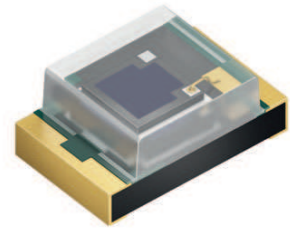


# Silicon NPN Phototransistor with $V_{\lambda}$ Characteristics

## Version 1.3

---

### SFH 3716



#### Features:

- **Spectral range of sensitivity:** (typ) 350 ... 950 nm
- **Special:** Adapted to human eye sensitivity ( $V_{\lambda}$ )
- Very small SMT package
- SMT package 0805, colorless clear resin, 2 mm x 1.25 mm x 0.8 mm

#### Applications

- For control and drive circuits
- Ambient light detector
- Exposure meter for daylight and artificial light
- Sensor for backlight-dimming

#### Ordering Information

Type:	Photocurrent $I_{PCE}$ [ $\mu$ A] $V_{CE} = 5$ V, white LED 100 lx	Ordering Code
SFH 3716	35 ... 64	Q65111A9149

**Maximum Ratings** ( $T_A = 25\text{ °C}$ )

Parameter	Symbol	Values	Unit
Operating and storage temperature range	$T_{op}; T_{stg}$	-40 ... 100	°C
Collector-emitter voltage	$V_{CE}$	5.5	V
Collector current	$I_C$	20	mA
Emitter-collector voltage	$V_{EC}$	0.5	V
ESD withstand voltage (acc. to ANSI/ ESDA/ JEDEC JS-001 - HBM)	$V_{ESD}$	2000	V

**Characteristics** ( $T_A = 25\text{ °C}$ )

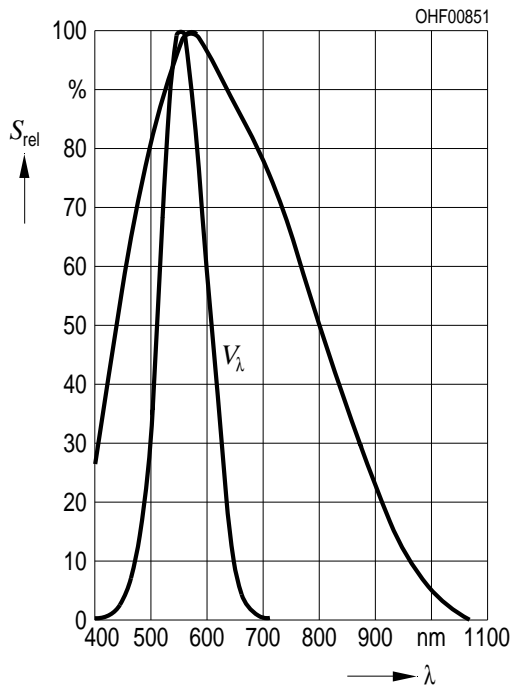
Parameter		Symbol	Values	Unit
Wavelength of max. sensitivity	(typ)	$\lambda_{S\ max}$	570	nm
Spectral range of sensitivity	(typ)	$\lambda_{10\%}$	(typ) 350 ... 950	nm
Radiant sensitive area	(typ)	A	0.29	mm <sup>2</sup>
Dimensions of chip area	(typ)	L x W	(typ) 0.75 x 0.75	mm x mm
Half angle	(typ)	$\varphi$	± 60	°
Capacitance ( $V_{CE} = 0\text{ V}$ , $f = 1\text{ MHz}$ , $E = 0$ )	(typ)	$C_{CE}$	4	pF
Photocurrent ( $V_{CE} = 5\text{ V}$ , white LED 100 lx)		$I_{PCE}$	35 ... 64	μA
Dark current ( $V_{CE} = 5\text{ V}$ , $E = 0$ )	(typ (max))	$I_{CE0}$	3 (≤ 50)	nA
Temperature coefficient (Std. Light A)	(typ)	TC	0.9	% / K
Temperature coefficient ( $\lambda = 550\text{ nm}$ )	(typ)	TC	0.78	% / K

