

## Driver For IR Transmitter Diodes (Current Sink)

**Technology:** Bipolar

### Features

- Constant current for IR signal 320 mA
- Undervoltage control with indicator driver
- Constant current output for control LED 100 mA
- Current stabilisation starts at  $V_{CE} = 1\text{ V}$
- Control voltage  $V_4 = 2\text{ to }13.2\text{ V}$
- Minimum driver current  $I_4 = 0.4\text{ mA}$
- Additional switching transistor  $I_C = 20\text{ mA}$

**Package:** SO8

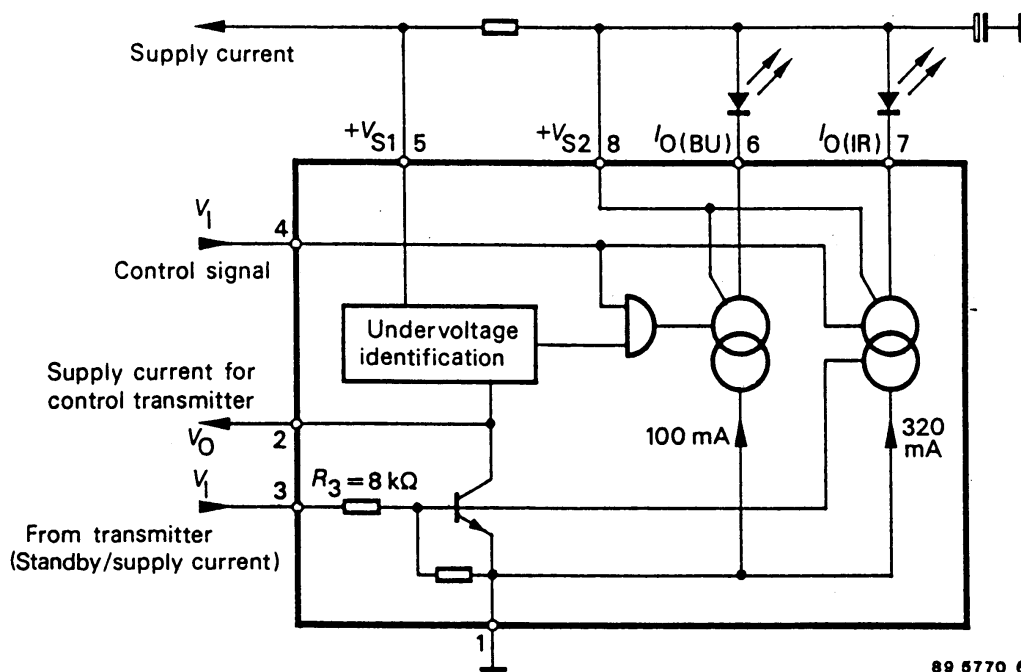


Figure 1. Block diagram

### Pin Description

Pin	Symbol	Function
1	Ground	Negative supply terminal
2	$V_O$	Switching output (standby/ operation)
3	$V_I$	Control input (standby/ operation)
4	$V_I$	Signal input to drive the current source

Pin	Symbol	Function
5	$V_{S1}$	Positive supply voltage terminal
6	$I_O$	Undervoltage indicator output (battery control)
7	$I_O$	IR diode output signal
8	$V_{S2}$	Supply voltage for the control stages of constant current outputs

## Absolute Maximum Ratings

Reference point Pin 1

Parameters	Symbol	Value	Unit
Supply voltage Pins 5 and 8	+V <sub>S1, S2</sub>	≤ 14	V
Input voltage Pins 3 and 4	V <sub>I</sub>	≤ 14	V
Output voltage Pins 2, 6 and 7	V <sub>O</sub>	≤ 14	V
Collector current Pin 2	I <sub>C</sub>	25	mA
Power dissipation T <sub>amb</sub> = 80°C	P <sub>tot</sub>	150	mW
Junction temperature	T <sub>j</sub>	125	°C
Ambient temperature range	T <sub>amb</sub>	-40 to +85	°C
Storage temperature range	T <sub>stg</sub>	-40 to +125	°C

