

**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.

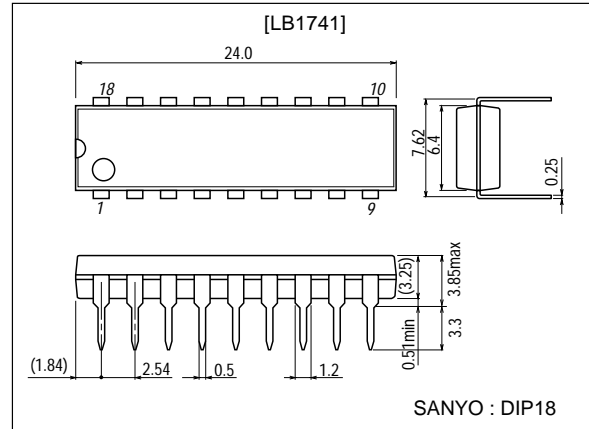
Features

- 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 $T_a = 25^\circ\text{C}$

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	$P_d \text{ max}$		1.47	W
Operating temperature	T_{opr}		-40 to +85	$^\circ\text{C}$
Storage temperature	T_{stg}		-55 to +150	$^\circ\text{C}$

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LB1741

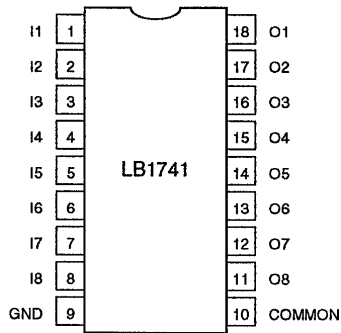
Recommended Operating Ranges at $T_a = 25^\circ\text{C}$

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 $T_a = 25^\circ\text{C}$

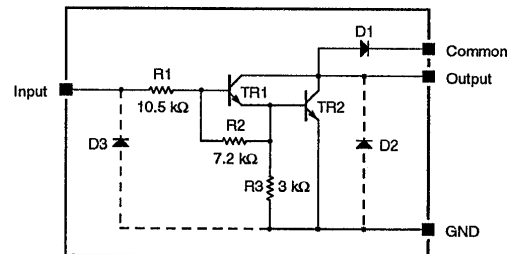
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Turn-ON input voltage	$V_{I(ON)}$	$V_{CE}=2\text{V}, I_O=125\text{mA}$			5.0	V
		$V_{CE}=2\text{V}, I_O=200\text{mA}$			6.0	V
		$V_{CE}=2\text{V}, I_O=275\text{mA}$			7.0	V
		$V_{CE}=2\text{V}, I_O=350\text{mA}$			8.0	V
Transistor ON input current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

Pinout



Top view

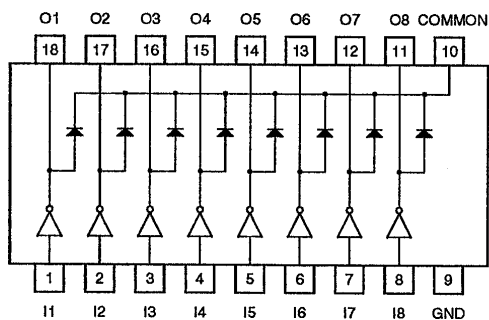
Equivalent Circuit



Notes

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

Block Diagram

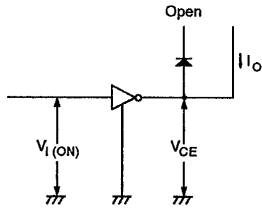


Pin Function

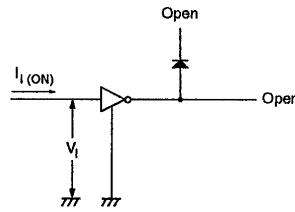
Number	Name	Description
1 to 8	I1 to I8	Transistor inputs
9	GND	Ground
10	COMMON	Transistor common
11 to 18	O1 to O8	Transistor outputs

Measurement Circuits

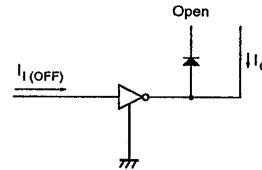
Turn-ON input voltage



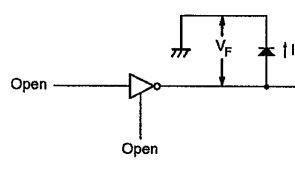
ON-state input current



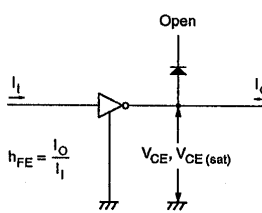
OFF-state input current



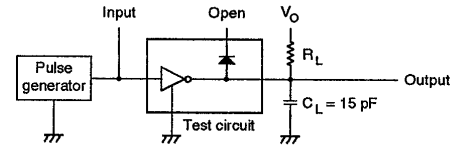
Clamp diode forward voltage



DC current gain and output saturation voltage

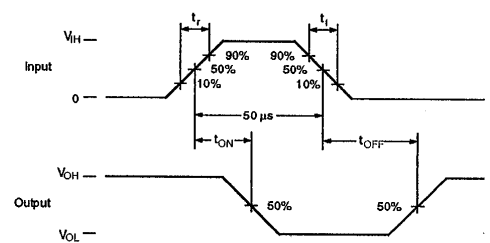
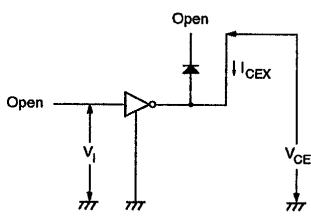


Turn-ON turn-OFF delay times

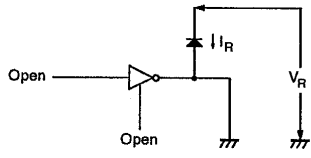


Notes
 1. 50µs pulsewidth, 10% duty cycle, 50Ω pulse generator output impedance, t_r ≤ 5ns, t_f ≤ 10ns, V_I = 8V.

Output leakage current



Clamp diode leakage current



2. C_L includes probe and jig capacitances.

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