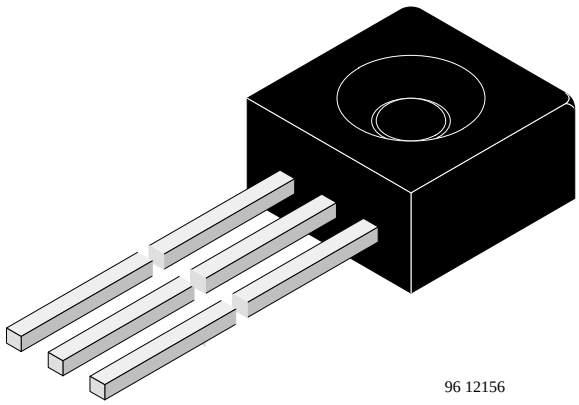
Silicon Photodetector with Logic Output

Description

TESS5400 INLINE is a high sensitive Photo Schmitt Trigger in a sideview plastic package with spherical lens.
Its epoxy casting is designed as an infrared filter spectrally matched to GaAs IR emitters (λ_p=950nm).



Features

- Very high photo sensitivity
- IR filter matched to GaAs
- Supply voltage range 4.5 to 16 V.
- Low current consumption (2 mA)
- Side view plastic package with lens
- Angle of half sensitivity $\varphi = \pm 35^\circ$
- TTL and CMOS compatible
- Open collector output
- Output signal inverted (active ”low”)
- Case compatible to CQX48 GaAs IR emitter

Applications

Optical data interface
Optical threshold switch
Interrupter
Counter
Pulse former

Absolute Maximum Ratings

T_{amb} = 25°C

Parameter	Test Conditions	Symbol	Value	Unit
Supply Voltage		V_{S1}	18	V
Output Current		I_o	20	mA
Power Dissipation		P_V	100	mW
Junction Temperature		T_j	100	°C
Operating Temperature Range		T_{amb}	–40...+85	°C
Storage Temperature Range		T_{stg}	–40...+100	°C
Soldering Temperature	t ≦ 5 s, 2 mm from body	T_{sd}	260	°C

Basic Characteristics

T_{amb} = 25°C

Parameter	Test Conditions	Symbol	Min	Typ	Max	Unit
Supply Voltage		V_{S1}	4.5		16	V
Supply Current	V_{S1} = 16 V	I_{S1}		2	5	mA
Irradiance for Threshold ”On”	λ = 950 nm	E_{eon}		50	85	μW/cm²
	λ = 900 nm	E_{eon}		40	70	μW/cm²
Hysteresis	V_{S1} = 5 V	E_{eoff}/E_{eon}		80		%
Output Voltage	I_{OL} = 16 mA, V_{S1} = 5 V, $E_e \geq E_{on}$	V_{OL}		0.2	0.4	V
High Level Output Current	$V_{S1} = V_{S2}$ = 16V, I_F = 0	I_{OH}			1	μA

Switching Characteristics

T_{amb} = 25°C

Parameter	Test Conditions	Symbol	Min	Typ	Max	Unit
Rise Time	$V_{S1} = V_{S2}$ = 5V, R_L = 1 kΩ, E_e = 3*E_{eon}, λ = 950 nm	t_r		100		ns
Fall Time		t_f		20		ns
Turn–On Time		t_{on}		1.5		μs
Turn–Off Time		t_{off}		3		μs
Switching Frequency		f_{sw}		200		kHz

Typical Characteristics (T_{amb} = 25°C unless otherwise specified)

