

80 V QUAD DARLINGTON SWITCHES

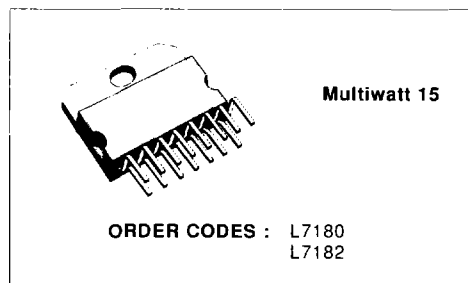
- FOUR NPN DARLINGTONS WITH ISOLATED CONNECTIONS
- OUTPUT CURRENT TO 1.5 A EACH DARLINGTON
- MINIMUM BREAKDOWN 80 V
- MULTIWATT PACKAGE ALLOWS OPERATION AT 1.5 A, 80 V, 100 % DUTY CYCLE, ALL FOUR DEVICES ON
- INTEGRAL SUPPRESSION DIODES
- VERSIONS FOR 5 V AND 6-15 V LOGIC FAMILIES

The L7180 has 350 Ω input resistors and is compatible with TTL, DTL, LSTTL and 5 V CMOS logic. The L7182 has 3 K Ω input resistors for use with 6-15 V CMOS and PMOS logic.

These devices are suitable for driving a wide range of inductive and non-inductive loads including DC motors, stepper motors, solenoids, relays, lamps, multiplexed LEDs and heaters.

DESCRIPTION

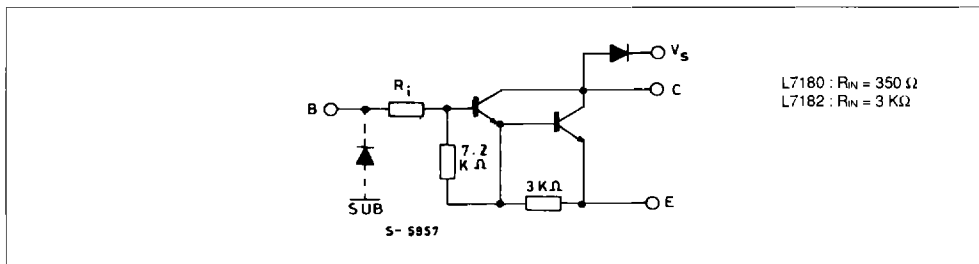
The L7180 and L7182 are 1.5 A quad darlington arrays mounted in the 15-lead MultiwattSM plastic package. Each darlington is equipped with a suppression diode for inductive loads, and all three terminals are isolated.



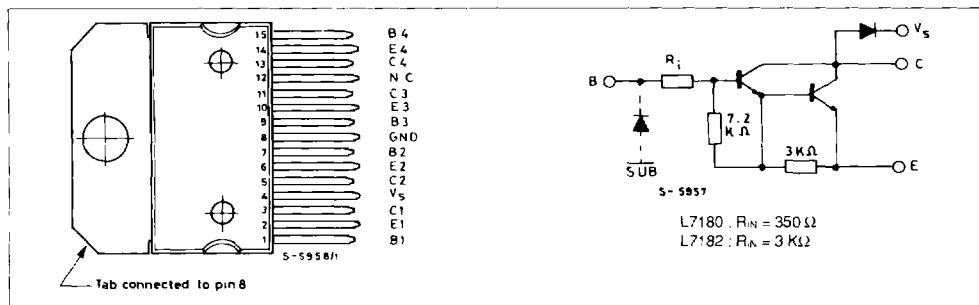
ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Test Conditions	Unit
V_{CEX}	Output Voltage	80	V
I_o	Output Current	1.75	A
V_i	Input Voltage	60	V
I_B	Input Current	25	mA
P_{tot}	Power Dissipation ($T_{case} = 75\text{ }^\circ\text{C}$)	25	W
T_{amb}	Operating Ambient Temperature Range	0 to 70	$^\circ\text{C}$
T_{stg}	Storage Temperature	- 55 to 150	$^\circ\text{C}$

SCHEMATIC DIAGRAM



CONNECTION AND SCHEMATIC DIAGRAMS (top view)



THERMAL DATA

$R_{th(j-c)}$	Thermal Resistance Junction-case	Max	3	°C/W
$R_{th(j-a)}$	Thermal Resistance Junction-ambient	Max	35	°C/W

ELECTRICAL CHARACTERISTICS ($T_{amb} = 25\text{ °C}$ unless otherwise specified)

