

# Quad high speed differential line receiver

## 26LS33/26LS33A

[查询"26LS33/BEA"供应商](#)

### FEATURES

- Input voltage range of 30 volts differential for 26LS33 and 25 volts differential for 26LS33A
- $\pm 0.5V$  sensitivity on 26LS33
- 6k minimum input impedance
- 60mV input hysteresis
- Operation from single +5V supply
- Fail safe input-output relationship. Output always high when inputs are open.
- 3-state drive, with choice of complementary output enables, for receiving directly onto a data bus
- 3-state outputs disabled during power up and power down

### DESCRIPTION

The 26LS33/33A is a quad line receiver that provides an enable and disable function common to all four receivers. Both parts feature 3-State outputs with 8mA sink capability and incorporate a fail-safe input-output relationship which forces the outputs high when the inputs are open.

### ORDERING INFORMATION

DESCRIPTION	ORDER CODE	PACKAGE DESIGNATOR*
16-Pin Ceramic DIP	26LS33/BEA 26LS33A/BEA	GDIP1-T16

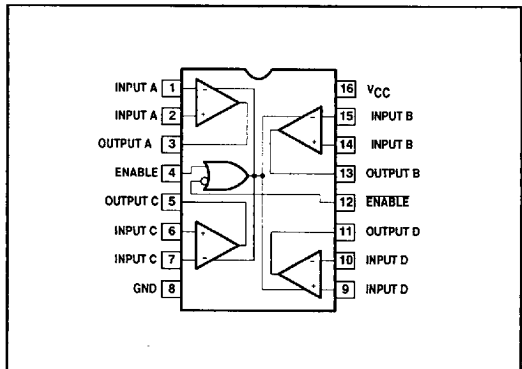
\* MIL-STD 1835 or Appendix A of 1995 Military Data Handbook

### FUNCTION TABLE (EACH RECEIVER)

DIFFERENTIAL INPUT	ENABLES		OUTPUT
	E	$\bar{E}$	
$V_{ID} \geq V_{TH}$	H	X	H
	X	L	H
$V_{TL} \leq V_{ID} \leq V_{TH}$	H	X	?
	X	L	?
$V_{ID} \leq V_{TL}$	X	L	L
X	L	H	Z

H = High level  
 L = Low level  
 X = Irrelevant  
 Z = High impedance (off)  
 ? = Indeterminate  
 E = Enable  
 $\bar{E}$  = Enable

### PIN CONFIGURATIONS



### ABSOLUTE MAXIMUM RATINGS<sup>1</sup>

SYMBOL	PARAMETER	RATING	UNIT
$V_{CC}$	Power supply	7	V
$V_{IN}$	Input voltage	7	V
$I_O$	Output sink current	50	mA
$V_{CMV}$	Common mode range	$\pm 25$	V
$V_{TH}$	Differential input voltage	$\pm 25$	V
$T_{STG}$	Storage temperature range	-65 to +150	$^{\circ}C$

### RECOMMENDED OPERATING CONDITIONS

SYMBOL	PARAMETER	LIMITS			UNIT
		MIN	NOM	MAX	
$V_{CC}$	Supply voltage	4.5	5.0	5.5	V
$T_{amb}$	Operating free-air temperature range	-55		+125	$^{\circ}C$



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(Over recommended operating temperature and supply voltage range unless otherwise specified.)

