended operating conditions

	SN55ALS195			SN75ALS195			UNIT
	MIN	NOM	MAX	MIN	NOM	MAX	
Supply voltage, V_{CC}	4.5	5	5.5	4.75	5	5.25	V
Common-mode input voltage, V_{IC}			±7			±7	V
Differential input voltage, V_{ID}			±12			±12	V
High-level input voltage, V_{IH}	2			2			V
Low-level input voltage, V_{IL}			0.8			0.8	V
High-level output current, I_{OH}			−400			−400	μA
Low-level output current, I_{OL}			16			16	mA
Operating free-air temperature, T_A	−55		125	0		70	°C

electrical characteristics over recommended ranges of common-mode input voltage, supply voltage, and operating free-air temperature (unless otherwise noted)

PARAMETER		TEST CONDITIONS†			MIN	TYP‡	MAX	UNIT
V_{IT+}	Positive-going input threshold voltage						200	mV
V_{IT-}	Negative-going input threshold voltage				−200§			mV
V_{hys}	Hysteresis voltage ($V_{IT+} - V_{IT-}$)					120		mV
V_{IK}	Enable-input clamp voltage	V_{CC} = MIN,	I_I = −18 mA				−1.5	V
V_{OH}	High-level output voltage	V_{CC} = MIN, See Figure 1	V_{ID} = 200 mV,	I_{OH} = −400 μA,	2.5	3.6		V
V_{OL}	Low-level output voltage	V_{CC} = MIN, V_{ID} = −200 mV, See Figure 1	I_{OL} = 8 mA				0.45	V
			I_{OL} = 16 mA				0.5	
I_{OZ}	High-impedance-state output current	V_{CC} = MAX, V_O = 2.7 V	V_{IL} = 0.8 V,	V_{ID} = −3 V,			20	μA
		V_{CC} = MAX, V_O = 0.5 V	V_{IL} = 0.8 V,	V_{ID} = 3 V,			−20	
I_I	Line input current	Other input at 0 V, See Note 3	V_{CC} = MIN,	V_I = 15 V		0.7	1.2	mA
			V_{CC} = MAX,	V_I = −15 V		−1	−1.7	
I_{IH}	High-level enable-input current	V_{CC} = MAX	V_{IH} = 2.7 V				20	μA
			V_{IH} = 5.25 V				100	
I_{IL}	Low-level enable-input current	V_{CC} = MAX,	V_{IL} = 0.4 V				−100	μA
r_i	Input resistance				12	18		kΩ
I_{OS}	Short-circuit output current	V_{CC} = MAX, See Note 4	V_{ID} = 3 V,	V_O = 0,	−15	−78	−130	mA
I_{CC}	Supply current	V_{CC} = MAX,	Outputs disabled			22	35	mA

† For conditions shown as MIN or MAX, use the appropriate values specified under recommended operating conditions.
‡ All typical values are at V_{CC} = 5 V, T_A = 25°C.
§ The algebraic convention, in which the less positive limit is designated minimum, is used in this data sheet for threshold voltage levels only.
NOTES: 3. Refer to ANSI Standards EIA/TIA-422-B and EIA/TIA-423-A for exact conditions.
4. Not more than one output should be shorted at a time, and the duration of the short circuit should not exceed one second.

switching characteristics, V_{CC} = 5 V, C_L = 15 pF, T_A = 25°C

PARAMETER		TEST CONDITIONS	MIN	TYP	MAX	UNIT
t_{PLH}	Propagation delay time, low- to high-level output	V_{ID} = 0 to 3 V, See Figure 2		15	22	ns
t_{PHL}	Propagation delay time, high- to low-level output			15	22	ns
t_{PZH}	Output enable time to high level	See Figure 3		13	25	ns
t_{PZL}	Output enable time to low level			10	25	
t_{PHZ}	Output disable time from high level	See Figure 3		19	25	ns
t_{PLZ}	Output disable time from low level			17	22	