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit	Fig.
I_{CEX}	Output Leakage Current	$V_{CE} = 80\text{ V}$ $V_{CE} = 80\text{ V}$	$T_{amb} = 70\text{ °C}$			100 500	μA μA	1
$V_{CE(RISUS)}$	Collector-emitter Sustaining Voltage(*)	$I_C = 50\text{ mA}$	$V_i = 0.4\text{ V}$	50			V	2
$V_{CE(sat)}$	Collector-emitter Saturation Voltage	$I_C = 500\text{ mA}$ $I_C = 750\text{ mA}$ $I_C = 1\text{ A}$ $I_C = 1.5\text{ A}$	$I_B = 625\text{ }\mu\text{A}$ $I_B = 935\text{ }\mu\text{A}$ $I_B = 1.25\text{ mA}$ $I_B = 2.25\text{ mA}$			1.15 1.3 1.4 1.6	V V V V	3
$I_{(ION)}$	Input Current	For L7180 For L7180 For L7182 For L7182	$V_i = 2.4\text{ V}$ $V_i = 3.75\text{ V}$ $V_i = 5\text{ V}$ $V_i = 12\text{ V}$	1.4 3.3 0.6 1.7		4.3 9.6 1.8 5.2	mA mA mA mA	4
$V_{(ION)}$	Input Voltage	For L7180 $V_{CE} = 2\text{ V}$ $V_{CE} = 2\text{ V}$ For L7182 $V_{CE} = 2\text{ V}$ $V_{CE} = 2\text{ V}$	$I_C = 1\text{ A}$ $I_C = 1.5\text{ A}$ $I_C = 1\text{ A}$ $I_C = 1.5\text{ A}$			2 2.5 6.5 10	V V V V	5
t_{PLH}	Turn-on Delay Time	0.5 V_i to 0.5 V_o				1	μs	
t_{PHL}	Turn-off Delay Time	0.5 V_i to 0.5 V_o				1.5	μs	

(*) $t_{sus} = 10\text{ }\mu\text{s}$.

Guaranteed by design : not tested 100 %.

TEST CIRCUITS

Figure 1.

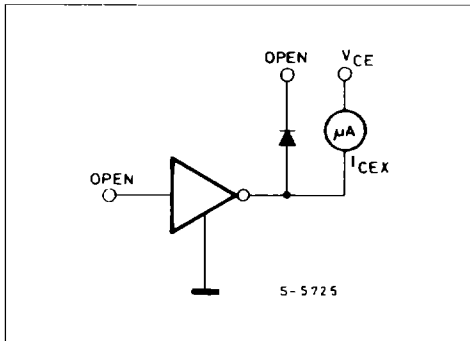


Figure 2.

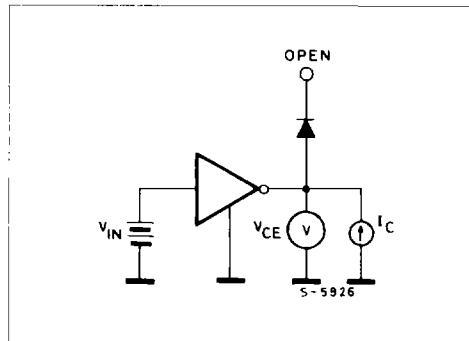


Figure 3.

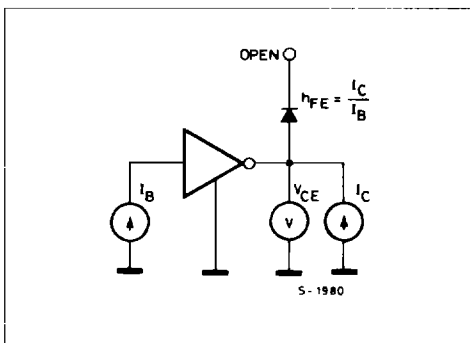


Figure 4.

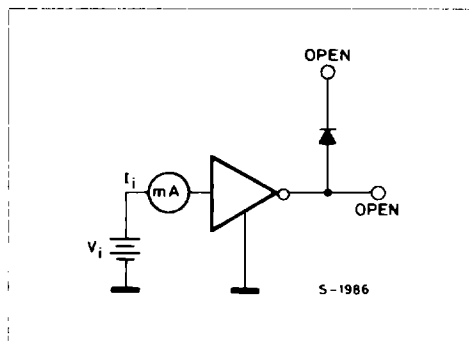
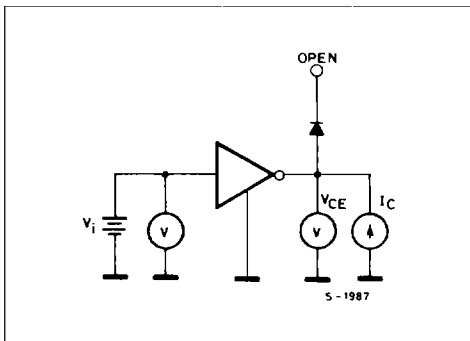


Figure 5.



MOUNTING INSTRUCTIONS

The power dissipated in the circuit must be removed by adding an external heatsink.

Thanks to the Multiwatt® package attaching the heatsink is very simple, a screw or a compression spring (clip) being sufficient. Between the heatsink

and the package it is better to insert a layer of silicon grease, to optimize the thermal contact : no electrical isolation is needed between the two surfaces.

Figure 6 : Mounting Example.

