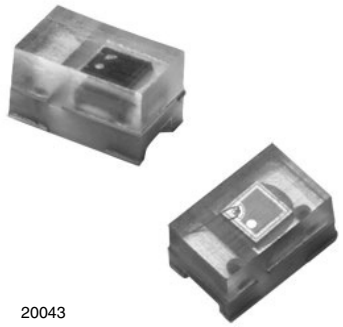
Ambient Light Sensor in 0805 Package, RoHS Compliant, Released for Lead (Pb)-free Solder Process, AEC-Q101 Released

Description

TEMT6200FX01 is a silicon NPN epitaxial planar phototransistor in a miniature transparent 0805 package for surface mounting. The device is sensitive to the visible spectrum.



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Features

- Product designed and qualified acc. AEC-Q101 for the automotive market
- High sensitivity
- Adapted to human eye responsivity
- Suppression filter for near IR
- Wide angle of half sensitivity: $\varphi = \pm 60°$
- SMD 0805 package
- Dimensions: L 2 mm x W 1.25 mm x H 0.85 mm
- Tape and reel: 3000 pcs/reel
- Minimum order quantity: MOQ = 3000 pcs
- Lead (Pb)-free soldering released
- Lead (Pb)-free component in accordance with RoHS 2002/95/EC and WEEE 2002/96/EC

Applications

- Automotive sensors
- Ambient light sensor for display backlight dimming in:
  - Mobile phones
  - Notebook computers
  - PDA's
  - Cameras
  - Dashboards

Absolute Maximum Ratings

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

Parameter	Test condition	Symbol	Value	Unit
Collector emitter voltage		V_{CEO}	6	V
Emitter collector voltage		V_{ECO}	1.5	V
Collector current		I_C	20	mA
Total power dissipation	$T_{amb} \leq 55$ °C	P_V	100	mW
Junction temperature		T_j	100	°C
Operating temperature range		T_{amb}	- 40 to + 100	°C
Storage temperature range		T_{stg}	- 40 to + 100	°C
Soldering temperature	Acc. reflow profile fig. 6, page 3	T_{sd}	260	°C
Thermal resistance junction/ ambient		R_{thJA}	450	K/W

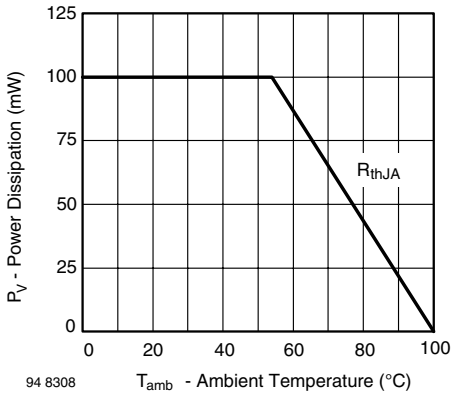


Figure 1. Power Dissipation vs. Ambient Temperature

Basic Characteristics

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

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Collector emitter breakdown voltage	I_C = 0.1 mA	V_{CEO}	6			V
Collector dark current	V_{CE} = 5 V, E = 0	I_{CEO}		3	50	nA
Collector emitter capacitance	V_{CE} = 0 V, f = 1 MHz, E = 0	C_{CEO}		16		pF
Photo current	E_v = 20 lx, CIE illuminant A, V_{CE} = 5 V,	I_{PCE}		4.6		µA
	E_v = 100 lx, CIE illuminant A, V_{CE} = 5 V,	I_{PCE}	9	23	36	µA
Temperature coefficient of I_{PCE}	CIE illuminant A	TK_{IPCE}		1.18		%/K
	LED, white	TK_{IPCE}		0.9		%/K
Angle of half sensitivity		φ		± 60		deg
Wavelength of peak sensitivity		λ_p		550		nm
Range of spectral bandwidth		$\lambda_{0.5}$		450 to 610		nm
Collector emitter saturation voltage	E_v = 20 lx, 0.45 µA	V_{CEsat}		0.1		V