## Thermal Resistance

Parameters	Symbol	Value	Unit
Junction ambient	R <sub>thJA</sub>	160	K/W

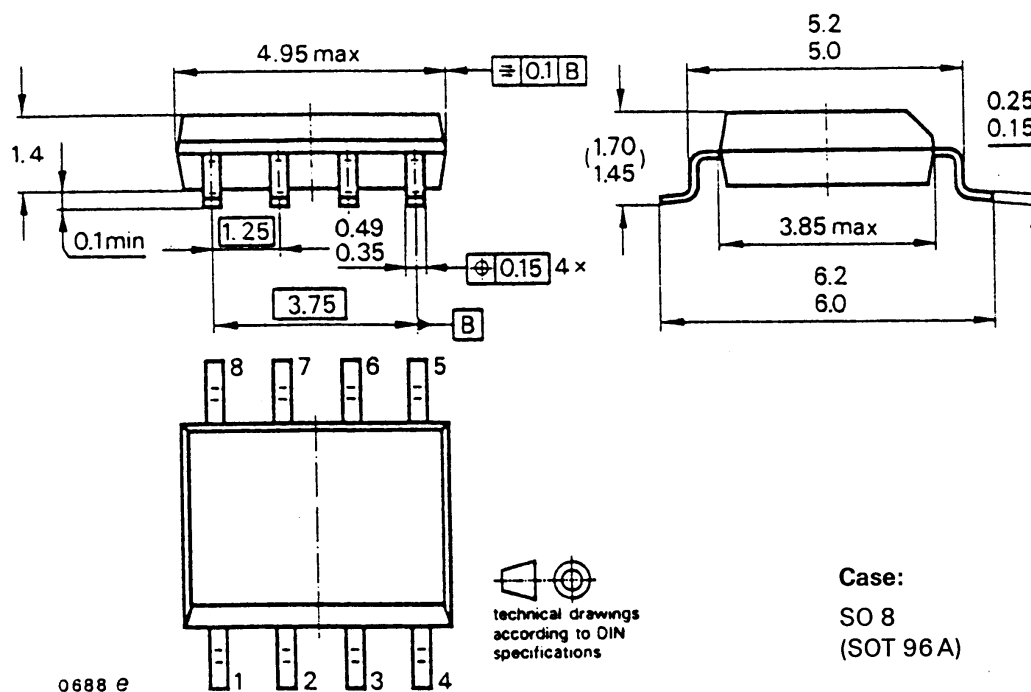
## Electrical Characteristics

V<sub>S1</sub> = V<sub>S2</sub> = 9 V, T<sub>amb</sub> = 80°C, reference point Pin 1, unless otherwise specified

Parameters	Test Conditions / Pin	Symbol	Min.	Typ.	Max.	Unit
<b>Supply voltage range</b>	Pin 5	V <sub>S1</sub>	2.8		13.2	V
	Pin 8	V <sub>S2</sub>	2		13.2	V
<b>Battery voltage control</b>						
Switching threshold	U429B-FP Pin 5	V <sub>S1</sub>	6.35	6.7	7.15	V
<b>Regulated pulse output current</b>						
IR-signal, V <sub>7</sub> = 7 V	Pin 7	I <sub>O</sub>	240	320	400	mA
<b>Undervoltage indicator</b>						
V <sub>6</sub> = 4 V, @ V <sub>S1</sub> = V <sub>S2</sub> = 4.5 V	Pin 6	I <sub>O</sub>	71	100	125	mA
<b>IR-signal</b>						
V <sub>7</sub> = 3 V, @ V <sub>S1</sub> = V <sub>S2</sub> = 5 V	Pin 7	I <sub>O</sub>	192	250	328	mA
<b>Undervoltage indicator</b>						
V <sub>6</sub> = 3 V, @ V <sub>S1</sub> = V <sub>S2</sub> = 4.5 V	Pin 6	I <sub>O</sub>	71	95	118	mA
<b>Collector saturation voltage</b>						
IR-signal i <sub>7</sub> = 200 mA	Pin 7	V <sub>O</sub>			0.8	V
<b>Undervoltage indicator</b>						
i <sub>6</sub> = 60 mA, V <sub>S1</sub> = V <sub>S2</sub> = 4.5 V	Pin 6	V <sub>O</sub>			0.8	V
<b>Switching transistor</b>						
I <sub>2</sub> = 10 mA, V <sub>3</sub> = 4 V	Pin 2	V <sub>O</sub>			100	mV
I <sub>2</sub> = 20 mA, V <sub>3</sub> = 7 V	Pin 2	V <sub>O</sub>			500	mV

Parameters	Test Conditions / Pin	Symbol	Min.	Typ.	Max.	Unit
<b>Collector leakage current</b>						
IR-signal	Pin 7	$I_{CEO}$			1	$\mu A$
Undervoltage indicator	Pin 6	$I_{CEO}$			0.5	$\mu A$
Switching transistor	Pin 2	$I_{CEO}$			0.3	$\mu A$
Driver	Pin 8	$I_O$			0.3	$\mu A$
Switching transistor, internal	Pin 5	$I_O$			0.3	$\mu A$
<b>Control voltage range</b>						
	Pin 3	$V_I$	2.5		13.2	V
	Pin 4	$V_I$	2.5		13.2	V
<b>Control current</b>						
	Pin 3	$I_I$	0.25			mA
	Pin 4	$I_I$	0.15			mA
<b>Input resistance</b>						
	Pin 3	$R_I$	3	6	9	$k\Omega$
	Pin 4	$R_I$	4	8	12	$k\Omega$

## Dimensions in mm



## 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.

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