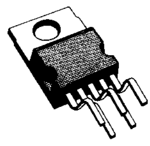
HIGH SIDE DRIVER

ADVANCE DATA

- LOW SATURATION VOLTAGE
- TTL COMPATIBLE INPUT
- WIDE SUPPLY VOLTAGE
- NO EXTERNAL COMPONENTS
- INTERNAL RECIRCULATION PATH FOR FAST DECAY OF INDUCTIVE LOAD CURRENT
- SHORT CIRCUIT PROTECTION
- FAILSAFE OPERATION : OUTPUT IS OFF IF THE LOGIC INPUT IS LEFT OPEN



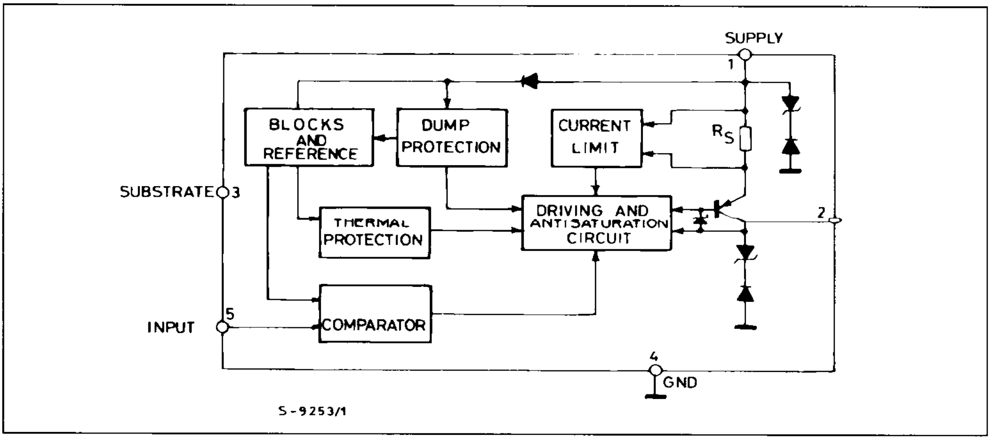
Pentawatt
ORDER CODE: L9350

DESCRIPTION

The L9350 is a monolithic integrated circuit designed to drive grounded resistive, inductive or mixed loads from the power supply positive side. Very low standby current (100/A typ.) and internally implemented protections against load dump and reverse voltages make the device very useful in automotive applications. No external components are required because the output recirculation clamping zener is included in the chip. This zener can withstand a recirculation peak current of 550mA on a 80mH/25 load.

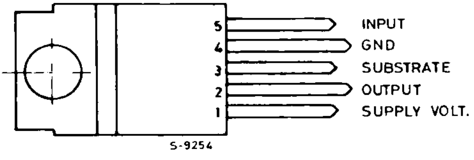
The device is self-protected against overtemperature, overvoltage and overcurrent conditions. The L9350 operates over the full battery voltage range, from 4.5V (cold cranking) up to 24V (jump starting). The L9350 withstands revers battery conditions (- 13V) and supply voltage transients up to 100V limiting the maximum output transistor V_{EC} to 70V by an internal zener. ON and OFF delay times of 25/s max in any output status, including recirculating situation, allow PWM use of L9350.

BLOCK DIAGRAM



This is advanced information on a new product now in development or undergoing evaluation. Details are subject to change without notice.

PIN CONNECTIONS (top view)



Note : Pin 3 must be left open or connected to ground.

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_S	D.C. Supply Voltage D.C. Reverse Supply Voltage Load Dump : 5ms ≤ t_{rise} ≤ 10ms τ_f Fall Time Constant = 100ms, R_{source} ≥ 0.5Ω Low Energy Spikes : R_{source} ≥ 10Ω, t_{rise} = 1µs, tf = 2ms, fr Repetition Frequency = 0.2Hz	24 – 13 60 ± 100	V V V V
V_I	Input Voltage	– 0.3 to 7	V
I_O	Output Current	Internally Limited	
P_{tot}	Total Power Dissipation at T_{case} = 90°C	17.1	W
T_J, T_{stg}	Junction and Storage Temperature	– 55 to 150	°C

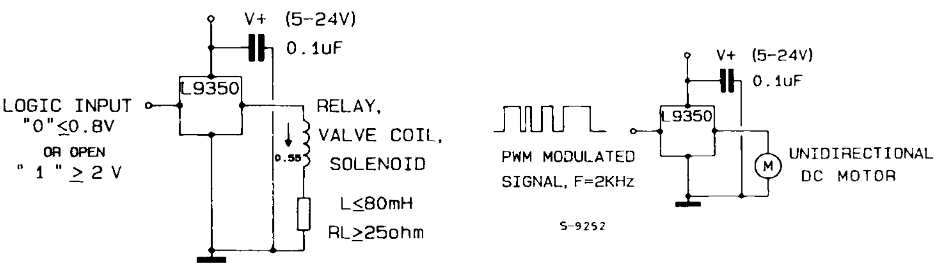
THERMAL DATA

$R_{thj\text{-}amb}$	Thermal Resistance Junction-ambient	Max	80	°C/W
$R_{thj\text{-}case}$	Thermal Resistance Junction-case	Max	3.5	°C/W

ELECTRICAL CHARACTERISTICS
(V_S = 14.4V, – 40°C ≤ Tj ≤ + 125°C unless otherwise specified).

