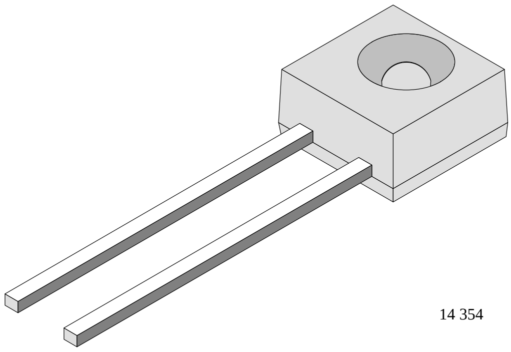
TSKS5412X01

GaAs Infrared Emitting Diode in Side View Package

Description

TSKS5412 is a standard GaAs infrared emitting diode in a flat sideview molded plastic package. A small recessed spherical lens provides an improved radiant intensity in a low profile case. The diode is case compatible to the TEKS5412 photodetector, allowing the user to assemble his own optical sensor.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Features

- Side view case with spherical lens
- Radiation direction perpendicular to mounting direction
- Angle of half intensity $\varphi = \pm 30^\circ$
- Peak wavelength λ_p = 950 nm
- Case compatible with TEKS5412
- Option X01: High rel. device for advanced applications

- Fan-fold packing according to IEC 286 part 2
- Packing AMMOPACK: 2,000 pcs
- Ordering code number: TSKS5412X01ASZ
- Visual inspection according to QSV 5610

Absolute Maximum Ratings

T_{amb} = 25°C

Parameter	Test Conditions	Symbol	Value	Unit
Reverse Voltage		V_R	6	V
Forward Current		I_F	100	mA
Surge Forward Current	$t_p \leqq 100\ \mu s$	I_{FSM}	2	A
Power Dissipation		P_V	170	mW
Junction Temperature		T_j	100	°C
Operating Temperature Range		T_{stg}	–40...+85	°C
Storage Temperature Range		T_{stg}	–40...+100	°C
Soldering Temperature	$t \leqq 5$ s, 2 mm from body	T_{sd}	260	°C
Thermal Resistance Junction/Ambient		R_{thJA}	450	K/W

Basic Characteristics

T_{amb} = 25°C

Parameter	Test Conditions	Symbol	Min	Typ	Max	Unit
Forward Voltage	I_F = 100 mA, t_p ≦ 20 ms	V_F		1.3	1.7	V
Reverse Voltage	I_R = 10 µA	V_{VR}	6			V
Junction Capacitance	V_R = 0 V, f = 1 MHz, E = 0	C_j		50		pF
Radiant Intensity	I_F = 50 mA, t_p ≦ 20 ms	I_e	2.3		7	mW/sr
Radiant Power	I_F = 50 mA, t_p ≦ 20 ms	ϕ_e		5		mW
Temp. Coefficient of ϕ_e	I_F = 50 mA	$TK_{\phi e}$		–1		%/K
Angle of Half Intensity		φ		±30		deg
Peak Wavelength	I_F = 50 mA	λ_p		950		nm
Spectral Bandwidth	I_F = 50 mA	$\Delta\lambda$		50		nm
Rise time	I_F=1A, t_p/T=0.01, t_p≦10µs	t_r		400		ns
Fall Time	I_F=1A, t_p/T=0.01, t_p≦10µs	t_f		450		ns

Additional Test

- 100% inspection of body with infrared camera.
  test criteria: no cracks allowed

TSKS5412X01 / TEKS5412X01 matched (for Reference only)

Parameters	Test Conditions	Symbol	Min.	Typ.	Max.	Unit
Input threshold current	V_{S1} = 5 V	I_{FT}		1.5		mA
Hysteresis	V_{S1} = 5 V	I_{Foff}/I_{Fon}		80		%
Output voltage	I_{OL} = 16 mA, I_F > I_{FT} V_{S1} = 5 V			0.2	0.4	V
Switching frequency	I_F = 3 x I_{FT}, R_L = 1 kΩ V_{S1} = V_{S2} = 5 V	f_{sw}		200		KHz

Remark: Parameter tested with test fixture provided by Kostal (LENKWINKELSENSOR)

