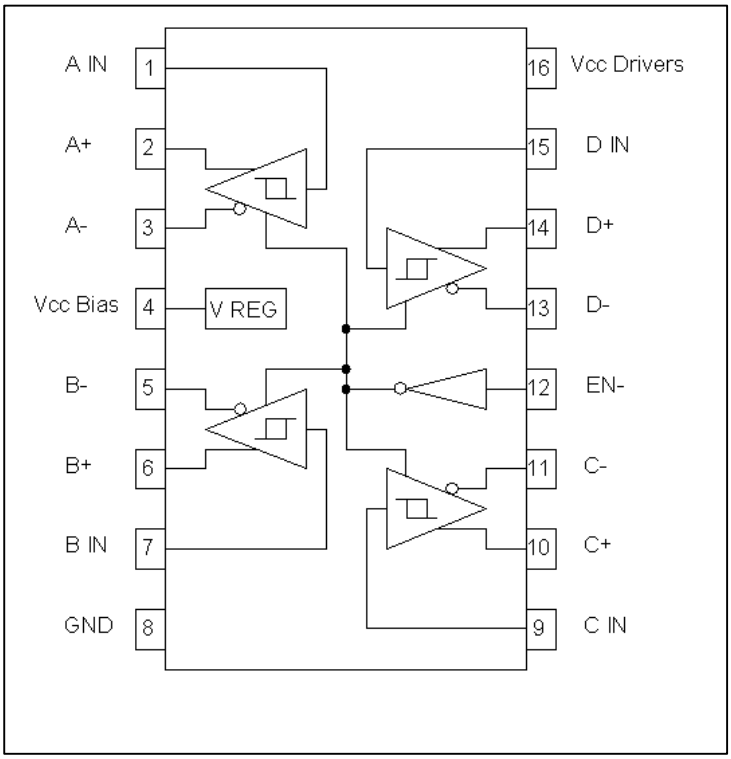
QUAD DIFFERENTIAL LINE DRIVER

WITH SEPARATE LOGIC BIAS AND DRIVER BIAS SUPPLIES, AND ENABLE FUNCTION

ET7272

FEATURES

- Supply Voltage Range 3.5V to 30V
- Operation to 800KHz
- CMOS and TTL Compatible Inputs
- Separate logic bias and driver supply pins
- Optional single supply operation for moderate power applications
- High Impedance Buffered Inputs with Hysteresis may be driven directly by phototransistors
- Tri-State outputs
- 80mA peak SINK/SOURCE current
- Outputs Protected by Thermal Shut-Down



APPLICATIONS

- Optical Encoders
- Industrial Controls

DESCRIPTION

These line drivers are pin compatible with 26LS31 in applications where pin 4 = 5V and pin 12 = GND. Internal clamp diodes allow trouble-free operation when driving cable lengths exceeding 100m. Split supplies are provided to minimize standby power dissipation in high voltage applications. The logic should be powered from a regulated 5V supply at the VccBias pin. The output stages may then be powered by a separate supply at VccDrivers, up to 30V. Output voltage swings of 0.3V to VCC-1.9V are typical. The outputs are protected against shorts to ground, shorts to Vcc and to other outputs, by a two-fold scheme of current limiting and thermal shutdown. This assures highly reliable operation in harsh environments. Heat-sinking may be accomplished at pin 8 which is directly connected to the ASIC substrate.

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min.	Max.	Units	Ref.
Operating Temperature Range	T_A	-55	115	°C	
Supply Voltage Range(both)	V_{CC}	4.5	30	V	

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ELECTRICAL CHARACTERISTICS

Unless otherwise specified, T_A = 25°C and EN- <0.8V.