Typical Characteristics

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

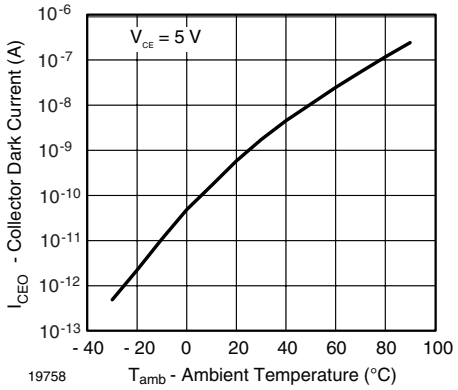


Figure 2. Collector Dark Current vs. Ambient Temperature

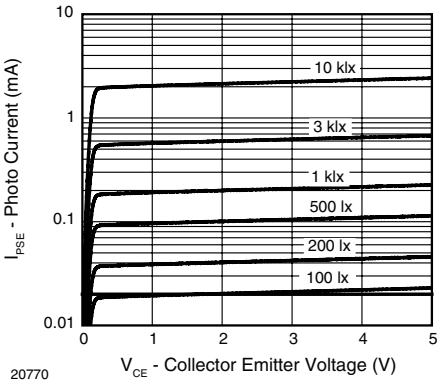


Figure 5. Photo Current vs. Collector Emitter Voltage

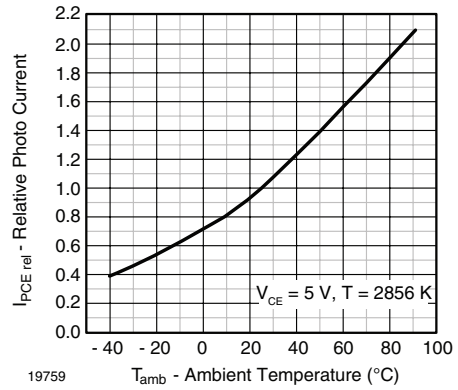


Figure 3. Relative Photo Current vs. Ambient Temperature

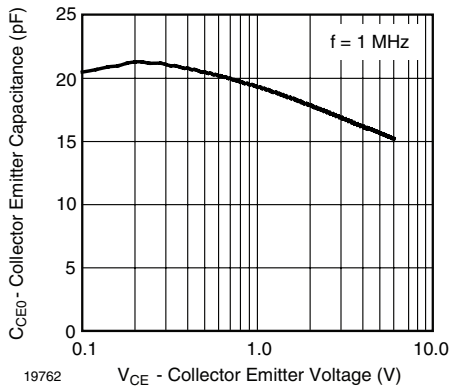


Figure 6. Collector Emitter Capacitance vs. Collector Emitter Voltage

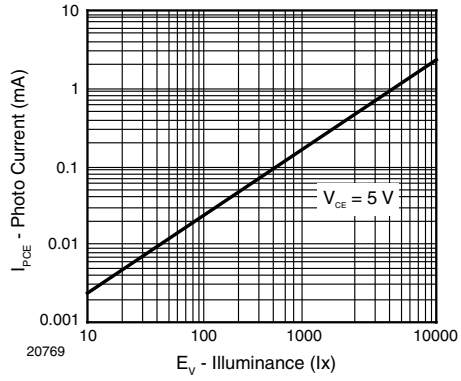


Figure 4. Photo Current vs. Illuminance

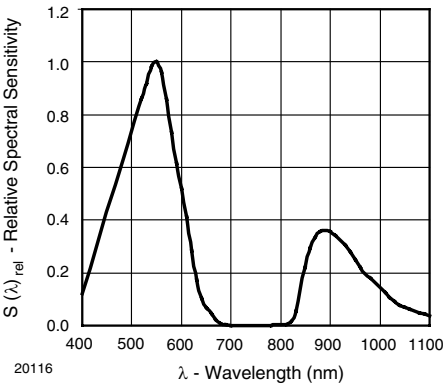


Figure 7. Relative Spectral Sensitivity vs. Wavelength

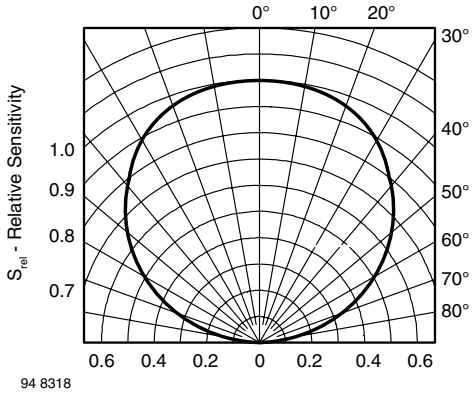