Grouping ( $T_A = 25\text{ °C}$ )

Group	Min Photocurrent	Max Photocurrent
	White LED 100 lx	White LED 100 lx
	$I_{PCE, min}$ [ $\mu\text{A}$ ]	$I_{PCE, max}$ [ $\mu\text{A}$ ]
SFH 3716	35	64

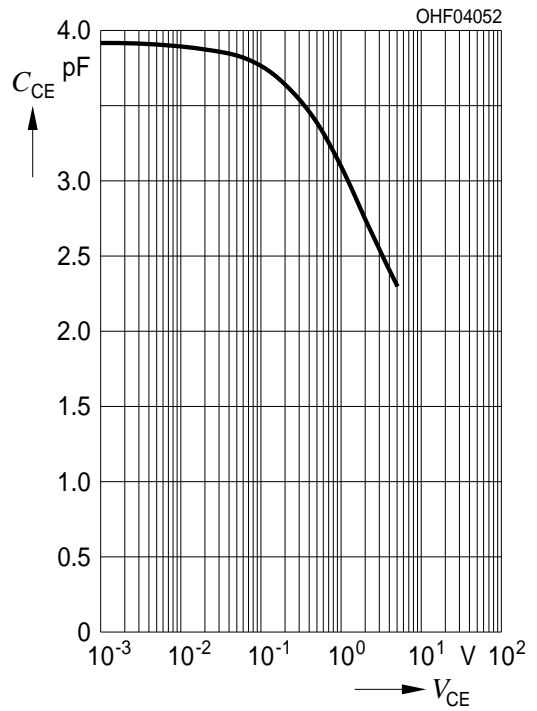
Relative Spectral Sensitivity <sup>1) page 11</sup>

$S_{rel} = f(\lambda)$



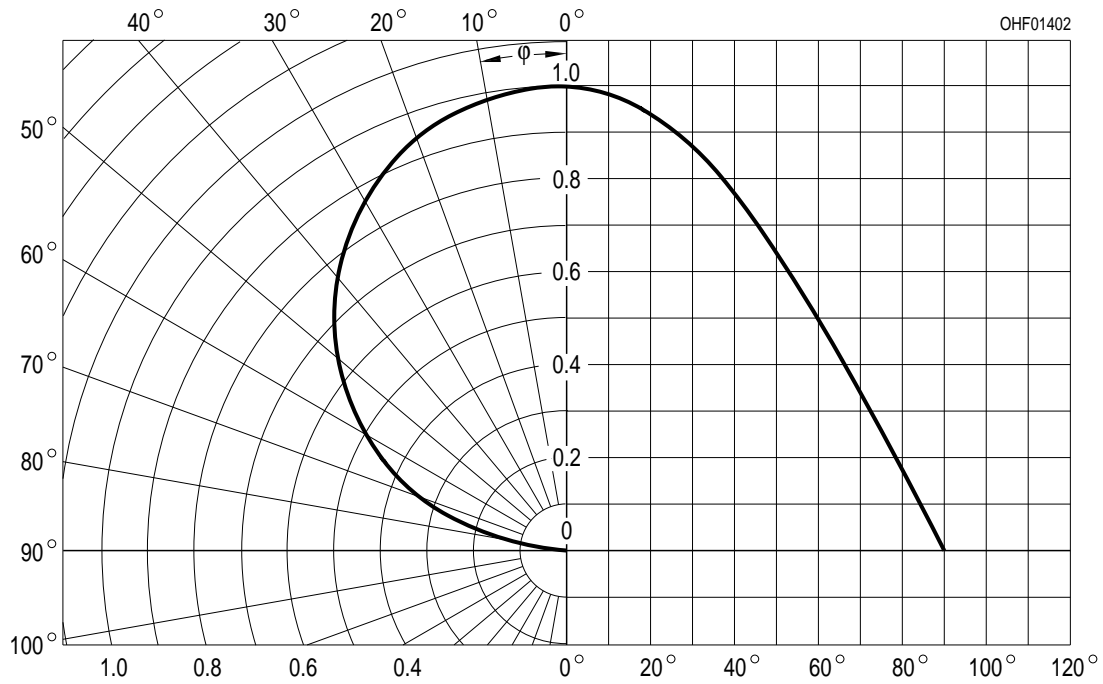
Collector-Emitter Capacitance <sup>1) page 11</sup>