Parameters	Symbol	Min.	Typ.	Max.	Units	Test Conditions
Overtemp Operate Point (junction)[1]	T_{JOP}		172		°C	
Overtemp Release Point (junction)[1]	T_{JRP}		136		°C	
Vcc Bias Voltage Range	V_{CCB}	3.5	5	30	V	
Vcc Drivers Voltage Range	V_{CCD}	4.5	5	30	V	
Supply Current V_{CCB}1 (BIAS)	I_{CCB}1		11.9	16.0	mA	V_{CCB} and V_{CCD} = 5V
Supply Current V_{CCD}1 (DRIVERS)	I_{CCD}1		2.4	3.3	mA	V_{CCB} and V_{CCD} = 5V
Supply Current V_{CCB}2	I_{CCB}2		2.5	3.4	mA	V_{CCB} and V_{CCD} = 5V, EN- > 2V
Supply Current V_{CCD}2	I_{CCD}2		0.0	0.1	mA	V_{CCB} and V_{CCD} = 5V, EN- > 2V
Supply Current V_{CCB}3	I_{CCB}3		12.1	18.5	mA	V_{CCB} and V_{CCD} = 30V
Supply Current V_{CCD}3	I_{CCD}3		2.4	3.3	mA	V_{CCB} and V_{CCD} = 30V
Supply Current V_{CCB}4	I_{CCB}4		2.6	3.5	mA	V_{CCB} and V_{CCD} = 5V, EN- > 2V
Supply Current V_{CCD}4	I_{CCD}4		0.0	0.1	mA	V_{CCB} and V_{CCD} = 5V, EN- > 2V
Enable Input Threshold	V_{THE}	0.8	1.5	2	V	
Enable Low Level Input Current	I_{ILE}	-10	0	10	µA	V_{IN} = 0V, V_{CCB} = 5V
Enable High Level Input Current	I_{IHE}	-	108	150	µA	V_{IN} = 5V, V_{CCB} = 5V
High Impedance Output Leakage	I_{OZ}	-4.0	0.0	4.0	µA	V_{CCD} =30V, EN- > 2V, Output at 15V
Input Positive-Going Threshold	V_{T+}	1.05	1.25	1.45	V	V_{CCB} = 5V
Input Negative-Going Threshold	V_{T-}	0.75	0.95	1.15	V	V_{CCB} = 5V
Input Hysteresis	V_H	-	0.3	-	V	V_{CCB} = 5V
Low Level Input Current	I_{IL}		-0.1	-4.0	µA	V_{IN} = 0V, V_{CCB} = 5V
High Level Input Current	I_{IH}		0	4.0	µA	V_{IN} = 5V, V_{CCB} = 5V
Low Level Output1	V_{OL}1		375	500	mV	I_{OL} = 20mA, V_{CCD} = 5V
Low Level Output2	V_{OL}2		370	500	mV	I_{OL} = 20mA, V_{CCD} =30V
High Level Output1	V_{OH}1	2.4	2.8		V	I_{OH} = -20mA, V_{CCD} = 5V
High Level Output2	V_{OH}2	27.7	28.1		V	I_{OH} = -20mA, V_{CCD}=30V

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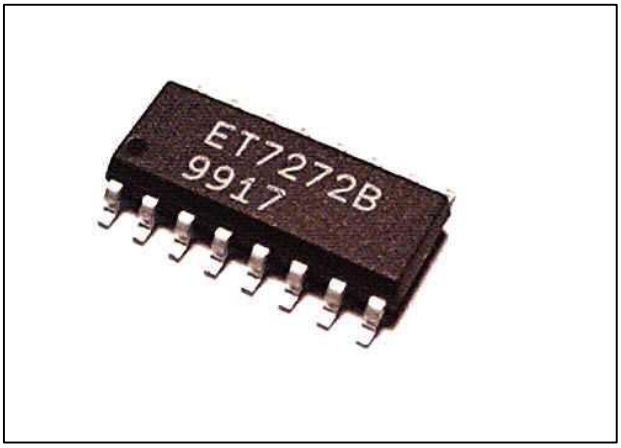
AC SWITCHING CHARACTERISTICS

Values given at $V_{CC}B$ = 5V, $V_{CC}D$ = 24V, T_A = 25°C, C_L = 1000pF on all outputs, and EN- <0.8V.

Parameters	Symbol	Min.	Typ.	Max.	Units	Test Conditions
Propagation delay, rising input 50% point to zero crossing of differential outputs	T_{PLH}		450	630	ns	
Propagation delay, falling input 50% point to zero crossing of differential outputs	T_{PHL}		450	630	ns	
Output Rise Time	T_R		700	980	ns	
Output Fall Time	T_F		700	980	ns	

NOTES:

1. This is not a test parameter, but for information only.
2. It may be necessary to clamp the outputs with Schottky diodes when driving extemely long cables with high capacitance between outputs. These diodes should have a forward voltage of less than 0.4V, and be connected with cathode to the output and anode to ground.



PACKAGE	SUFFIX
Chip Only	-C
16 Lead SOIC	-SOP

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