Figure 8. Relative Radiant Sensitivity vs. Angular Displacement

Reflow Solder Profiles

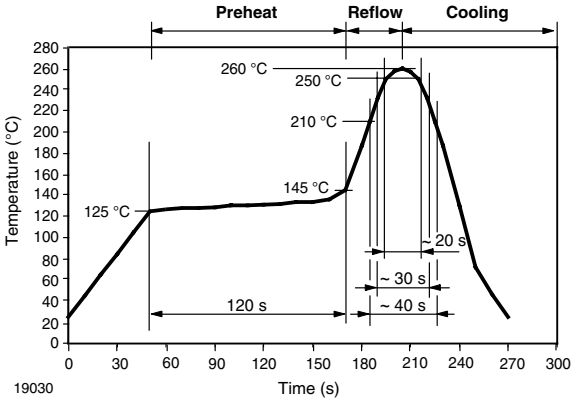


Figure 9. Lead (Pb)-free (Sn) Reflow Solder Profile

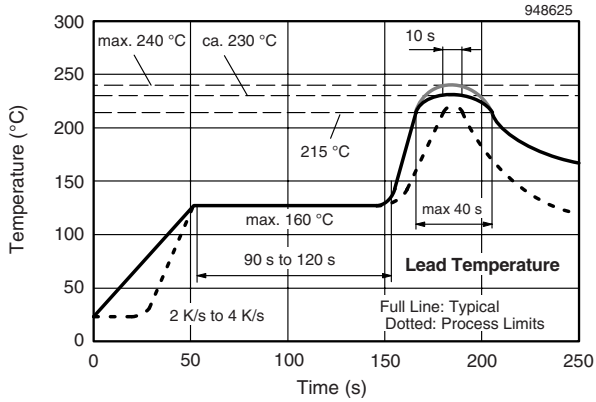


Figure 10. Lead Tin (SnPb) Reflow Solder Profile

Drypack

Devices are packed in moisture barrier bags (MBB) to prevent the products from moisture absorption during transportation and storage. Each bag contains a desiccant.

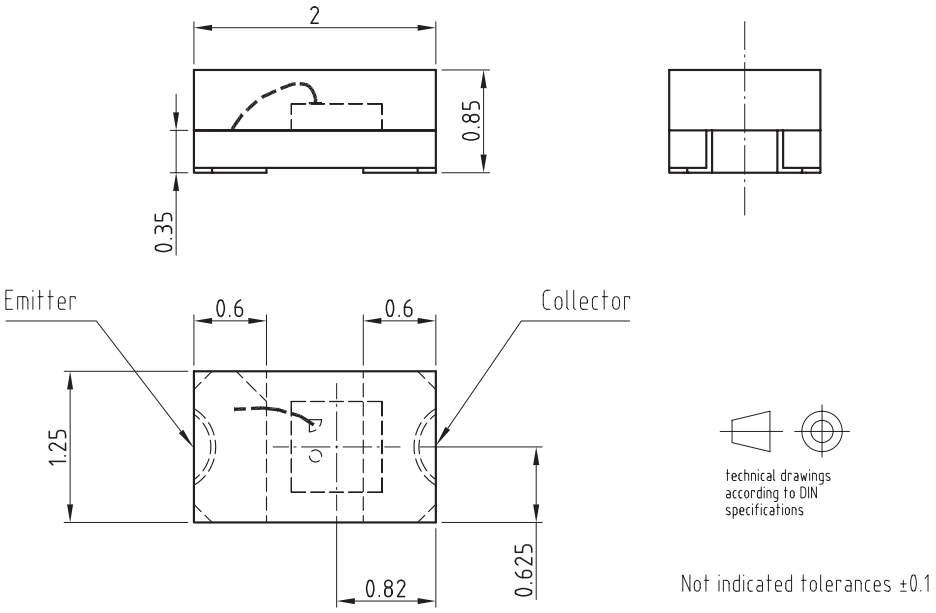
Floor Life

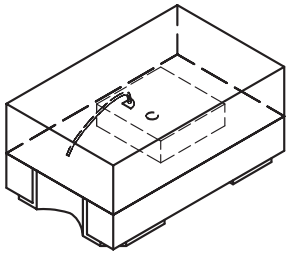
Time between soldering and removing from MBB must not exceed the time indicated in J-STD-020, Moisture sensitivity level 4:
Floor life: 72 h
Conditions: T_{amb} < 30 °C, RH < 60 %

