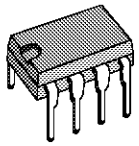
SGS-THOMSON MICROELECTRONICS

L9308

DUAL LOW SIDE DRIVER

- DARLINGTON OUTPUT STAGE
- INPUT COMPARATOR WITH WIDE RANGE COMMON MODE OPERATION AND GROUND COMPATIBLE INPUTS
- INPUT COMPARATOR HYSTERESIS
- SHORT CIRCUIT PROTECTION OF OUTPUT WITH SOA PROTECTION
- INTERNAL THERMAL PROTECTION WITH HYSTERESIS
- SINGLE SUPPLY VOLTAGE FROM 3.5V UP TO 28V



MINIDIP

ORDERING NUMBER : L9308

DESCRIPTION

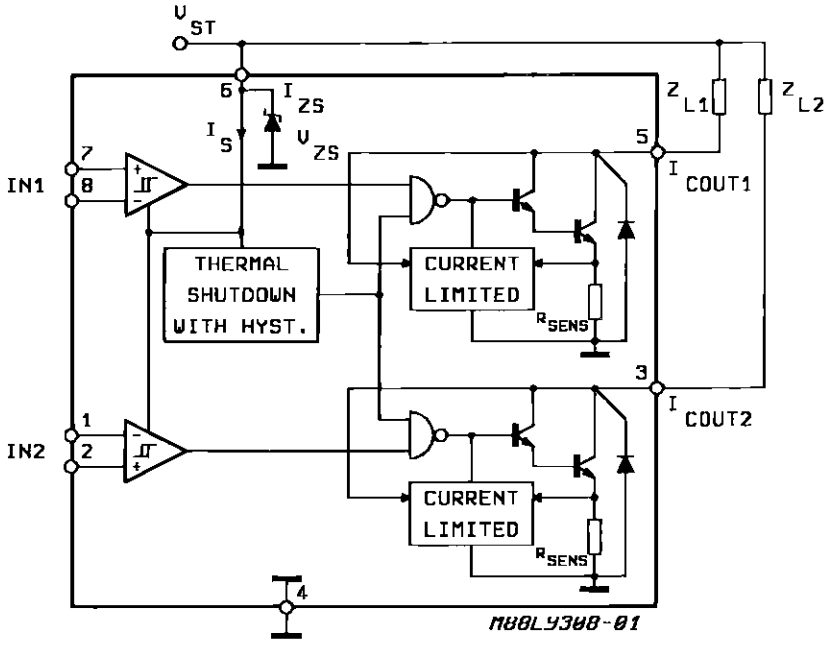
The L9308 is a monolithic interface circuit with differential input comparator and open collector output able to sink current specifically to drive lamps, relays, d.c. motors, electro valves etc.

Particular care has been taken to protect the device against destructive failures - short circuit of outputs to V_S, SOA protection, supply overvoltage.

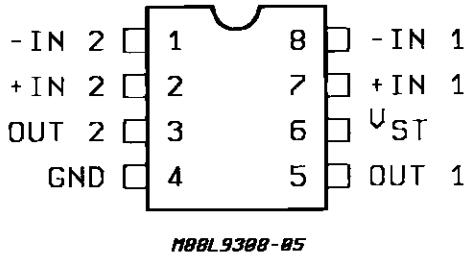
A built in thermal shut-down switches off the device when the IC's internal dissipation becomes too high and the chip temperature exceeds the security threshold.

The input comparator hysteresis increases the interface's noise immunity allowing the correct use in critical environments as automotive applications.

BLOCK DIAGRAM



PIN CONNECTION (Top view)



1) -IN2 Inverting input2
2) +IN2 Non-inverting input2
3) OUT2 Output2
4) GND Ground
5) OUT1 Output1
6) V_{ST} Supply
7) +IN1 Non-inverting input1
8) -IN1 Inverting input1

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter		Value	Unit
I_{ZS}	Current Into Supply Clamp Zener Diode	Tamb = 25°C, DC Pulsed (*)	30 80	mA mA
V_S	Supply Voltage		28	V(**)
I_O	Output Current		Internally Limited	
T_j, T_{stg}	Junction and Storage Temperature		– 55 to +150	°C
P_{tot}	Power Dissipation at T_{amb} = 85°C		650	mW

(*) TON ≤ 2.5ms ; repetition time > 30ms.
(**) The maximum allowed supply voltage without limiting resistor is limited by the built-in protection zener diode : see V_{ZS} spec. values. If V_S is higher than V_{ZS} a resistor R_S is necessary to limit the zener current I_{ZS}.

