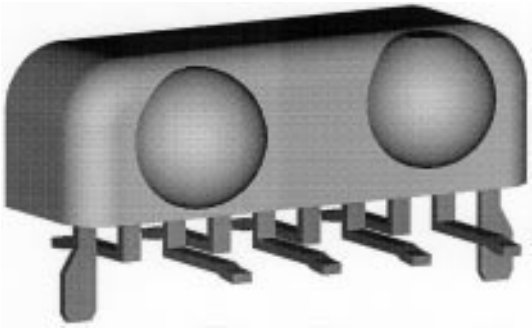
IrDA SIR Integrated Transceiver

Description

The TFDS2000 is an infrared transceiver for data communication systems. The transceiver is compatible to the IrDA standard which allows data rates up to 10 MBit/s. The TFDS2000 enables optimum operation with TEMIC's integrated IrDA receiver and driver circuit U2532B.

Features

- Compatible to IrDA standard
- SMD side view
- Low profile (height = 5.6 mm max.)
- High efficiency, high speed emitter
- Fast photo pin detector diode



Pin description:

1: IRED anode
2: NC
3: Pin diode: cathode
4: NC
5: Pin diode: anode
6: NC
7: NC
8: IRED cathode

Absolute Maximum Ratings

Reference point Pin 4, unless otherwise specified

Parameter	Test Conditions	Symbol	Value	Unit
Reverse voltage pin photo diode emitter diode		 V_R V_R	 60 6	 V V
Forward currents pin photo diode emitter diode	 Average, cw Pulse (<90 µs, t_{on} <20%) Peak (<2 µs, t_{on} <10%)	I_F I_{IRED}(DC) I_{IRED}(RP) I_{IRED}(PK)	50 100 500 1000	mA mA mA mA
Power dissipation	See figure 3	P_{tot}	200	
Junction temperature		T_J	125	°C
Ambient temperature Range (operating)		T_{amb}	0 to 70	°C
Soldering temperature	See figure 11 introductory text IrDA Design Guide		230 (typ. 215)	°C

Basic Characteristics

T_{amb} = 25°C, unless otherwise specified

Parameter	Test Conditions	Symbol	Min.	Typ.	Max.	Unit
Photo pin diode						
Breakdown voltage	I_R = 100 µA, E = 0	$V_{(BR)}$	32			V
Spectral sensitivity	λ = 870 nm	s_λ		0.5		A/W
Light reverse current	V_R = 5 V E = 1 W/m^2 λ = 870 nm	I_{ra}		4.4		µA
Temperature coefficient of light reverse current		TK_{Ira}		-0.1		%/K
Spectral bandwidth		$\lambda_{0.5}$		790 to 1050		nm
Dark reverse current	V_R = 10 V, E = 0	I_{ro}		0.1	30	nA
Rise time, fall time	V_R = 5 V, R_L = 1 kΩ, E = 1 W/m^2 λ = 870 nm			100		ns
Junction capacitance	V_R = 5 V, f = 1 MHz	C_{jd}		5.8		pF
Transmitter						
Forward voltage	I_F = 100 mA, t_p = 20 ms	V_F		1.35	1.6	V
Forward voltage	I_F = 600 mA, t_p = 100 µs	V_F		2.2	2.8	V
Reverse current	V_R = 5 V, E = 0	I_R			10	µA
Junction capacitance	V_R = 0 V, f = 1 MHz	C_{je}		160		pF
Temperature coefficient of forward voltage V_F		TK_{VF}		-1.3		mV/K
Output radiant intensity, α = ±15°	I_F = 300 mA	I_e		100		mW/sr
Angle of half intensity		α		±24		°
Peak wavelength of emission		λp	850		900	nm
Half width of emission spectrum				60		nm
Temperature coefficient of peak wavelength λp		$TK_{\lambda p}$		+0.2		nm/K
Optical rise/fall time	I_F = 100 mA	t_r, t_f		30		ns
Temperature coefficient of intensity I_e		TK_{Ie}		-0.35		%/K

Recommended SMD pads for the transceiver TFDS2000
Dimensions in mm

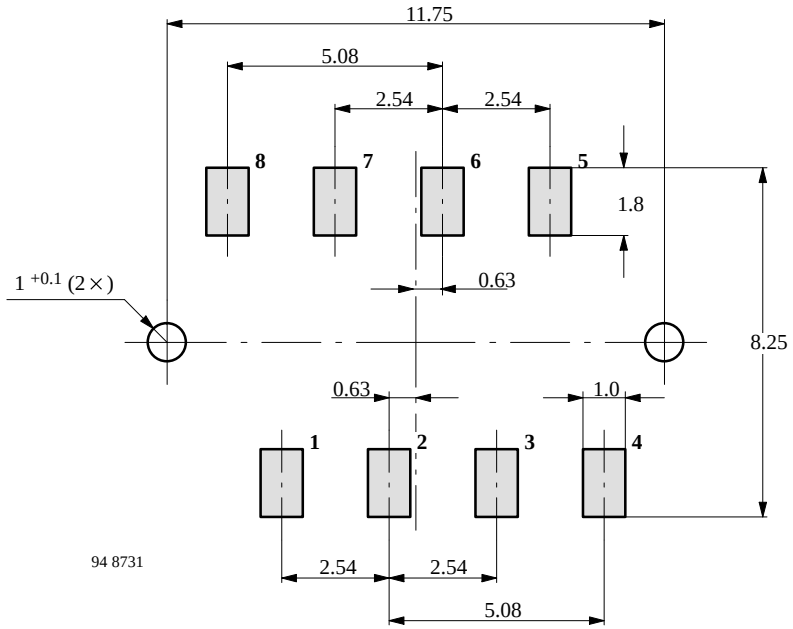


Figure 1.