PARAMETER MEASUREMENT INFORMATION

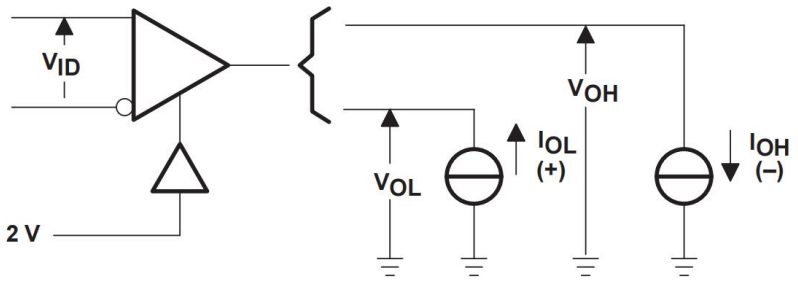
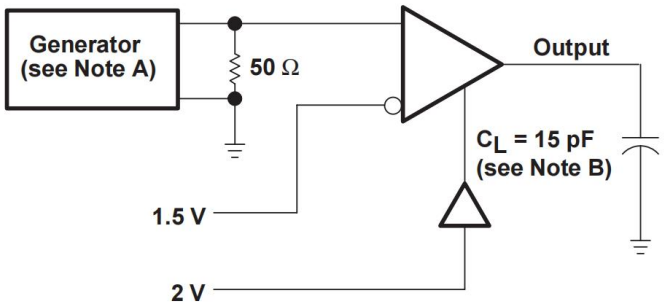
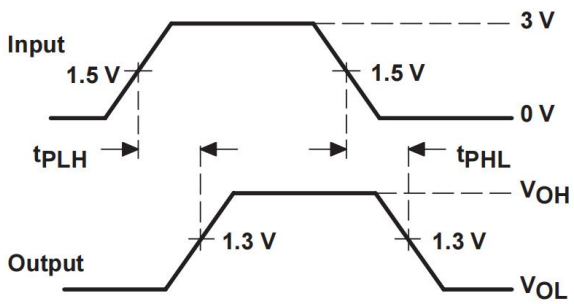