THERMAL DATA

Symbol	Parameter		Value	Unit
$R_{th\ j\text{-}amb}$	Thermal Resistance Junction-ambient	Max	100	°C/W

ELECTRICAL CHARACTERISTICS ($V_S = 14.4V$; $-40°C \leq T_{amb}, \leq 85°C$; $R_S = 100\Omega$ unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_{IH}	Hysteresis of the Input Comparater	V_{IN} = 200mVpp ; f = 1kHz	20		80	mV
I_B	Input Bias Current	$V_I^+ = V_I^- = 0$		0.2	1.0	µA
I_{OS}	Input Offset Current	$V_I^+ = V_I^- = 0$		± 50	± 400	nA
CMR	Input Common Mode Range	V_s = 6 – 18V T_{amb} = 25°C	0		V_{ST} –1.6	V
I_{SC}	Output Short Circuit Current for Each Channel (see fig. 4)	$V_{IN} - V_{IN} > 70mV$ V_S = 16V T_{amb} = 25°C to 85°C T_{amb} = – 40°C to 25°C $V_{OUT\ 1,\ 2}$ = 6V			 0.6 0.7 1.2	 A A A
V_{CSAT}	On Status Saturation Voltage	T_{amb} = – 40°C to 25°C $V_I^- - V_I^+ > 70mV$ $I_{OUT\ 1,\ 2}$ = 300mA T_{amb} = 25°C to 85°C		 1.0	1.5 1.4	V V
I_{OL}	Output Leakage Current	$V_I^- - V_I^- > 70mV$ V_S = 18V V_S = 5V		10	300 20	µA µA
V_{ST}	Supply voltage (pin 6)		3.5		18	V
$I_{"st.by"}$	Supply Current	V_I^+ $V_I^- > 70mV$		5	8	mA
$I_{"ON"}$	Supply Current	V_I^- $V_I^+ > 70mV$		18		mA
V_{ZS}	Voltage Clamp Supply Protection	I_{ZS} = 10mA	20		27	V
I_{Omin}	Minimum Output Current wiyth the Outputs connected Together	V_{CSAT} = 1.5V	400			mA
t_r t_f	Rise Time (see fig. 2) Fall Time	I_{OUT} = 50mA T_{amb} = 25°C			2 2	µs
t_{don} t_{doff}	Delay Time on Delay Time off	I_{OUT} = 50mA T_{amb} = 25°C			10 10	µs

Figure 1 : Switching Time Test Circuit.

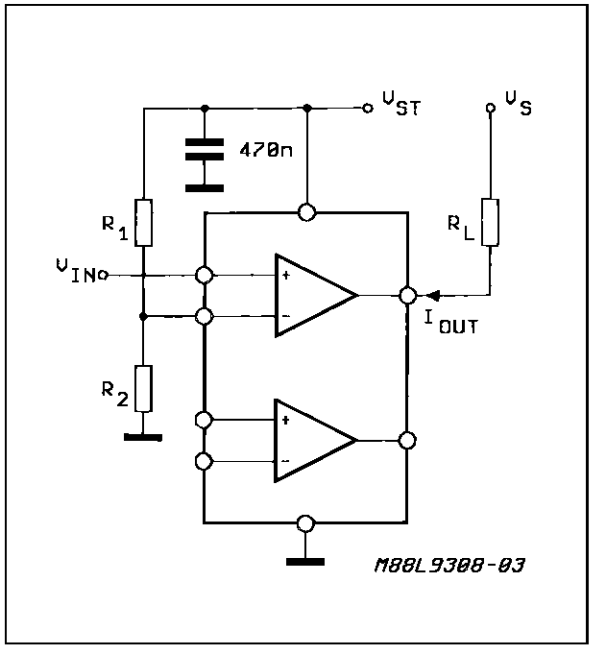


Figure 2 : Switching Time Waveforms for Resistive Loads.

