TEMIC

TELEFUNKEN Semiconductors

U4793B/ U4793B-FP

Overload Monitoring with Resistive Load, V_T = 44.5 mV

Description

The IC U4793B in bipolar circuit, is designed to monitor overload or a short circuit in automotive or industrial applications. The threshold is tied to $V_{4,6} = V_S - V_T$ whereas V_T = 44.5 mV. It is independent of the supply voltage, V_S. If the voltage drop across shunt resistor, R_{sh}, exceeds this value, the output is turned on, otherwise the output is turned off.

Without supply voltage or open input Pin 8, the output is turned off. The output breakdown voltage is determined by the Z-diodes Z_3 and Z_5 with a typical value of V_Z = 22 V.

A not used comparator input must be connected to Pin 7.

Features

- 10 kV – ESD protection

- Two comparators with common reference

- Tight threshold tolerance

- Constant threshold

- NPN output

- Interference and damage–protection according to VDE 0839

- EMI protection

- Reversal polarity protection

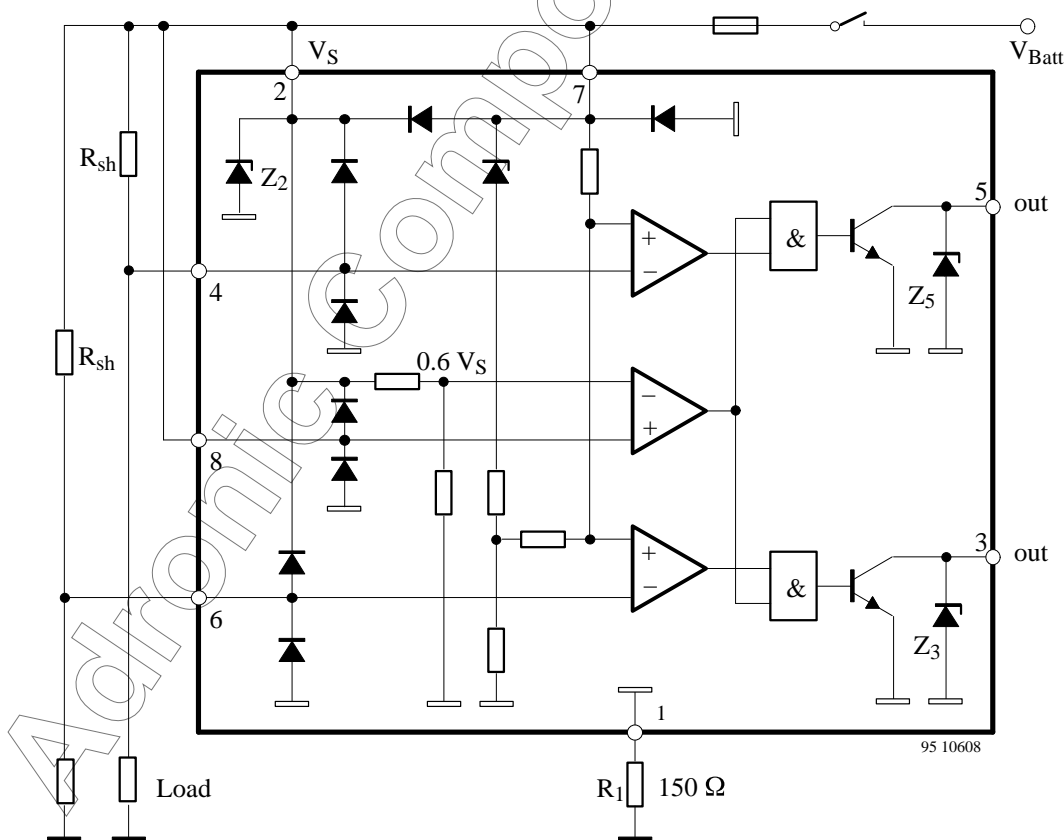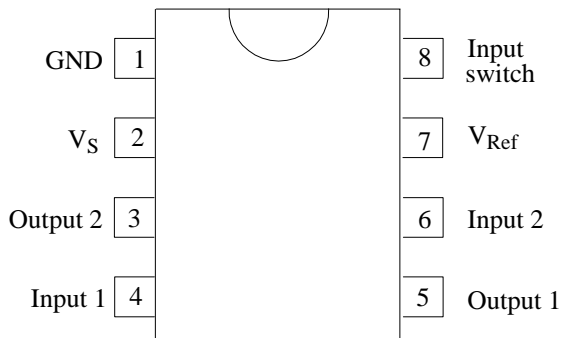- Load dump protection

Case: DIP 8 and SO 8

Block Diagram

Figure 1. Schematic and application circuit

Pin Description

GND	1		8	Input switch
V_S	2		7	V_{Ref}
Output 2	3		6	Input 2
Input 1	4		5	Output 1

