

Automotive Lamp Outage Monitor, $V_T = 53 \text{ mV}$

Description

The monolithic integrated bipolar circuit, U4791B, is designed as a monitor for lamp failure in automobiles. The comparator threshold is matched to the PTC characteristic of incandescent lamps. The threshold is tied to a typical value of $V_{4,6} = V_S - V_T$ whereas $V_T = 53 \text{ mV}$.

The integrated circuit is recommended for the application of parallel connected lamps. If the voltage drop across shunt resistor, R_{sh} , exceeds 53 mV , the output is turned off, otherwise the output is turned on. Without supply voltage or open input Pin 8 the output is turned off.

A not used comparator must be connected to Pin 7.

Features

- 10 kV-ESD protection
 - Two comparators with common reference
 - Tight threshold tolerance
 - Threshold matched to PTC characteristic of incandescent lamps
 - Temperature compensated
 - NPN output
 - Interference and damage-protection according to VDE 0839
 - EMI protection
 - Reversal polarity protection
 - Load dump protection
- Case: DIP 8 and SO 8

Block Diagram

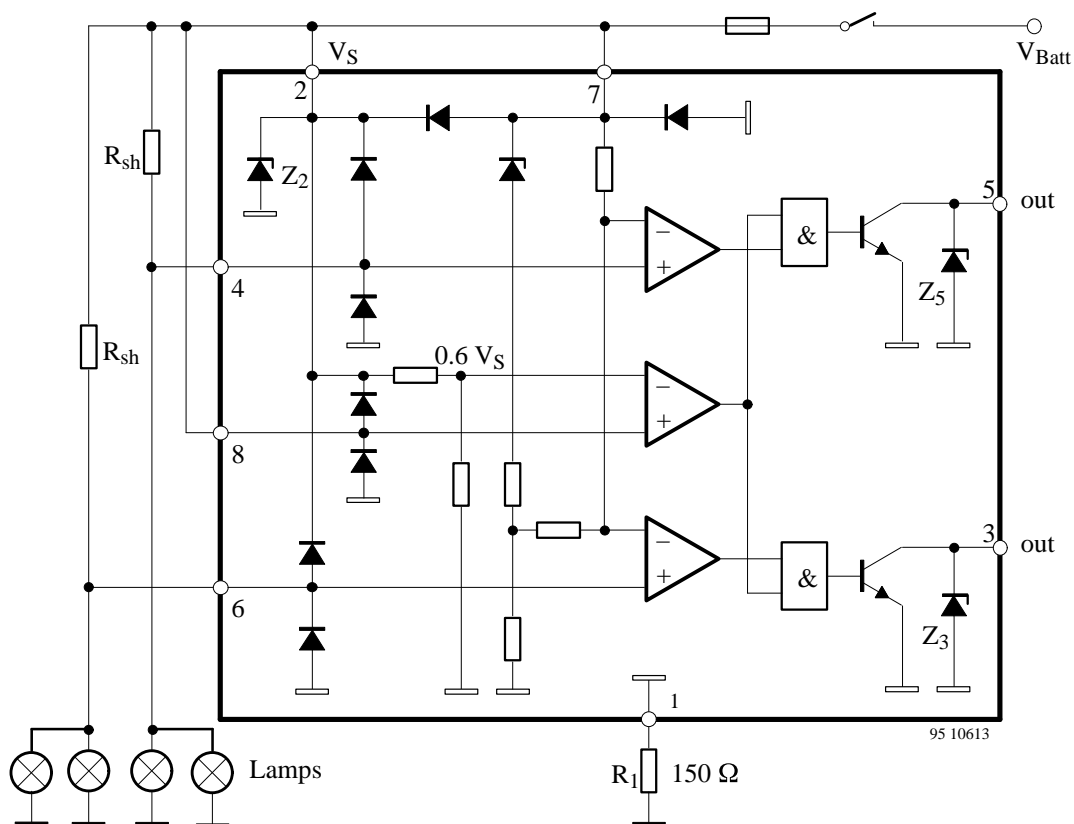
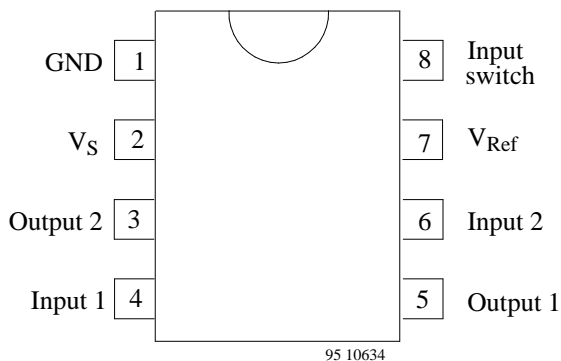