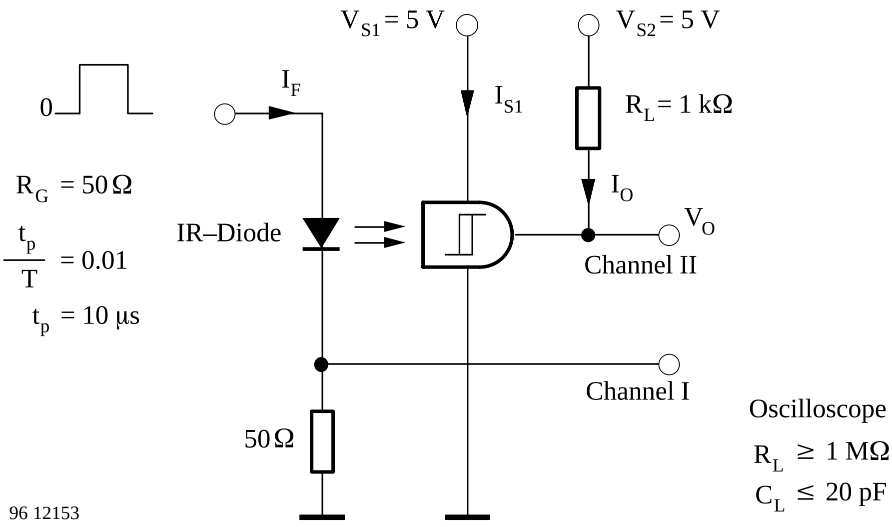


Figure 1. Test circuit

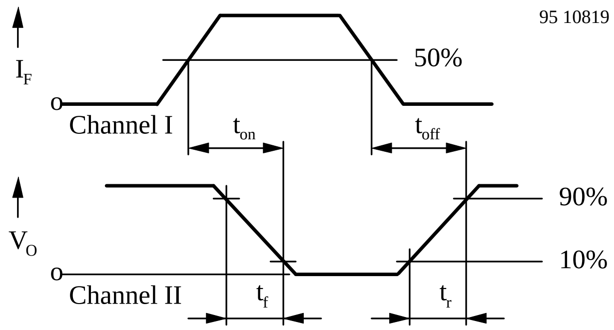


Figure 2. Pulse diagram

Typical Characteristics (T$_{amb}$ = 25°C unless otherwise specified)

