

SANYO	No.4094	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.

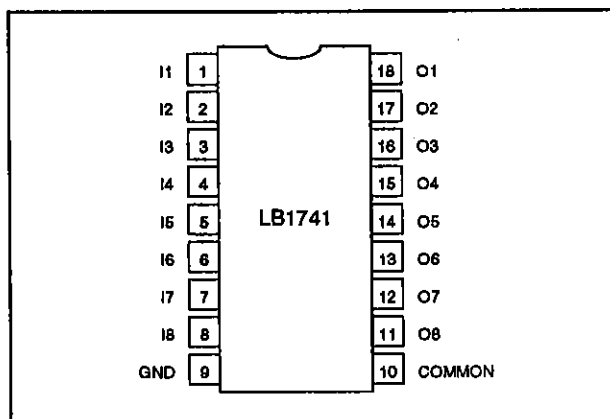
The LB1741 with active-HIGH, 10.5 k Ω impedance inputs interfaces directly to P-MOS or CMOS logic. With an input voltage of -0.5 to 30 V (max), outputs can sink 500 mA (max) per channel and have 50 V (max) output withstand voltages.

The LB1741 is available in 18-pin DIPs.

FEATURES

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

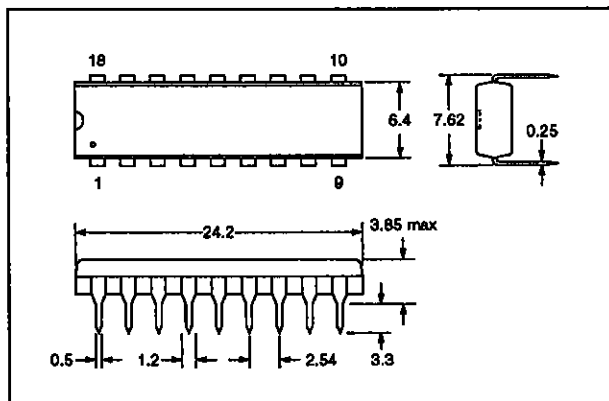
PINOUT



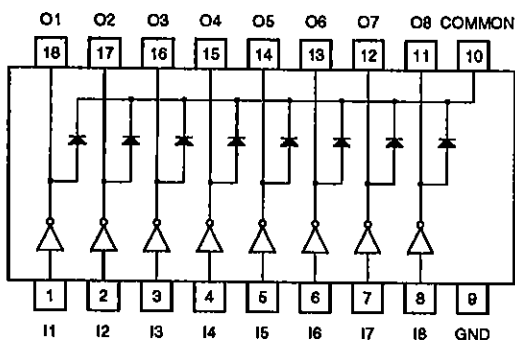
PACKAGE DIMENSIONS

Unit: mm

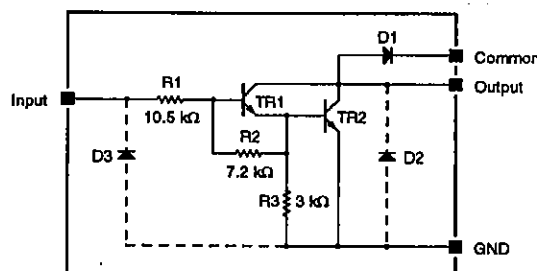
3007A-DIP18



BLOCK DIAGRAM



EQUIVALENT CIRCUIT



Notes

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

PIN DESCRIPTION

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

SPECIFICATIONS

Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
Output withstand voltage range	V_{CE0}	-0.5 to 50	V
Input voltage range	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
Power dissipation	P_D	1.47	W
Operating temperature range	T_{opr}	-40 to 85	°C
Storage temperature range	T_{stg}	-55 to 150	°C

Recommended Operating Conditions

$T_a = 25\text{ °C}$

Parameter	Symbol	Conditions	Rating			Unit
			min	typ	max	
Output withstand voltage range	V_{CE0}		0	-	50	V
Power dissipation	P_D		-	-	0.52	W
Input voltage	V_I		0	-	30	V
Output current	I_o	25 ms, 8% duty cycle, eight circuits	0	-	400	mA
		25 ms, 25% duty cycle, eight circuits	0	-	200	

LB1741

Parameter	Symbol	Conditions	Rating			Unit
			min	typ	max	
Clamp diode withstand voltage	V_R		-	-	50	V
Clamp diode forward current	I_F		-	-	400	mA

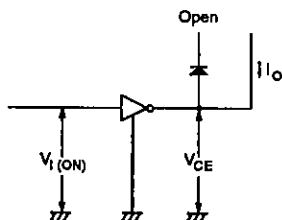
Electrical Characteristics

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

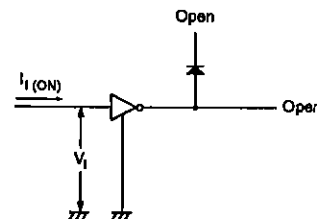
Parameter	Symbol	Condition	Rating			Unit
			min	typ	max	
Turn-ON input voltage	$V_{I(ON)}$	$V_{CE} = 2\text{ V}, I_O = 125\text{ mA}$	-	-	5.0	V
		$V_{CE} = 2\text{ V}, I_O = 200\text{ mA}$	-	-	6.0	
		$V_{CE} = 2\text{ V}, I_O = 275\text{ mA}$	-	-	7.0	
		$V_{CE} = 2\text{ V}, I_O = 350\text{ mA}$	-	-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

Measurement Circuits

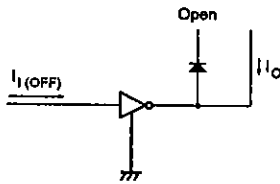
Turn-ON input voltage



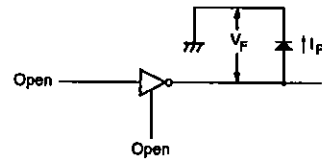
ON-state input current



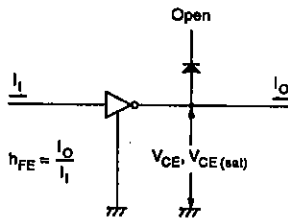
OFF-state input current



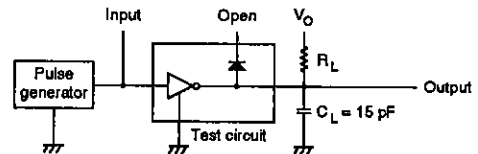
Clamp diode forward voltage



DC current gain and output saturation voltage



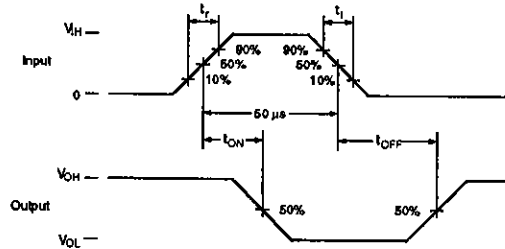
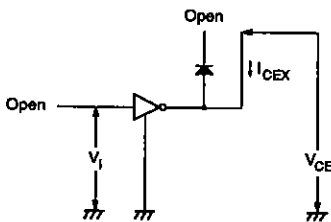
Turn-ON and turn-OFF delay times



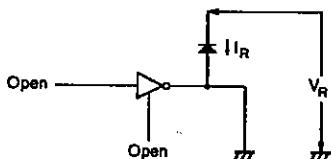
Notes

1. 50 μs pulsewidth, 10% duty cycle, 50 Ω pulse generator output impedance, $t_r \leq 5$ ns, $t_f \leq 10$ ns, $V_i = 8$ V

Output leakage current



Clamp diode leakage current



2. C_L includes probe and jig capacitances.

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