$C_{CE} = f(V_{CE}), f = 1\text{ MHz}, E = 0$

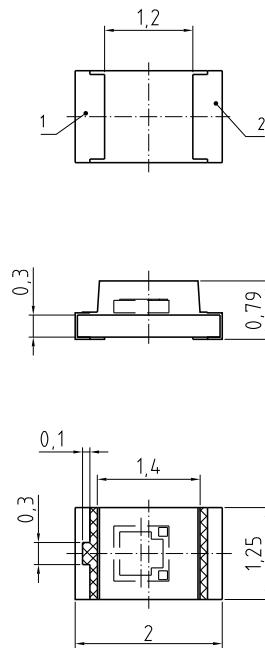


**Directional Characteristics** <sup>1) page 11</sup>

$S_{rel} = f(\phi)$



**Package Outline**



general tolerance  $\pm 0.1$   
 solder resist area

E062.586101-01

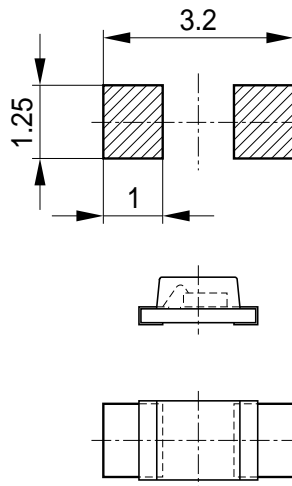
Dimensions in mm.

**Pinning**

Pin	Description
1	Collector
2	Emitter

**Approximate Weight:**

3.76 mg

**Recommended Solder Pad**

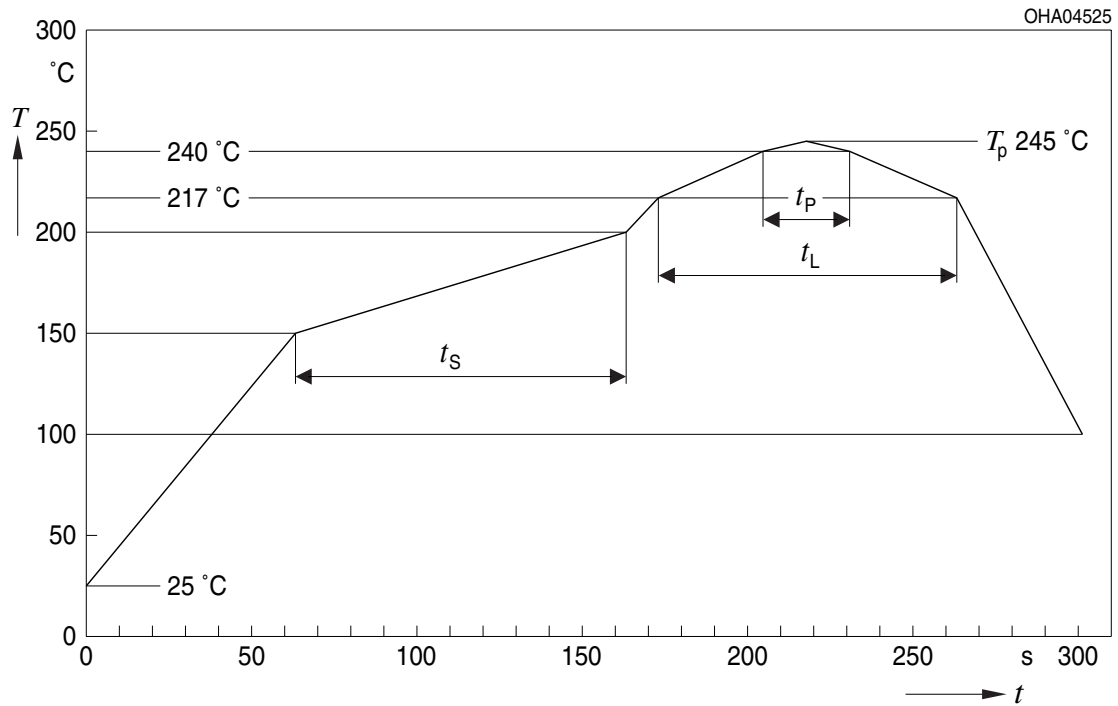
Bauteil positioniert  
Component location on pad