SYMBOL	PARAMETER	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP <sup>1</sup>	MAX	
$V_{TH}$	Differential input voltage	$-15V \leq V_{CM} \leq +15V$	-0.5	0.06	0.5	V
$R_{IN}$	Input resistance	$-15V \leq V_{CM} \leq +15V$ , (One input AC ground)	6.0	9.8		k $\Omega$
$I_{IN}$	Input current (under test)	$V_{IN} = +15V$ (26LS33A) Other input $-10V \leq V_{IN} \leq +15V$ (26LS33) Other input $-15V \leq V_{IN} \leq +15V$			2.3 2.3	mA mA
$I_{IN}$	Input current (under test)	$V_{IN} = -15V$ (26LS33A) Other input $-15V \leq V_{IN} \leq +10V$ (26LS33) Other input $-15V \leq V_{IN} \leq +15V$			-2.8 -2.8	mA mA
$V_{OH}$	Output High voltage	$V_{CC} = \text{Min}$ , $I_{OH} = -440\mu A$ $\Delta V_{IN} = +1.0V$ , $V_{ENABLE} = 0.8V$	2.5	3.4		V
$V_{OL}$	Output Low voltage	$V_{CC} = \text{Min}$ , $V_{ENABLE} = 0.8V$ , $\Delta V_{IN} = +1.0V$			0.3 0.45	V V
		$I_{OL} = 4.0mA$				
		$I_{OL} = 8.0mA$				
$V_{IL}$	Enable Low voltage				0.8	V
$V_{IH}$	Enable High voltage		2.0			V
$V_i$	Enable clamp voltage	$V_{CC} = \text{Min}$ , $I_{IN} = -18mA$			-1.5	V
$I_O$	Off state (high impedance) output current	$V_{CC} = \text{Max}$			20 -20	$\mu A$ $\mu A$
		$V_O = 2.4V$				
		$V_O = 0.4V$				
$I_{IL}$	Enable Low current	$V_{IN} = 0.4V$		-0.2	-0.36	mA
$I_{IH}$	Enable High current	$V_{IN} = 2.7V$		0.5	20	$\mu A$
$I_i$	Enable input High current	$V_{IN} = 5.5V$		1	100	$\mu A$
$I_{SC}$	Output short circuit current	$V_{CC} = \text{Max}$ , $\Delta V_{IN} = +1V$ , $V_{OUT} = 0V$	-15	-60	-85	mA
$I_{CC}$	Power supply current	$V_{CC} = \text{Max}$ ; All $V_{IN} = \text{GND}$ , outputs disabled		52	70	mA
$V_{HYST}$	Input hysteresis	$T_{amb} = 25^\circ C$ , $V_{CC} = 5.0V$ , $V_{CM} = 0V$		120		mV

**AC ELECTRICAL CHARACTERISTICS** $T_{amb} = +25^\circ C$ ,  $V_{CC} = 5.0V$ 

SYMBOL	PARAMETER	TEST CONDITIONS	26LS33 LIMITS			26LS33A LIMITS		UNIT
			MIN	TYP <sup>1</sup>	MAX	MIN	MAX	
$t_{PLH}$	Input to output	See switching test circuit and waveforms. $C_L = 15pF$		9	25		35	ns
$t_{PHL}$	Input to output	See switching test circuit and waveforms. $C_L = 15pF$		10	25		35	ns
$t_{LZ}$	Enable to output	See switching test circuit and waveforms. $C_L = 5pF$		15	30		40	ns
$t_{HZ}$	Enable to output	See switching test circuit and waveforms. $C_L = 5pF$		12	22		30	ns
$t_{ZL}$	Enable to output	See switching test circuit and waveforms. $C_L = 15pF$		8	22		25	ns
$t_{ZH}$	Enable to output	See switching test circuit and waveforms. $C_L = 15pF$		8	22		25	ns

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## AC ELECTRICAL CHARACTERISTICS

$-55^{\circ}\text{C} \leq T_{\text{amb}} \leq +125^{\circ}\text{C}$ ,  $V_{\text{CC}} = 5.0\text{V}$

SYMBOL	PARAMETER	TEST CONDITIONS	26LS33 LIMITS		26LS33A LIMITS		UNIT
			MIN	MAX	MIN	MAX	
$t_{\text{PLH}}$	Input to output	See switching test circuit and waveforms. $C_L = 15\text{pF}$		38		53	ns
$t_{\text{PHL}}$	Input to output	See switching test circuit and waveforms. $C_L = 15\text{pF}$		38		53	ns
$t_{\text{LZ}}$	Enable to output	See switching test circuit and waveforms. $C_L = 5\text{pF}$		45		60	ns
$t_{\text{HZ}}$	Enable to output	See switching test circuit and waveforms. $C_L = 5\text{pF}$		33		45	ns
$t_{\text{ZL}}$	Enable to output	See switching test circuit and waveforms. $C_L = 15\text{pF}$		33		38	ns
$t_{\text{ZH}}$	Enable to output	See switching test circuit and waveforms. $C_L = 15\text{pF}$		33		38	ns

**NOTE:**

1. All typical values are  $T_A = 25^{\circ}\text{C}$ ,  $V_{\text{CC}} = 5.0\text{V}$ .