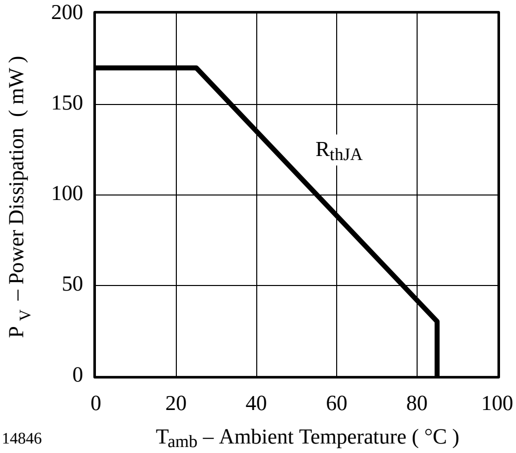


Figure 3. Power Dissipation vs. Ambient Temperature

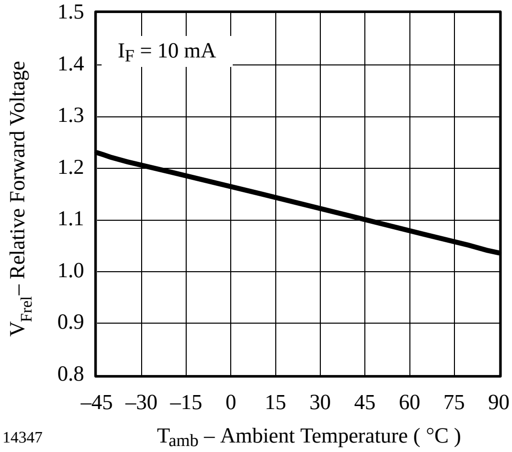


Figure 6. Relative Forward Voltage vs. Ambient Temperature

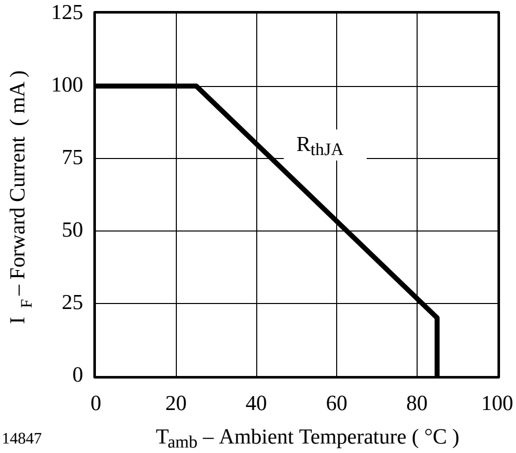


Figure 4. Forward Current vs. Ambient Temperature

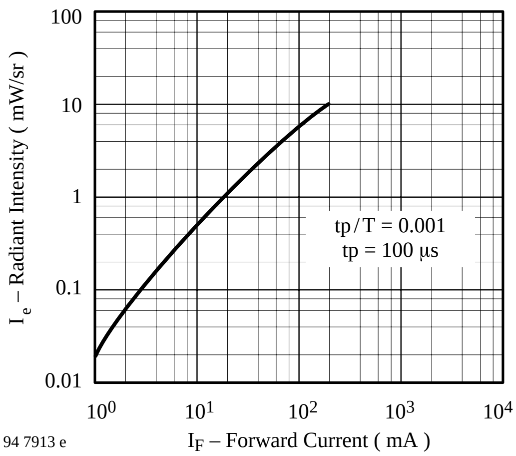


Figure 7. Radiant Intensity vs. Forward Current

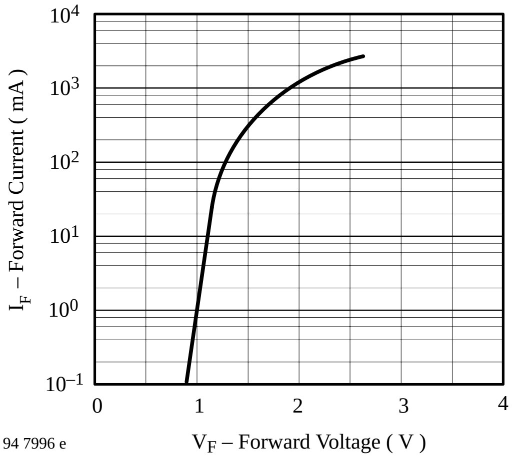


Figure 5. Forward Current vs. Forward Voltage

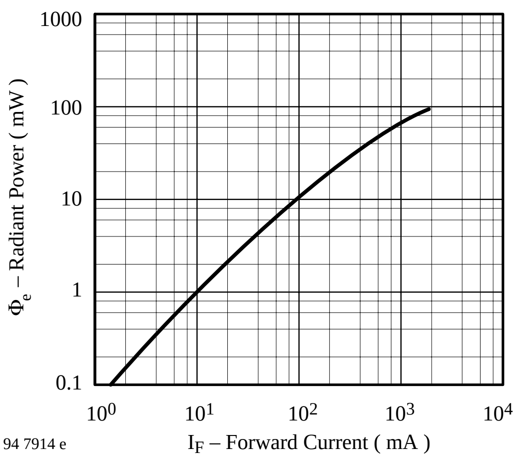


Figure 8. Radiant Power vs. Forward Current