OHFP2578

Dimensions in mm.

### Reflow Soldering Profile

Product complies to MSL Level 3 acc. to JEDEC J-STD-020D.01



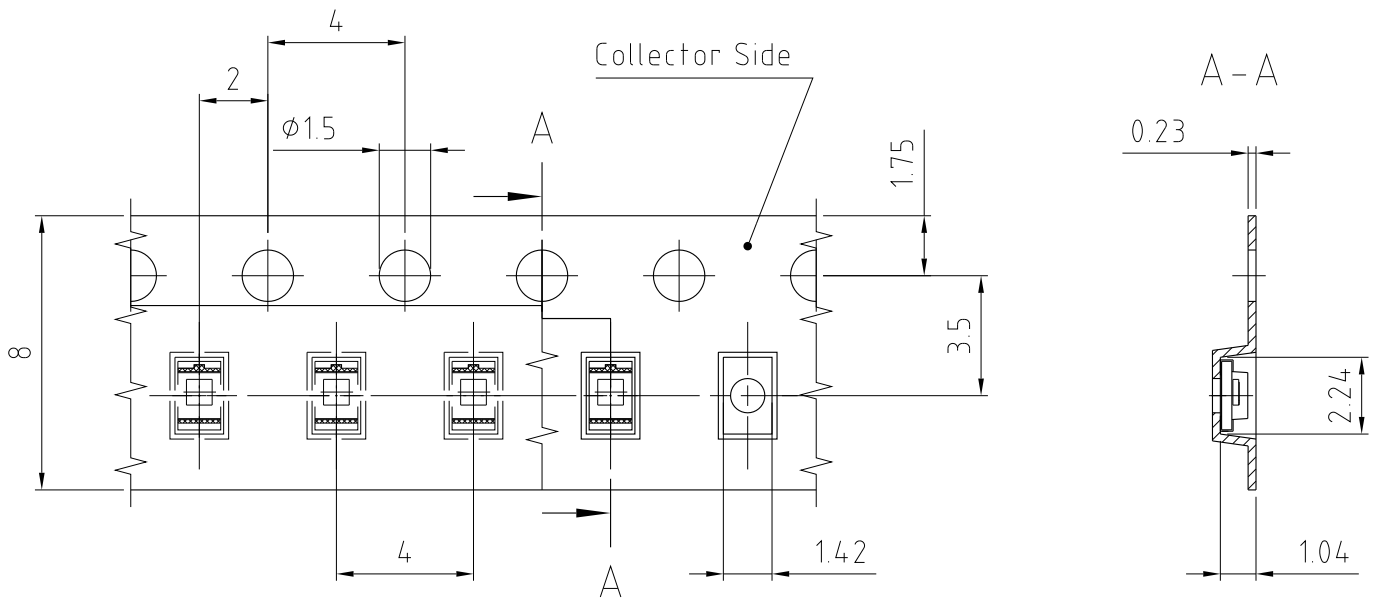
OHA04612

Profile Feature Profil-Charakteristik	Symbol Symbol	Pb-Free (SnAgCu) Assembly			Unit Einheit
		Minimum	Recommendation	Maximum	
Ramp-up rate to preheat*) 25 °C to 150 °C			2	3	K/s
Time $t_S$ $T_{Smin}$ to $T_{Smax}$	$t_S$	60	100	120	s
Ramp-up rate to peak*) $T_{Smax}$ to $T_P$			2	3	K/s
Liquidus temperature	$T_L$	217			°C
Time above liquidus temperature	$t_L$		80	100	s
Peak temperature	$T_P$		245	260	°C
Time within 5 °C of the specified peak temperature $T_P - 5$ K	$t_P$	10	20	30	s