Figure 1. Schematic and application circuit

Pin Description



Pin	Symbol	Function
1	GND	Reference point, ground
2	V_S	Supply voltage
3	O_2	Output 2
4	I_1	Input 1
5	O_1	Output 1
6	I_2	Input 2
7	V_{Ref}	Reference voltage
8	Input	Input switch

Absolute Maximum Ratings

Parameters	Symbol	Value	Unit
Supply voltage Pin 2, 7	V_S	16.5	V
Current consumption $t = 2$ ms, measured at Pin 1 (GND) Pin 1	I_1	1.5	A
Output current Pin 3, 5	$I_{3,5}$	20	mA
Input voltage reference point Pin 7 Pin 4, 6	$-V_{4,6}$	6	V
Power dissipation $T_{amb} = 95$ °C DIP 8 SO 8	P_{tot}	420 360	mW
	P_{tot}	690 560	mW
Ambient temperature range	T_{amb}	-40 to +95	°C
Storage temperature range	T_{stg}	-55 to +125	°C
Junction temperature	T_j	150	°C

Electrical Characteristics

$V_S = 9$ to 15 V, $T_{amb} = -40$ to $+95$ °C, figure 1, unless otherwise specified

Parameters	Test Conditions / Pin	Symbol	Min	Typ	Max	Unit
Supply voltage	Pin 2,7	V_S	9		15	V
Internal Z diode Z_2	Pin 2	V_Z	20			V
Current consumption	$V_S = 12$ V Pin 1 measured at Pin 1 (GND)	I_1		4.5	6	mA
Output saturation voltage	$V_S = 9$ V, $I_{3,5} = 10$ mA $T_{amb} = 25$ °C Pin 3,5	V_{sat}			0.5	V
Output Z diodes Z_3, Z_5	Pin 3,5	V_Z	21			V
Control signal threshold	Reference point Pin 7 (V_7) $I_{3,5} = 1$ mA Pin 4,6 $V_S = 12$ V $V_S = 15$ V	$-V_T$	51.5 57	53.5 59	55.5 61	mV
Voltage drift	$\Delta V = \frac{V_{T(15V)} - V_{T(12V)}}{15\text{ V} - 12\text{ V}}$ Pin 4,6	ΔV		1.8		mV/V
Threshold voltage	Switch identification Pin 8	V_8		$0.6 V_S$		V
Input currents	Pin 4,6	I_I		100		nA
	Pin 8			5		μ A
Delay time	Switch-on High to low Pin 3,5	$t_{d(on)}$		6		μ s
	Switch-off Low to high	$t_{d(off)}$		30		μ s

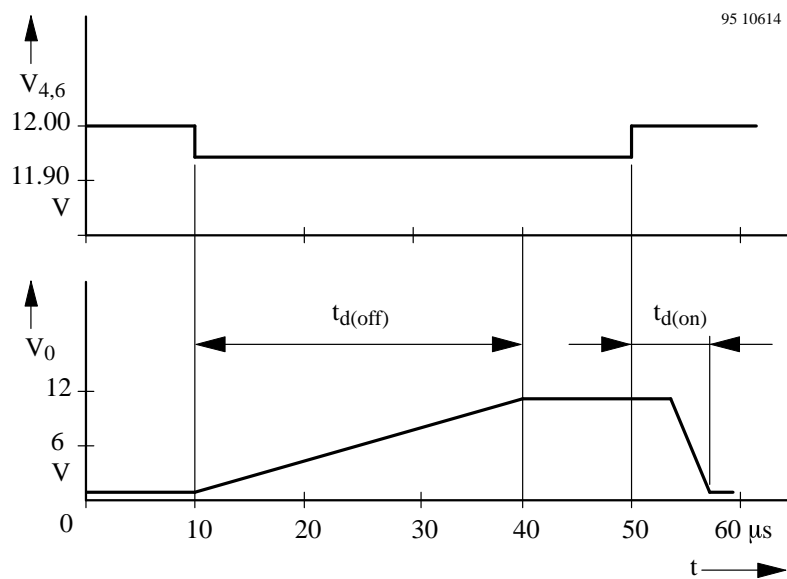


Figure 2.