Figure 1. V_{OH}, V_{OL}



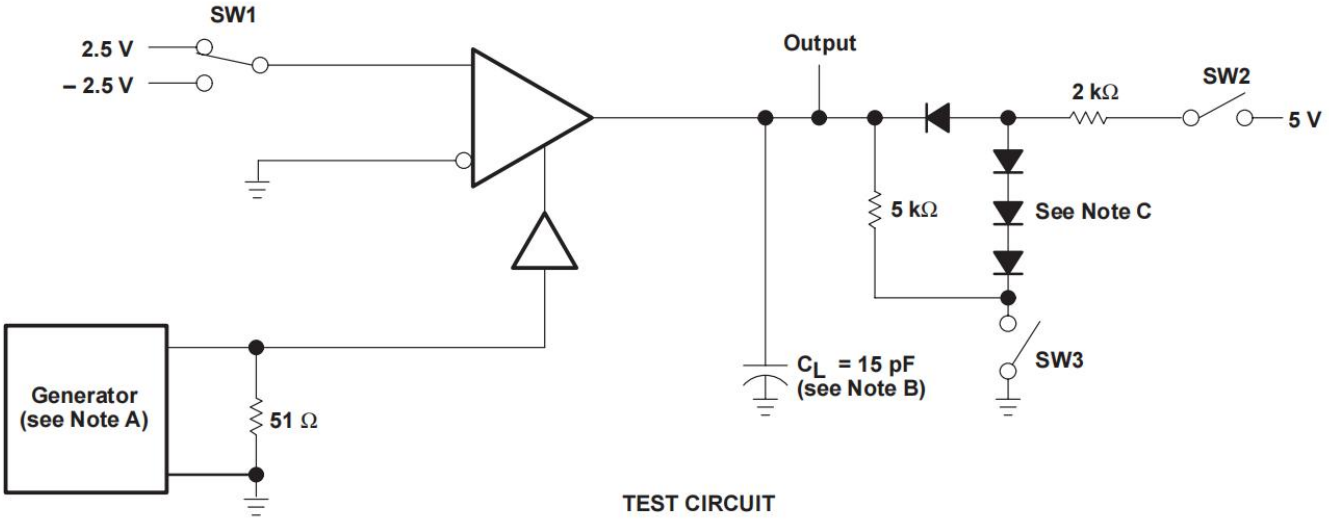


TEST CIRCUIT **VOLTAGE WAVEFORMS**

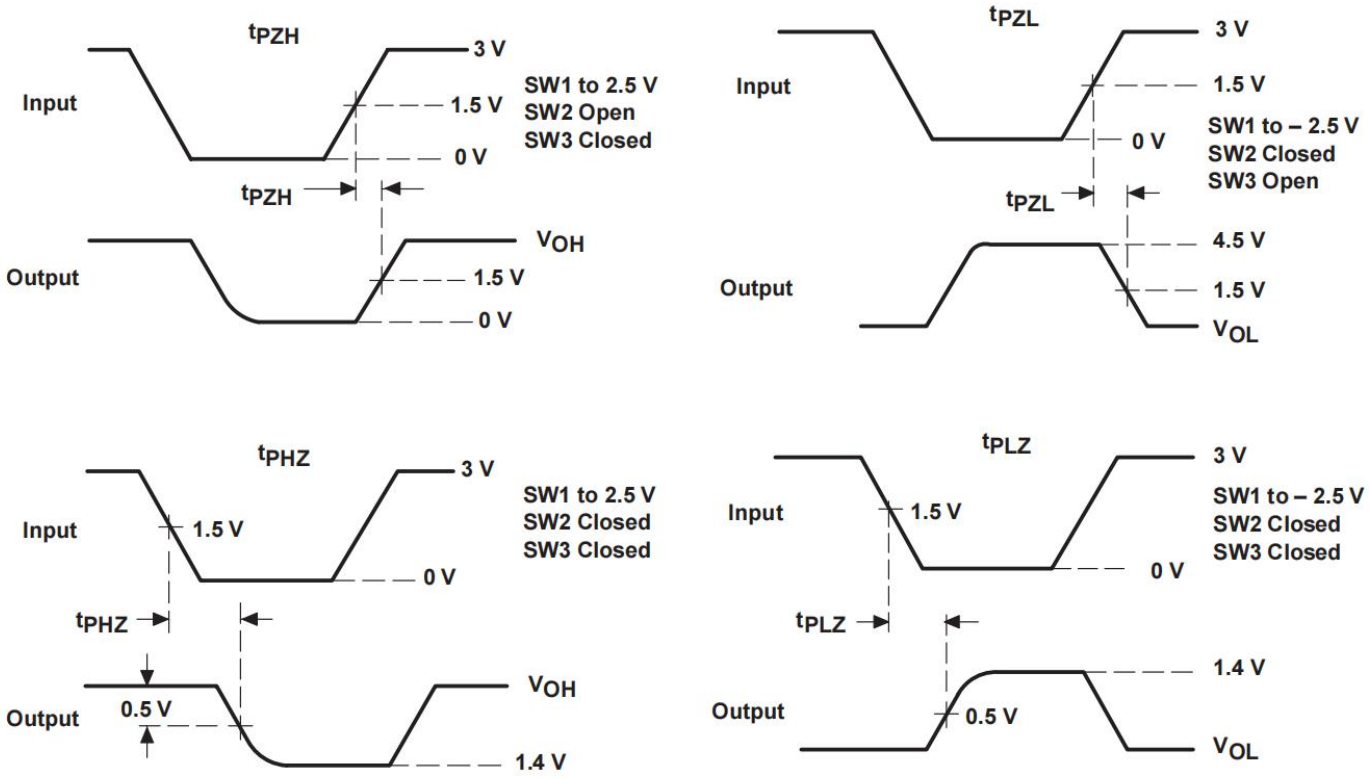
NOTES: A. The input pulse is supplied by a generator having the following characteristics: PRR ≤ 1 MHz, duty cycle ≤ 50%, Z_O = 50 Ω, t_r ≤ 6 ns, t_f ≤ 6 ns.
B. C_L includes probe and jig capacitance.