Drying

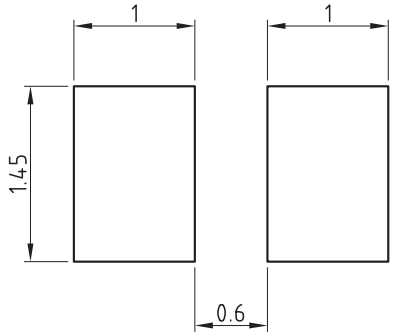
In case of moisture absorption devices should be baked before soldering. Conditions see J-STD-020 or label. Devices taped on reel dry using recommended conditions 192 h at 40 °C (+ 5 °C), RH < 5 %.

Package Dimensions in millimeters





Recommended solder pad
Footprint



Drawing-No.: 6.541-5063.01-4
Issue: 3; 23.02.07

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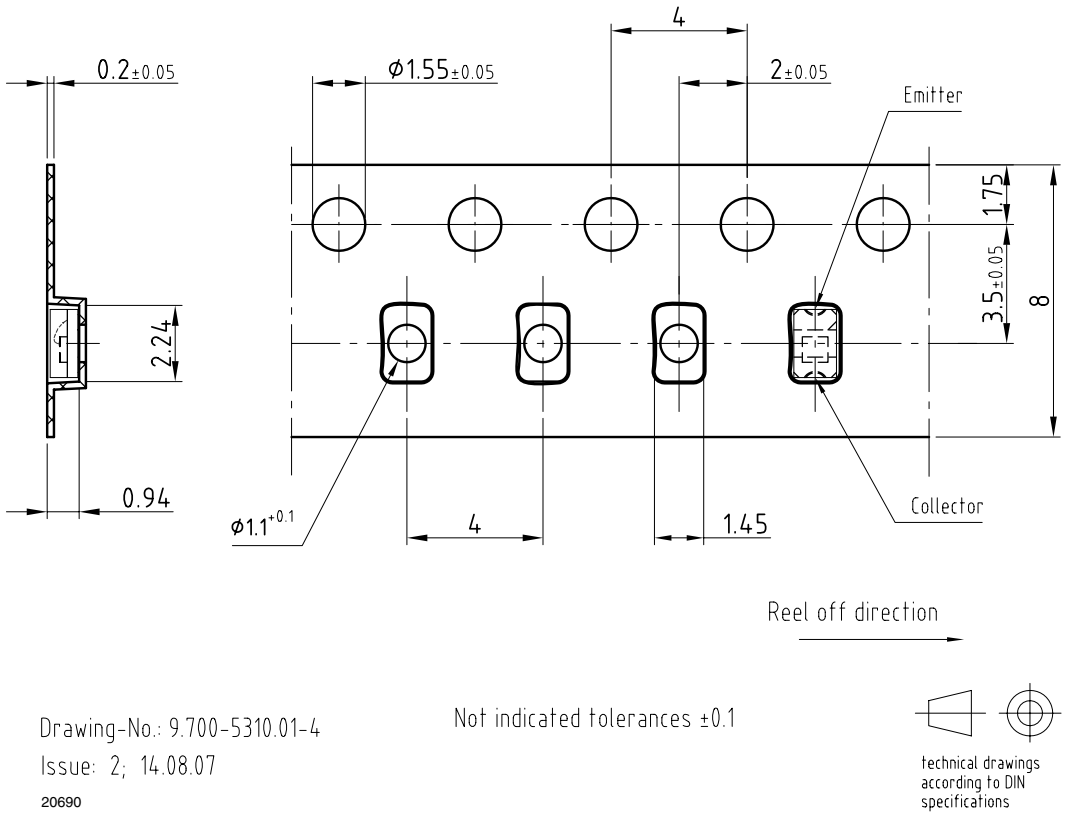
Blister Tape Dimensions in millimeters



Drawing-No.: 9.700-5310.01-4
Issue: 2; 14.08.07
20690

Not indicated tolerances ±0.1

technical drawings
according to DIN
specifications

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.

Vishay Semiconductor GmbH, P.O.B. 3535, D-74025 Heilbronn, Germany

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