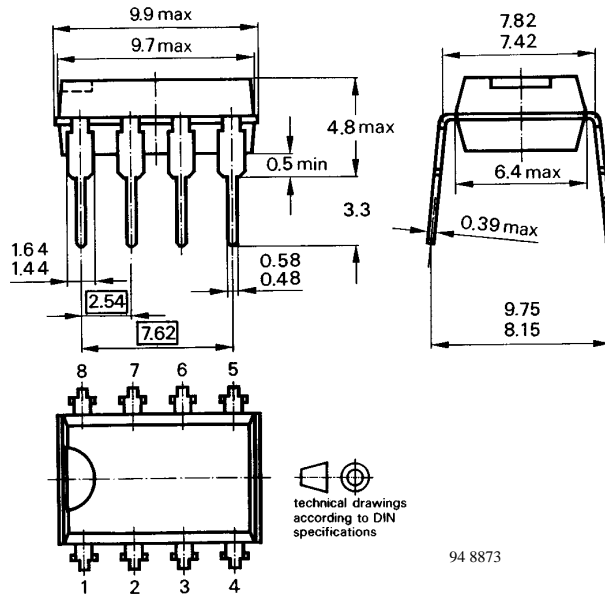
U4791B/ U4791B-FP

TEMIC

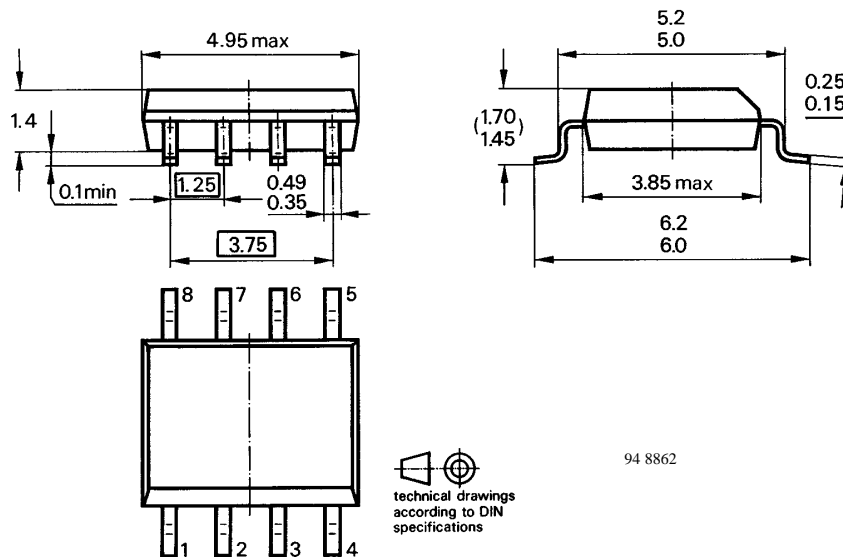
TELEFUNKEN Semiconductors

Dimensions in mm

Package: DIP 8



Package: SO 8



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2. Regularly and continuously improve the performance of our products, processes, distribution and operating systems with respect to their impact on the health and safety of our employees and the public, as well as their impact on the environment.

It is particular concern to control or eliminate releases of those substances into the atmosphere which are known as ozone depleting substances (ODSs).

The Montreal Protocol (1987) and its London Amendments (1990) intend to severely restrict the use of ODSs and forbid their use within the next ten years. Various national and international initiatives are pressing for an earlier ban on these substances.

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1. Annex A, B and list of transitional substances of the Montreal Protocol and the London Amendments respectively
2. Class I and II ozone depleting substances in the Clean Air Act Amendments of 1990 by the Environmental Protection Agency (EPA) in the USA
3. Council Decision 88/540/EEC and 91/690/EEC Annex A, B and C (transitional substances) respectively.

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