LINEAR
INTEGRATED
CIRCUITS

038817

L9305

993204 deleted

TARGET SPECIFICATION

prelim.

bipolar

DUAL HIGH CURRENT RELAY DRIVER

The L9305 is a monolithic interface circuit with differential input comparator and open collector output able to sink high current specifically to drive relays, lamps, d.c. motors.

Particular care has been taken to protect the device against destructive failures - short circuit of outputs to V_{CC}, output overvoltages, supply overvoltage.

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

A hysteresis input comparator increases the interface's noise immunity, allowing the correct use also in critical environments as automotive or industrial applications.

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Principal features

- High output current
- Hysteresis input comparator with wide range common mode operation and ground compatible inputs
- Short circuit protection of output to 15V
- Internal thermal protection with hysteresis
- Overvoltage clamp of the outputs
- Single supply voltage from 18 Volt down to 3.5 Volt

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Absolute maximum ratings

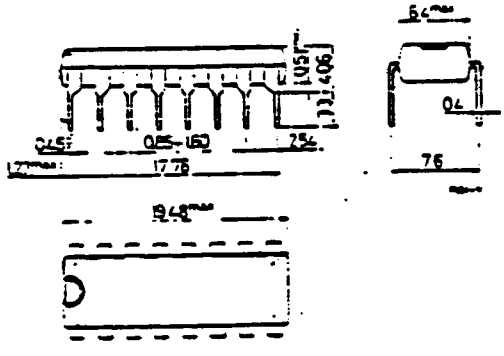
		Powerdip
V_{ST}, V_S	Supply voltage	18 V
I_C	Output current	1.8 A
T_{stg}	Storage temperature	-65 - +150°C
T_{OP}	Operating room temperature - free air -	-45 - + 85°C
P_{tot} (1)	Power dissipation at T_{amb}=85°	2200mW
	Output short circuit duration	(2) Indefinite
T_{jMAX}	Maximum junction temperature	150°C

Mechanical and Thermal Data

L9305 Powerdip 16 leads

$R_{th\ j\text{-}amb}$ max. 70°C/W

$R_{th\ j\text{-}pin\ 9\text{-}16}$ max. 14°C/W



(1) For greater power dissipation the device is cyclically switched off and on between T_{TH} and T_{jmax} ($T_{TH} < T_{jmax}$).

Power dissipation of Powerdip for total $R_{th\ j\text{-}amb}$ = 30°C/W.