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_S	Operating Supply Voltage		4.5		24	V
V_{IH}	Input Voltage High	4.5 < V_S < 24	2.0			V
V_{IL}	Input Voltage Low			1	0.8	
I_I	Input Current	0.8 < V_I < 5.5V		80	300	µA
I_{PL}	Output Leakage Current	V_O = 0V V_S = 24V V_I < 0.8V			1	mA
V_{sat}	Output Saturation Voltage	I_O = 125mA V_S = 4.5V		0.3	0.7	V
		I_O = 225mA V_S = 14.4V		0.5	0.8	V
		I_O = 550mA V_S = 14.4V		0.7	1.1	V
I_{SC}	Output Short Circuit Current		0.6	1.5		A
I_Q	Quiescent Current	V_I > 2V		50	100	mA
		V_I < 0.8V Stand-by Condition		100	200	µA
V_{ZO}	Negative Output Zener Voltage	R_L = 25Ω L = 80mH on V_I Transition from "1" to "0"	– 36	– 30	– 24	V
T_{on}	Turn ON Delay	Resistive Load R_L = 25Ω, T_j = 25°C (fig.2)			20	µs
T_{off}	Turn OFF Delay				25	µs
T_{dc}	Turn On Delay While Output is Clamped	R_L = 25Ω L = 80mH Any Time During Internal Clamping (fig.3)			20	µs

Figure 1 : Typical Automotive Application Circuit.



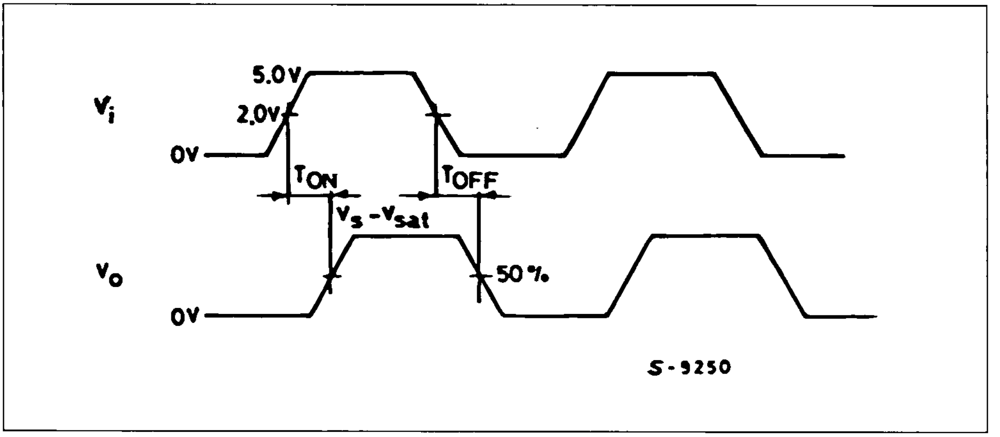


Figure 2 : Resistive Load.

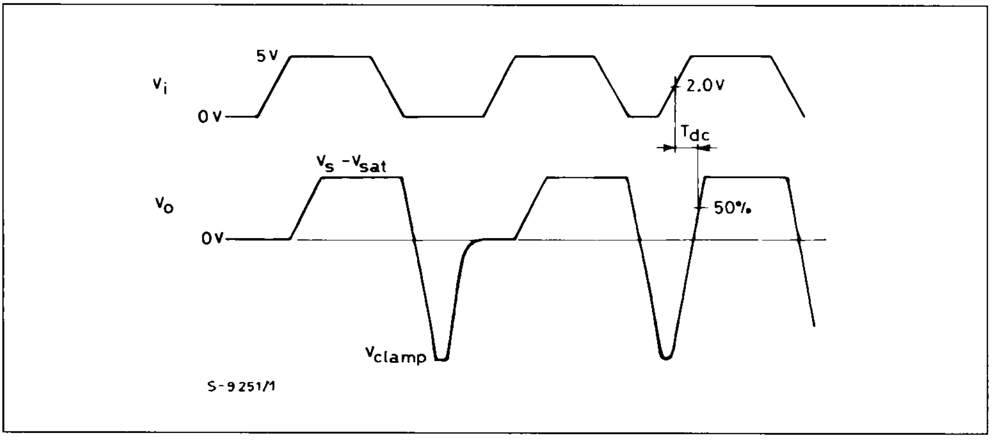


Figure 3 : Inductive Load.