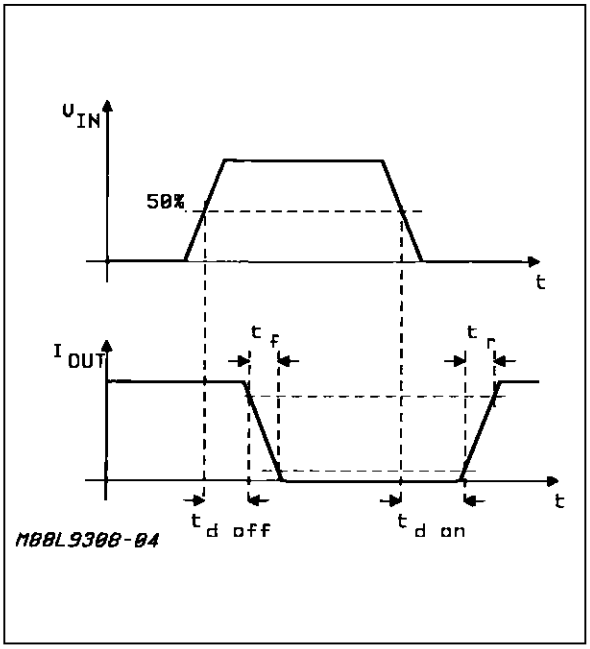
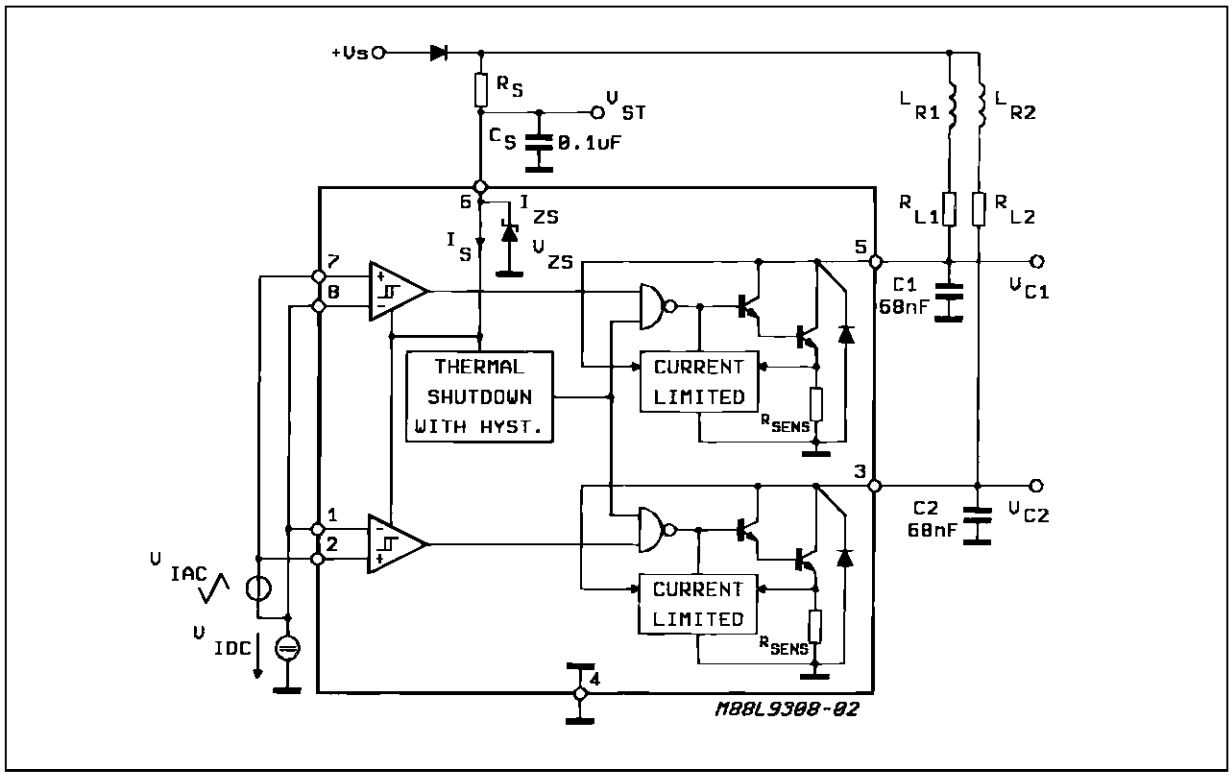
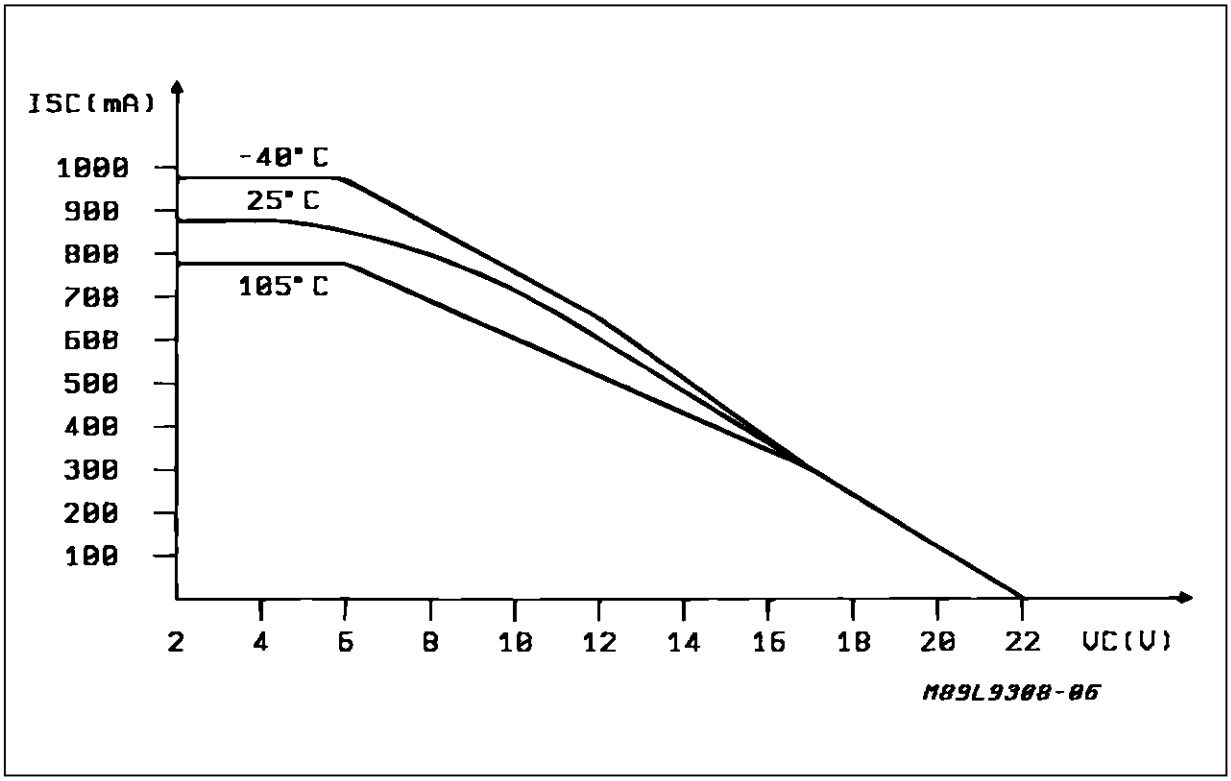


Figure 3 : Typical Application and Test Circuit.



Notes : a) R_S requiredonly to limit I_{ZS} whenever V_S exceeds V_{ZS} voltage value.
b) C_1, C_2 cut high frequency gain during current limiting.

Figure 4 : Typical SOA Characteristic.



MINIDIP PACKAGE MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A		3.32			0.131	
a1	0.51			0.020		
B	1.15		1.65	0.045		0.065
b	0.356		0.55	0.014		0.022
b1	0.204		0.304	0.008		0.012
D			10.92			0.430
E	7.95		9.75	0.313		0.384
e		2.54			0.100	
e3		7.62			0.300	
e4		7.62			0.300	
F			6.6			0.260
I			5.08			0.200
L	3.18		3.81	0.125		0.150
Z			1.52			0.060