(2) For $V_S \leq 15V$

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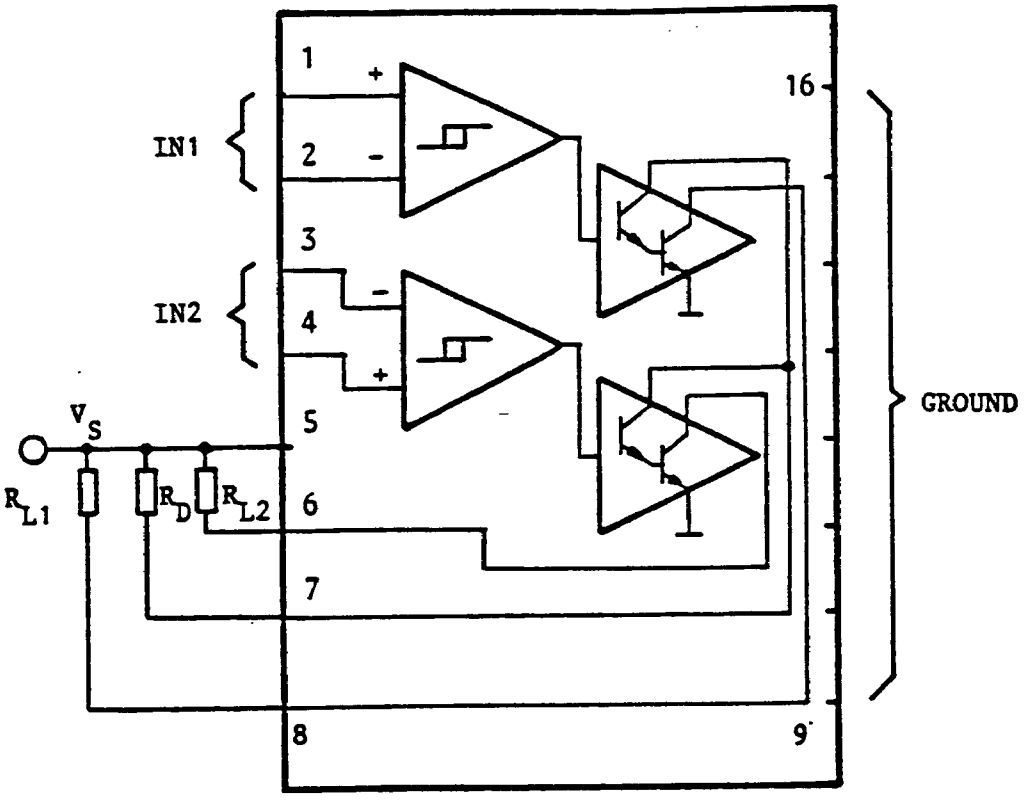
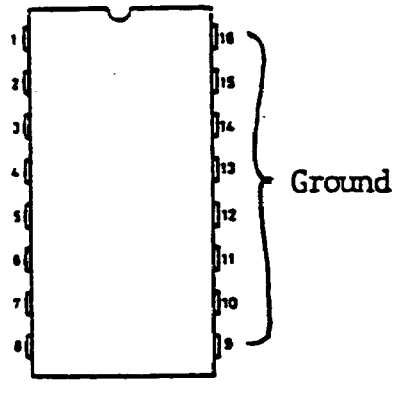
Connection Diagram Powerdip (top view)



1	Non inverting input 1
2	Inverting input 1
3	Inverting input 2
4	Non inverting input 2
5	Supply voltage
6	Out 2
7	Driver supply common
8	Out 1
9 - 16	Ground



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Electrical characteristics

Unless otherwise specified: T_{AMB} = 25°C VST = 13.5V

Parameter		Test Conditions (Fig.1)	Min	Typ	Max	Unit
V_{IH}	Hysteresis of the input comparator	V_{IN}=200mVpp f = 1kHz T_{amb} = 0 to 70 °C	20		70	mV
I_B	Input bias current			.2	1	µA
I_{OS}	Input offset current			±20	±200	nA
CMR	Input common mode range	V_S=6-18V;	0		V-1.6 ST	V
I_{SC}	Output short circuit current for each channel	$V_I^- - V_I^+ \geq$ 70mV V_S=6-15V	1.0	1.5	1.8	A
I_{CD}	Driver transistor current capability	$V_I^- - V_I^+ \geq$ 70mV V_S=6-15V DC			300	mA
		$V_I^- - V_I^+ \geq$ 70mV V_S=6-15V pulsed*)			600	mA
V_{CSAT}	On status saturation voltage	$V_I^- - V_I^+ \geq$ 70mV; I_{CD}=100mA; I_{COUT}=1.0A			1	V
I_{OL}	Output leakage current	$V_I^+ - V_I^- \geq$ 70mV V_S=18V		10		µA

*) $T_{ON} \leq$ 2.5ms; repetition time ≥ 30ms

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Parameter		Test Conditions	Min	Typ	Max	Unit
V_S	Supply voltage	T_{amb} = 0 to 70 °C	3.5		18	V
I_S "st.by"	Supply current	$V_I^+ - V_I^- \geq$ 70mV		5	8	mA
I_S "ON"	Supply current	$V_I^- - V_I^+ \geq$ 70mV		18		mA
V_{CZ}	Voltage clamp at the output - each channel	V_S=15V; R_L=12Ω L_R=20mH	21		27	V
V_{ZS}	Voltage clamp supply protection	I_{ZS}=10mA	20		27	V
I_{ZS}	Current into supply clamp zener	DC			30	mA
		pulsed*)			80	mA