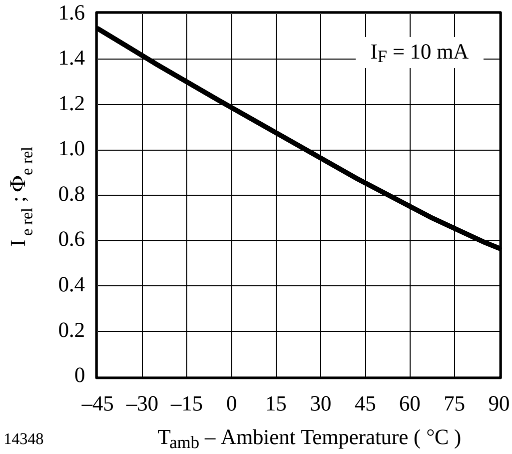


Figure 9. Rel. Radiant Intensity\Power vs. Ambient Temperature

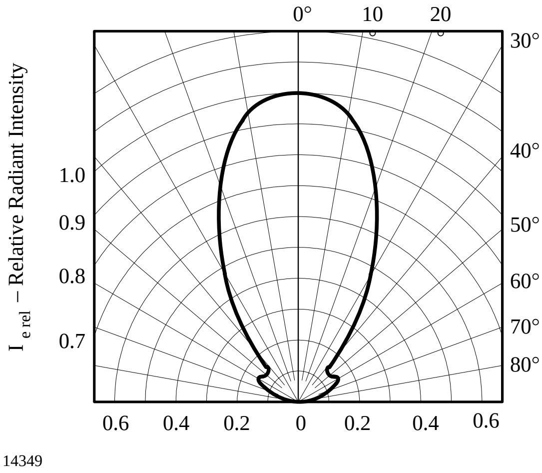


Figure 11. Relative Radiant Intensity vs. Angular Displacement

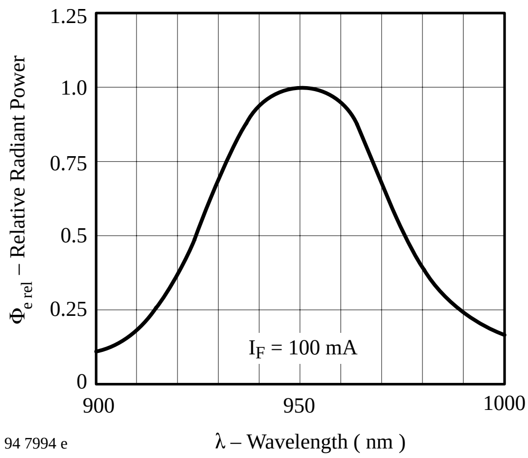


Figure 10. Relative Radiant Power vs. Wavelength

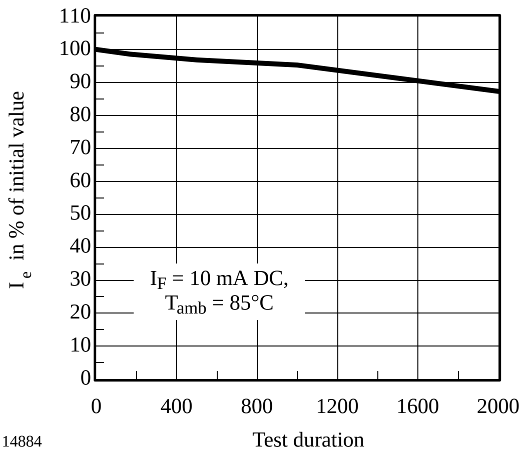
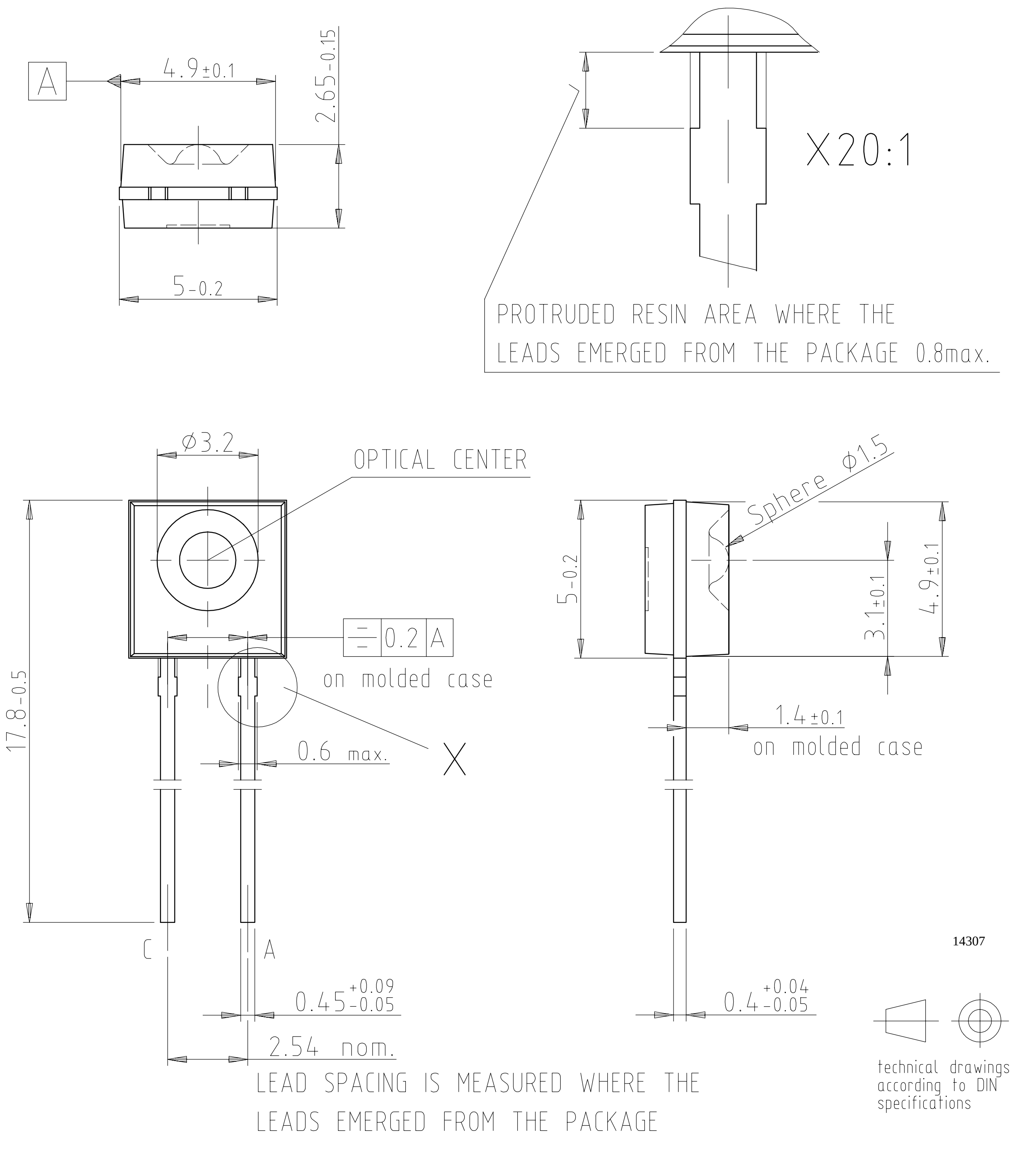


Figure 12 Typical degradation of I_e vs. Test duration

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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