Ordering number:ENN4094

Monolithic Digital IC

LB1741

Octal NPN Darlington-pair Transistor Array

Overview

The LB1741 is a high-current Darlington-pair transistor array that incorporates output clamp diodes, making it ideal for driving inductive loads.

The LB1741 with active-HIGH, 10.5kΩ impedance inputs interfaces directly to P-MOS or CMOS logic. With an input voltage of –0.5 to 30V (max), outputs can sink 500mA (max) per channel and have 50V (max) output withstand voltage.

The LB1741 is available in 18-pin DIPs.

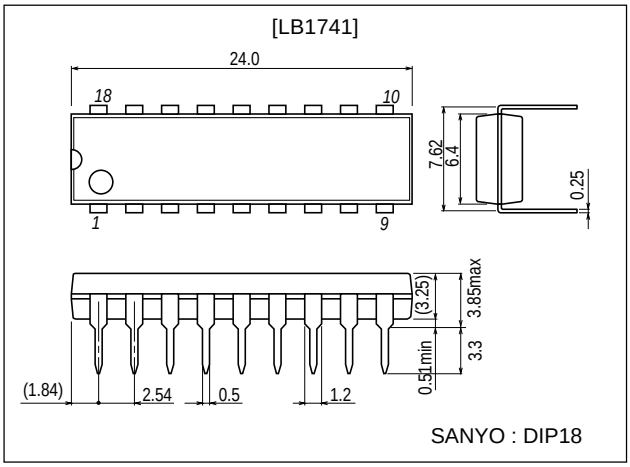
Features

- Output clamp diodes.
- Drives inductive loads.
- Active-HIGH, 10.5kΩ impedance inputs.
- Interfaces to P-MOS or CMOS logic.
- 500mA (max) per channel output current sink.
- 50V (max) output withstand voltage.
- 30V (max) input voltage.
- 18-pin DIP.

Package Dimensions

unit:mm

3007B-DIP18



Specifications

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	Unit
Output withstand voltage range	V_{CEO}		–0.5 to +50	V
Input voltage	V_I		–0.5 to +30	V
Output current	I_O		500	mA
GND current	I_{GND}		3.2	A
Clamp diode withstand voltage	V_R		50	V
Clamp diode forward current	I_F		500	mA
Allowable power dissipation	Pd max		1.47	W
Operating temperature	Topr		–40 to +85	˚C
Storage temperature	Tstg		–55 to +150	˚C

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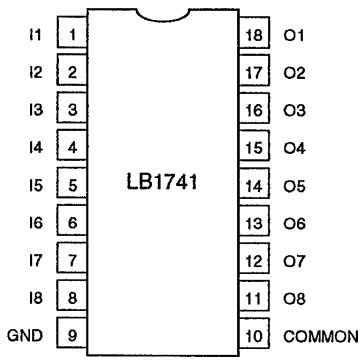
Recommended Operating Ranges at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Output withstand voltage range	V_{CEO}		0		50	V
Input voltage	V_I		0		30	V
Output current	I_O	TPW=25ms, 8% duty cycle, eight circuits	0		400	mA
		TPW=25ms, 25% duty cycle, eight circuits	0		200	mA
Clamp diode withstand voltage	V_R				50	V
Clamp diode forward current	I_F				400	mA

Electrical Characteristics at Ta = 25˚C

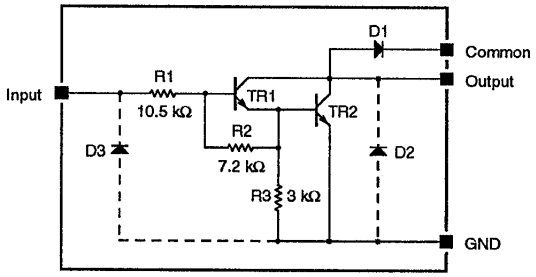
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Turn-ON input voltage	$V_{I(ON)}$	V_{CE}=2V, I_O=125mA			5.0	V
		V_{CE}=2V, I_O=200mA			6.0	V
		V_{CE}=2V, I_O=275mA			7.0	V
		V_{CE}=2V, I_O=350mA			8.0	V
Transistor ON input current	$I_{I(ON)}$	V_I=12V		1.0	1.45	mA
Transistor OFF input current	$I_{I(OFF)}$	I_O=500µA			65	µA
DC current gain	h_{FE}	V_{CE}=2V, I_O=350mA	1000			
Output saturation voltage	$V_{CE(sat)}$	I_I=500µA, I_O=350mA		1.3	1.6	V
		I_I=350µA, I_O=200mA		1.1	1.3	V
		I_O=250µA, I_O=100mA		0.9	1.1	V
Output leakage current	I_{CEX}	V_{CE}=50V			50	µA
		V_{CE}=50V, V_I=1V			500	µA
Clamp diode leakage current	I_R	V_R=50V			50	µA
Clamp diode forward voltage	V_F	I_F=350mA			2.0	V
Input capacitance	C_I			40		pF
Turn-ON delay time	t_{ON}	R_L=125Ω, C_L=15pF, V_O=50V		0.1		µs
Turn-OFF delay time	t_{OFF}	R_L=125Ω, C_L=15pF, V_O=50V		0.2		µs

