


SGS-THOMSON S G S-THOMSON
 MICROELECTRONICS

L7180
L7182

T.51-11

80 V QUAD DARLINGTON SWITCHES

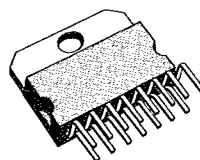
- FOUR NPN DARLINGTONS WITH ISOLATED CONNECTIONS
- OUTPUT CURRENT TO 1.5 A EACH DARLINGTON
- MINIMUM BREAKDOWN 80 V
- MULTIWATT PACKAGE ALLOWS OPERATION AT 1.5 A, 80 V, 100 % DUTY CYCLE, ALL FOUR DEVICES ON
- INTEGRAL SUPPRESSION DIODES
- VERSIONS FOR 5 V AND 6-15 V LOGIC FAMILIES

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 Multiwatt[®] plastic package. Each darlington is equipped with a suppression diode for inductive loads, and all three terminals are isolated.



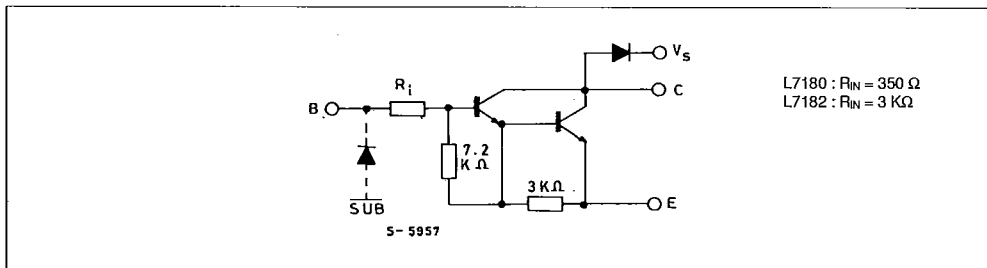
Multiwatt 15

ORDER CODES : L7180
L7182

ABSOLUTE MAXIMUM RATINGS

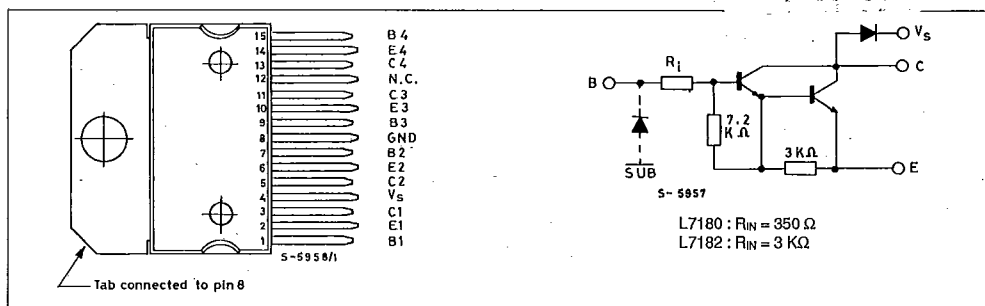
Symbol	Parameter	Test Conditions	Unit
V_{CEX}	Output Voltage	80	V
I_o	Output Current	1.75	A
V_i	Input Voltage	60	V
I_B	Input Current	25	mA
P_{tot}	Power Dissipation ($T_{case} = 75^\circ C$)	25	W
T_{amb}	Operating Ambient Temperature Range	0 to 70	$^\circ C$
T_{stg}	Storage Temperature	- 55 to 150	$^\circ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

SCHEMATIC DIAGRAM



CONNECTION AND SCHEMATIC DIAGRAMS (top view)

T-51-11



THERMAL DATA

$R_{th} \text{ j-case}$	Thermal Resistance Junction-case	Max	3	$^{\circ}\text{C/W}$
$R_{th} \text{ j-amb}$	Thermal Resistance Junction-ambient	Max	35	$^{\circ}\text{C/W}$