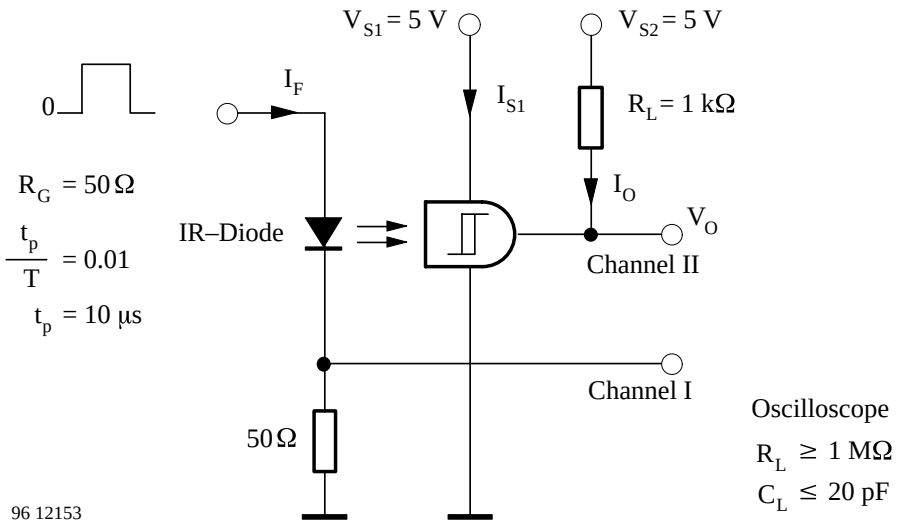


Figure 1. Test circuit

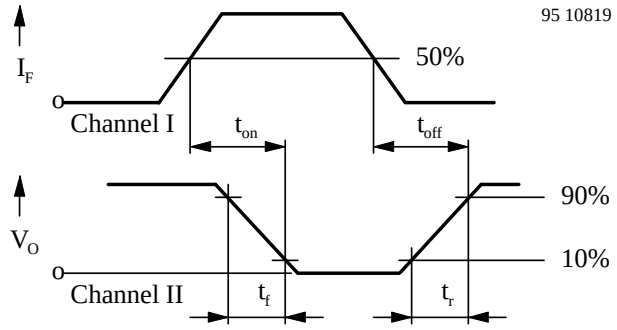
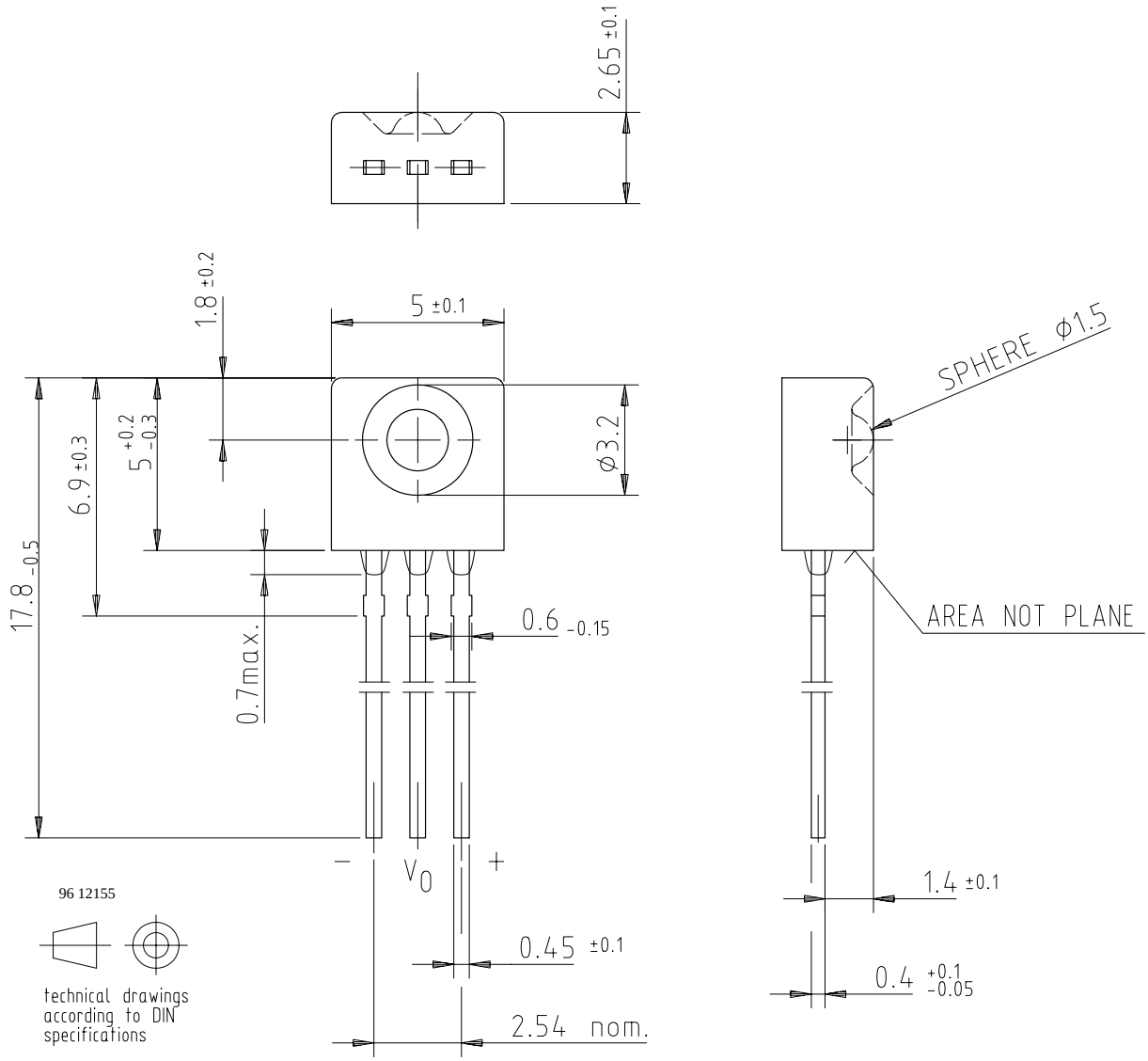


Figure 2. Pulse diagram

Dimensions in mm



Ozone Depleting Substances Policy Statement

It is the policy of **Vishay Semiconductor 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.

Vishay Semiconductor GmbH 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.

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

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