Pinout



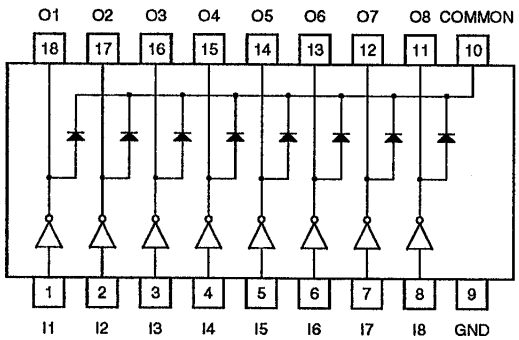
Top view

Equivalent Circuit



Notes
1. Only one channel is shown.
2. D2 and D3 are parasitic diodes.

Block Diagram

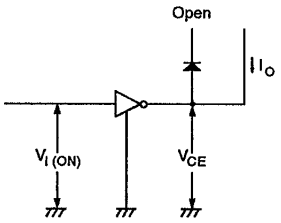


Pin Function

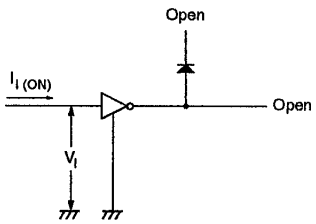
Number	Name	Description
1 to 8	I1 to I8	Transistor inputs
9	GND	Ground
10	COMMON	Transistor common
11 to 18	O1 to O8	Transistor outputs

Measurement Circuits

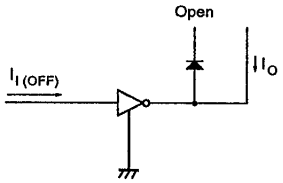
Turn-ON input voltage



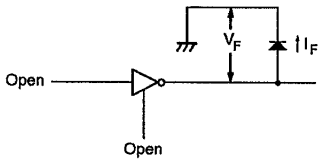
ON-state input current



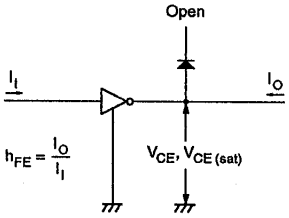
OFF-state input current



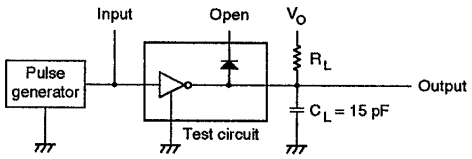
Clamp diode forward voltage



DC current gain and output saturation voltage



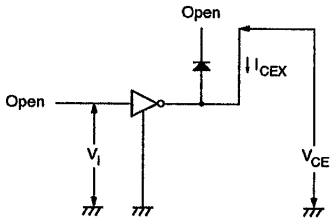
Turn-ON turn-OFF delay times

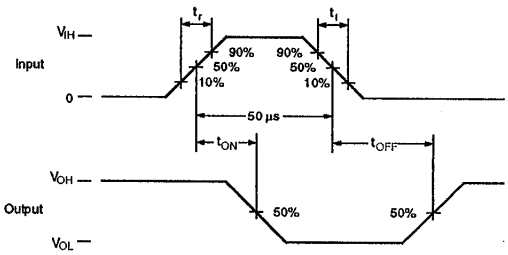


Notes

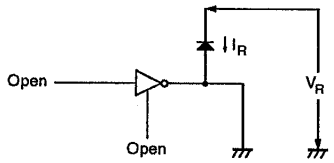
1. 50μs pulsewidth, 10% duty cycle, 50Ω pulse generator ouput impedance, t_r≤5ns, t_f≤10ns, V_I=8V.

Output leakage current





Clamp diode leakage current



2. C_L includes probe and jig capacitances.