Figure 2. Test CIrcuit and Voltage Waveforms

PARAMETER MEASUREMENT INFORMATION



TEST CIRCUIT



VOLTAGE WAVEFORMS

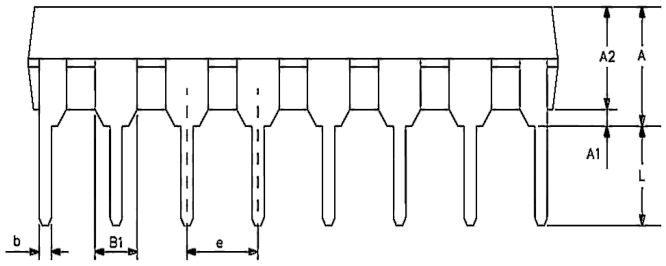
NOTES: A. The input pulse is supplied by a generator having the following characteristics: PRR ≤ 1 MHz, duty cycle ≤ 50%, Z_O = 50 Ω, t_r ≤ 6 ns, t_f ≤ 6 ns.
B. C_L includes probe and jig capacitance.
C. All diodes are 1N3064 or equivalent.

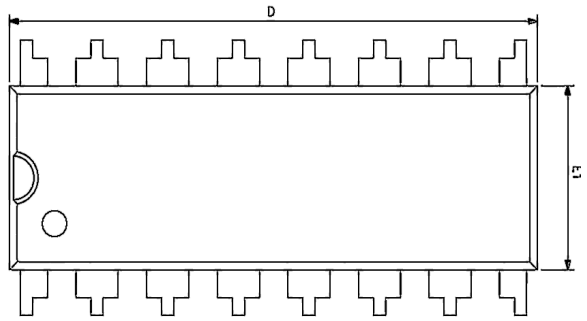
Figure 3. Test Circuit and Voltage Waveforms

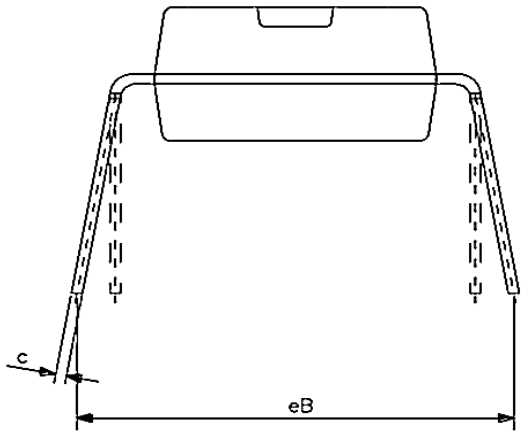
Order information

Order Number	Package	Package Quantity	Marking On The park
SN75ALS195N-TUDI	DIP16	Tube,25,A box of 1000	SN75ALS195N

Package DIP16







SIZE / SYMBOL	MIN./mm	MAX./mm
A2	3.20	3.60
A1	0.51	___
A	3.60	5.33
L	3.00	3.60
b	0.36	0.56
B1	1.52	
D	18.80	19.94
E1	6.20	6.60
e	2.54	
C	0.20	0.36
eB	7.62	9.30
R	0.20TYP	
R1	0.30TYP	
θ	0°	8°
θ1	45°TYP	
02	12°TYP	
03	0°	8°
04	0°	10°

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