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
T_{amb} = 60 °C DIP 8 SO 8		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	$I_{3,5}$ = 1 mA, figure 3 Pin 4,6 T_{amb} = 25°C	$-V_T$	43	44.5	46	mV
Temperature coefficient of control signal threshold		TC		15		µV/K
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		µA
Delay time	Switch-on Pin 3,5 High to low	$t_{d(on)}$		6		µs
	Switch-off Low to high	$t_{d(off)}$		30		µs
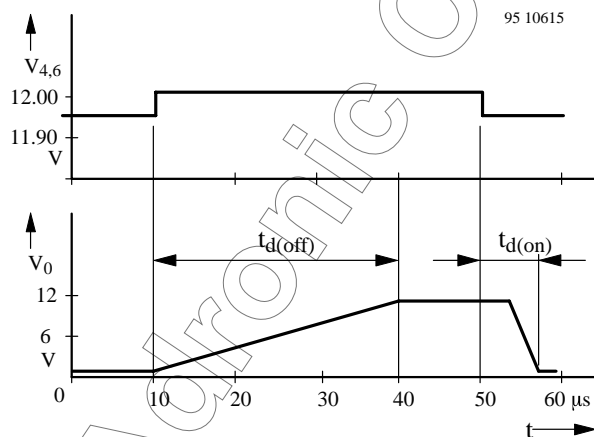
Figure 2.

Figure 3.

Dimensions in mm

Package: DIP 8

94 8873

Package: SO 8

94 8862
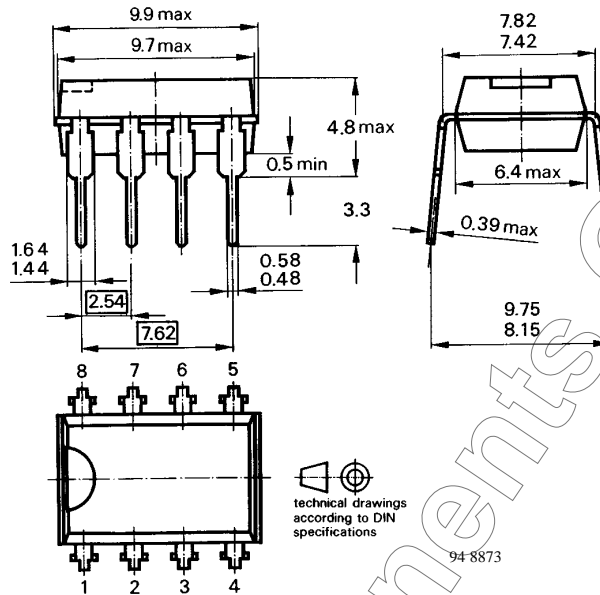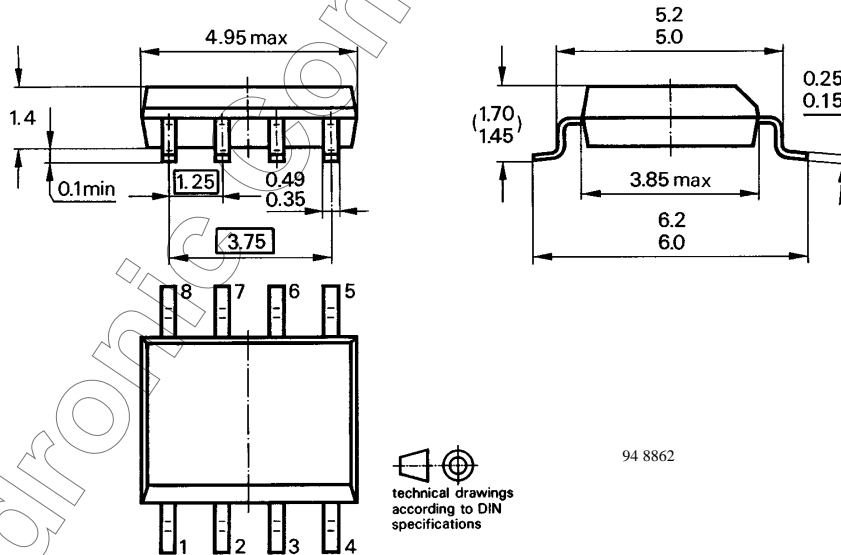
Ozone Depleting Substances Policy Statement

It is the policy of **TEMIC TELEFUNKEN microelectronic GmbH** to

1. Meet all present and future national and international statutory requirements.

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.

TEMIC TELEFUNKEN microelectronic GmbH semiconductor division has been able to use its policy of continuous improvements to eliminate the use of ODSs listed in the following documents.

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.

TEMIC can certify that our semiconductors are not manufactured with ozone depleting substances and do not contain such substances.