Ramp-down rate* $T_P$ to 100 °C			3	6	K/s
Time 25 °C to $T_P$				480	s

All temperatures refer to the center of the package, measured on the top of the component

\* slope calculation  $DT/Dt$ :  $Dt$  max. 5 s; fulfillment for the whole T-range

**Taping**

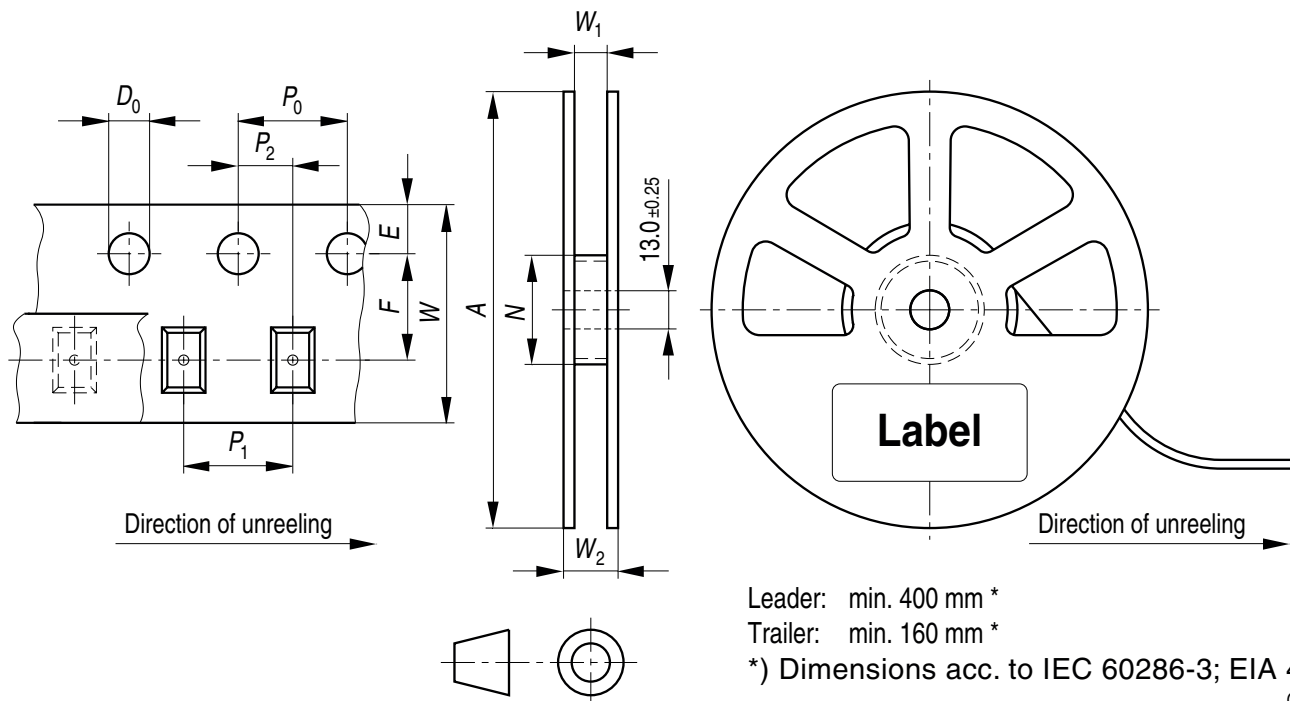


C63062-A4309-B1-01

*Dimensions in mm (inch).*

**Tape and Reel**

8 mm tape with 3000 pcs. on  $\phi$  180 mm reel



## Tape dimensions [mm]

W	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	D <sub>0</sub>	E	F
8 + 0.3 / -0.1	4 ± 0.1	2 ± 0.05 or 4 ± 0.1	2 ± 0.05	1.5 ± 0.1	1.75 ± 0.1	3.5 ± 0.05