*) $T_{ON} \leq$ 2.5ms, repetition time $\geq$ 30ms

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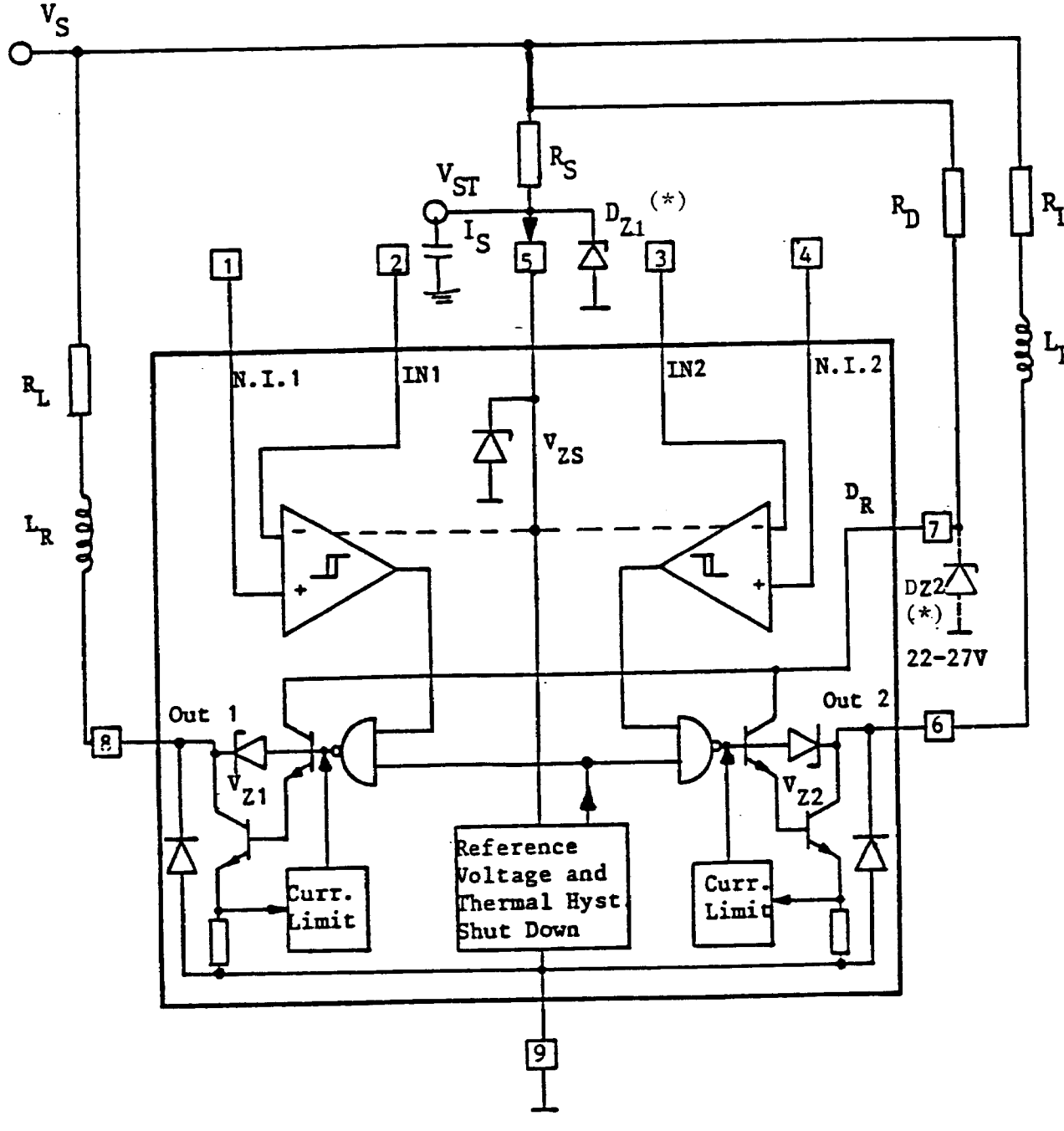
Fig. 1

L 9305 Block Diagram - Powerdip 8+8
and typ. application



(*) DZ1, DZ2 only for overvoltage suppression of V_S required