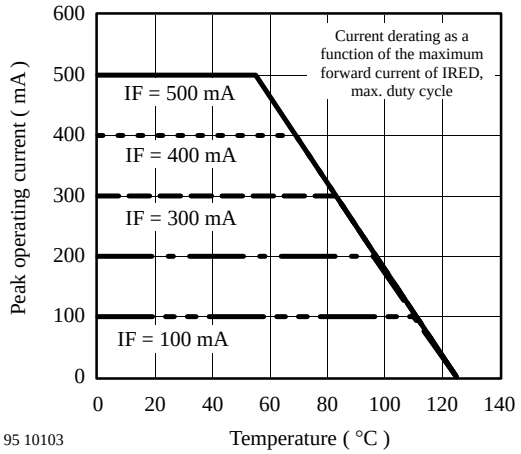
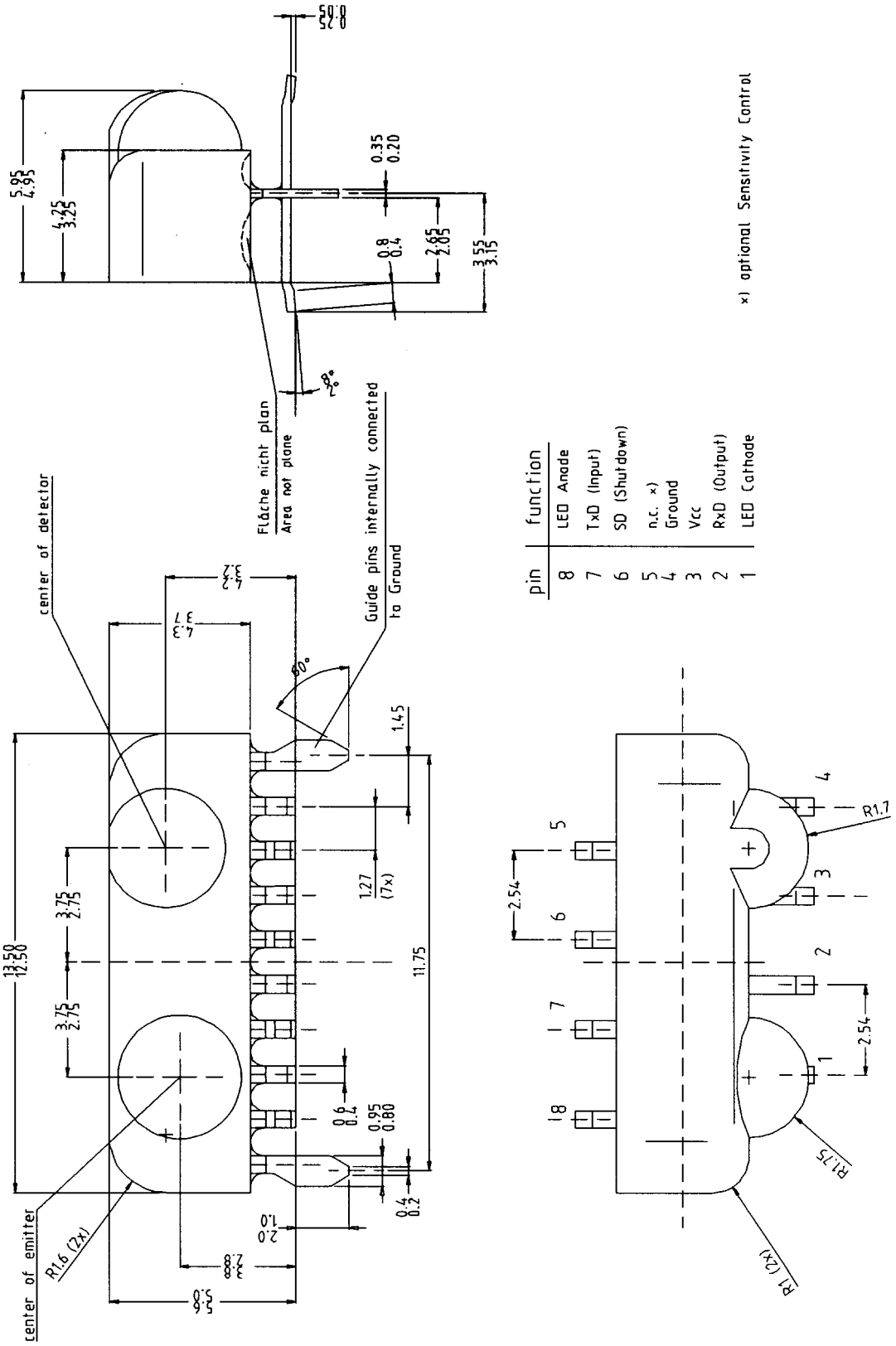


Figure 2. Current derating as a function of ambient temperature condition duty cycle <20%

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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