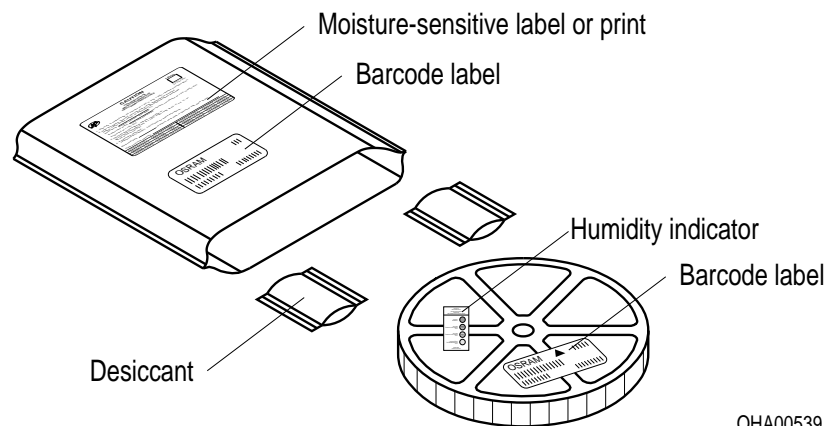
## Reel dimensions [mm]

A	W	N <sub>min</sub>	W <sub>1</sub>	W <sub>2max</sub>
180	8	60	8.4 + 2	14.4

## Barcode-Product-Label (BPL)



## Dry Packing Process and Materials

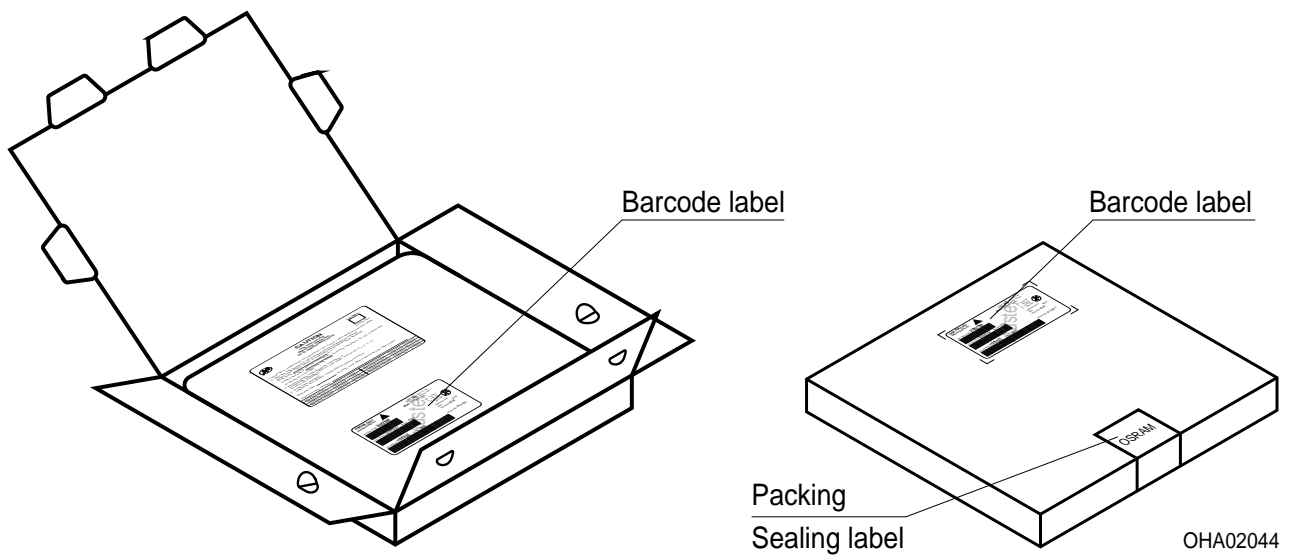


## Note:

Moisture-sensitive product is packed in a dry bag containing desiccant and a humidity card. Regarding dry pack you will find further information in the internet. Here you will also find the normative references like JEDEC.