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

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit	Fig.
I_{CEX}	Output Leakage Current	$V_{CE} = 80 \text{ V}$ $V_{CE} = 80 \text{ V}$ $T_{amb} = 70^{\circ}\text{C}$			100 500	μA	1
$V_{CE(sus)}$	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	$I_C = 500 \text{ mA}$ $I_B = 625 \mu\text{A}$ $I_C = 750 \text{ mA}$ $I_B = 935 \mu\text{A}$ $I_C = 1 \text{ A}$ $I_B = 1.25 \text{ mA}$ $I_C = 1.5 \text{ A}$ $I_B = 2.25 \text{ mA}$			1.15 1.3 1.4 1.6	V V V V	3
$I_{I(on)}$	Input Current	For L7180 $V_I = 2.4 \text{ V}$ For L7180 $V_I = 3.75 \text{ V}$ For L7182 $V_I = 5 \text{ V}$ For L7182 $V_I = 12 \text{ V}$	1.4 3.3 0.6 1.7		4.3 9.6 1.8 5.2	mA mA mA mA	4
$V_{I(on)}$	Input Voltage	For L7180 $V_{CE} = 2 \text{ V}$ $I_C = 1 \text{ A}$ $V_{CE} = 2 \text{ V}$ $I_C = 1.5 \text{ A}$ For L7182 $V_{CE} = 2 \text{ V}$ $I_C = 1 \text{ A}$ $V_{CE} = 2 \text{ V}$ $I_C = 1.5 \text{ A}$			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	

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

Guaranteed by design ; not tested 100 %.

S G S-THOMSON

TEST CIRCUITS

Figure 1.

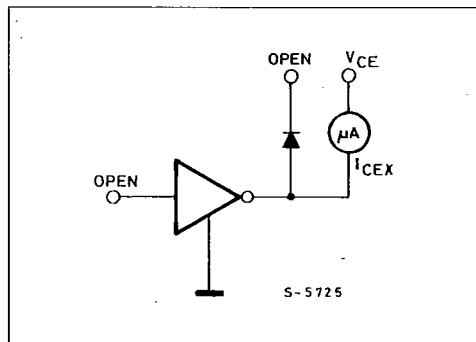


Figure 2.

T-51-11

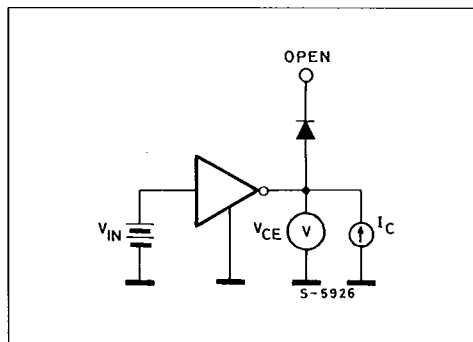


Figure 3.

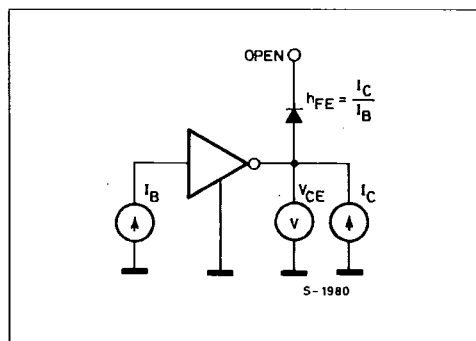


Figure 4.

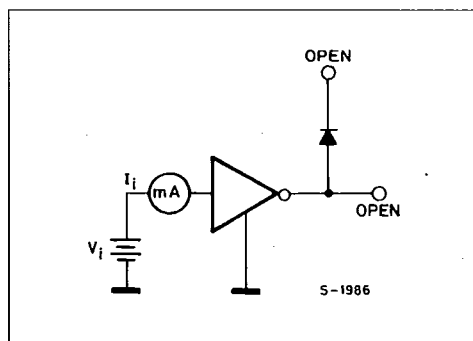
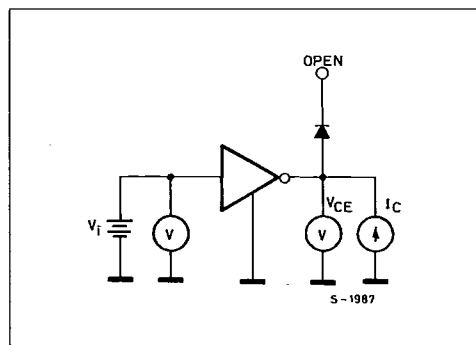


Figure 5.



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.