## Transportation Packing and Materials



## Dimensions of transportation box in mm

Width	Length	Height
200 ± 5	195 ± 5	30 ± 5

**Disclaimer**

Language english will prevail in case of any discrepancies or deviations between the two language wordings.

**Attention please!**

The information describes the type of component and shall not be considered as assured characteristics.

Terms of delivery and rights to change design reserved. Due to technical requirements components may contain dangerous substances.

For information on the types in question please contact our Sales Organization.

If printed or downloaded, please find the latest version in the Internet.

**Packing**

Please use the recycling operators known to you. We can also help you – get in touch with your nearest sales office.

By agreement we will take packing material back, if it is sorted. You must bear the costs of transport. For packing material that is returned to us unsorted or which we are not obliged to accept, we shall have to invoice you for any costs incurred.

**Components used in life-support devices or systems must be expressly authorized for such purpose!**

Critical components\* may only be used in life-support devices\*\* or systems with the express written approval of OSRAM OS.

\*) A critical component is a component used in a life-support device or system whose failure can reasonably be expected to cause the failure of that life-support device or system, or to affect its safety or the effectiveness of that device or system.

\*\*) Life support devices or systems are intended (a) to be implanted in the human body, or (b) to support and/or maintain and sustain human life. If they fail, it is reasonable to assume that the health and the life of the user may be endangered.

**Glossary**

- <sup>1)</sup> **Typical Values:** Due to the special conditions of the manufacturing processes of LED, the typical data or calculated correlations of technical parameters can only reflect statistical figures. These do not necessarily correspond to the actual parameters of each single product, which could differ from the typical data and calculated correlations or the typical characteristic line. If requested, e.g. because of technical improvements, these typ. data will be changed without any further notice.

**Published by OSRAM Opto Semiconductors GmbH**  
**Leibnizstraße 4, D-93055 Regensburg**  
**www.osram-os.com © All Rights Reserved.**

EU RoHS and China RoHS compliant product



此产品符合欧盟 RoHS 指令的要求；  
按照中国的相关法规和标准，不含有毒有害物质或元素。

Компания «Life Electronics» занимается поставками электронных компонентов импортного и отечественного производства от производителей и со складов крупных дистрибьюторов Европы, Америки и Азии.

С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибьюторских договоров

Мы предлагаем:

- Конкурентоспособные цены и скидки постоянным клиентам.
- Специальные условия для постоянных клиентов.
- Подбор аналогов.
- Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.
- Приемлемые сроки поставки, возможна ускоренная поставка.
- Доставку товара в любую точку России и стран СНГ.
- Комплексную поставку.
- Работу по проектам и поставку образцов.
- Формирование склада под заказчика.
- Сертификаты соответствия на поставляемую продукцию (по желанию клиента).
- Тестирование поставляемой продукции.
- Поставку компонентов, требующих военную и космическую приемку.
- Входной контроль качества.
- Наличие сертификата ISO.

В составе нашей компании организован Конструкторский отдел, призванный помогать разработчикам, и инженерам.

Конструкторский отдел помогает осуществить:

- Регистрацию проекта у производителя компонентов.
- Техническую поддержку проекта.
- Защиту от снятия компонента с производства.
- Оценку стоимости проекта по компонентам.
- Изготовление тестовой платы монтаж и пусконаладочные работы.



Тел: +7 (812) 336 43 04 (многоканальный)

Email: [org@lifeelectronics.ru](mailto:org@lifeelectronics.ru)