

Photo Modules for PCM Remote Control Systems

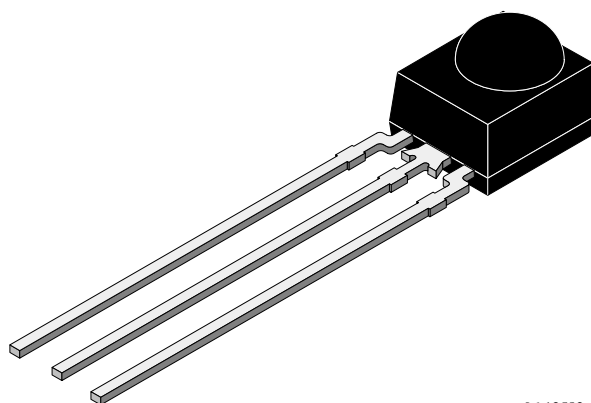
Available types for different carrier frequencies

Type	fo	Type	fo
TSOP1830SS3V	30 kHz	TSOP1833SS3V	33 kHz
TSOP1836SS3V	36 kHz	TSOP1837SS3V	36.7 kHz
TSOP1838SS3V	38 kHz	TSOP1840SS3V	40 kHz
TSOP1856SS3V	56 kHz		

Description

The TSOP18.. – series are miniaturized receivers for infrared remote control systems. PIN diode and pre-amplifier are assembled on lead frame, the epoxy package is designed as IR filter.

The demodulated output signal can directly be decoded by a microprocessor. The main benefit is the reliable function even in disturbed ambient and the protection against uncontrolled output pulses.



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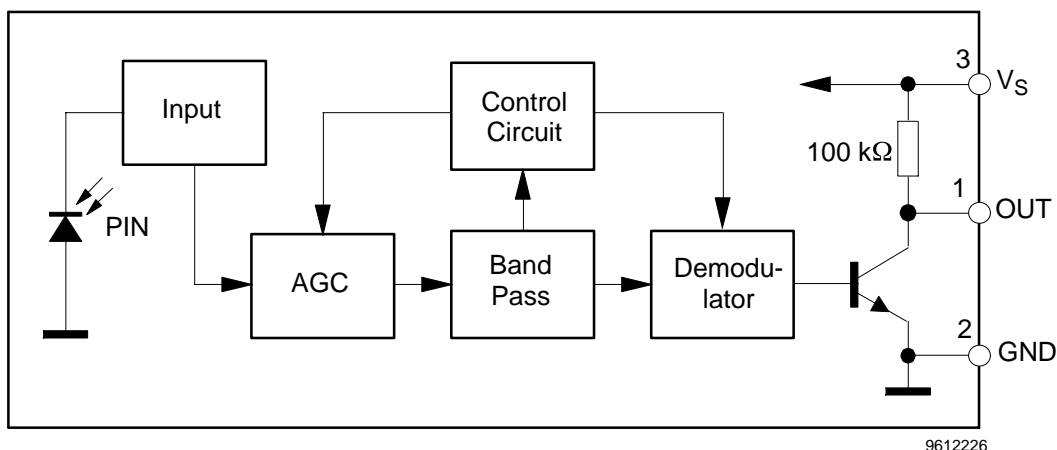
Features

- Photo detector and preamplifier in one package
- Internal filter for PCM frequency
- TTL and CMOS compatibility
- Output active low
- Improved shielding against electrical field disturbance
- Suitable burst length ≥ 6 cycles/burst

Special Features

- Small size package
- Supply voltage 3–6 Volt
- Enhanced immunity against all kinds of disturbance light
- No occurrence of disturbance pulses at the output
- Short settling time after power on ($< 200 \mu s$)

Block Diagram



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Absolute Maximum Ratings

$T_{amb} = 25^{\circ}\text{C}$

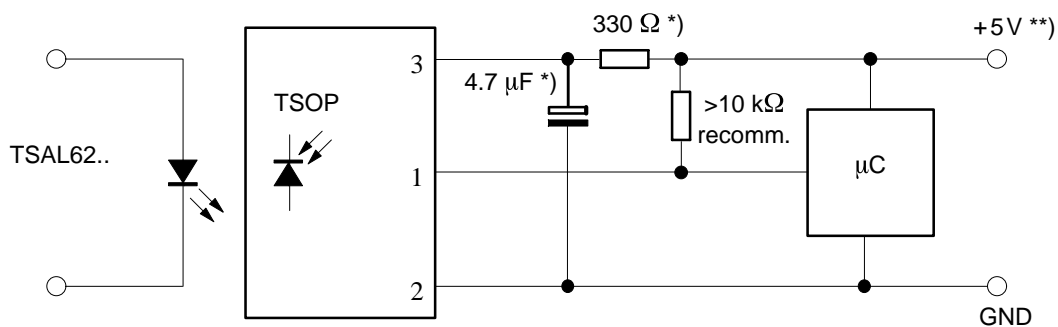
Parameter	Test Conditions	Symbol	Value	Unit
Supply Voltage	(Pin 3)	V_S	-0.3...6.0	V
Supply Current	(Pin 3)	I_S	5	mA
Output Voltage	(Pin 1)	V_O	-0.3...6.0	V
Output Current	(Pin 1)	I_O	5	mA
Junction Temperature		T_j	100	$^{\circ}\text{C}$
Storage Temperature Range		T_{stg}	-25...+85	$^{\circ}\text{C}$
Operating Temperature Range		T_{amb}	-25...+85	$^{\circ}\text{C}$
Power Consumption	($T_{amb} \leq 85^{\circ}\text{C}$)	P_{tot}	50	mW
Soldering Temperature	$t \leq 10\text{ s}$, 1 mm from case	T_{sd}	260	$^{\circ}\text{C}$

Basic Characteristics

$T_{amb} = 25^{\circ}\text{C}$

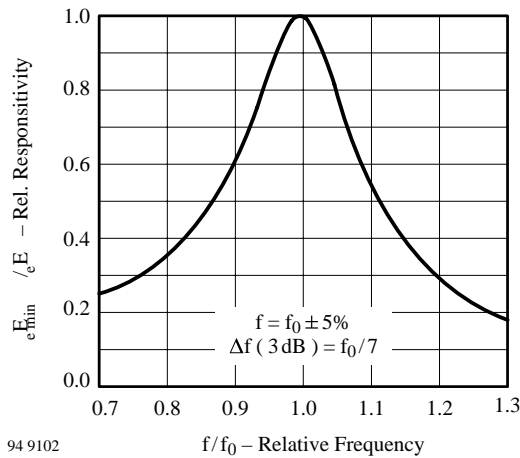
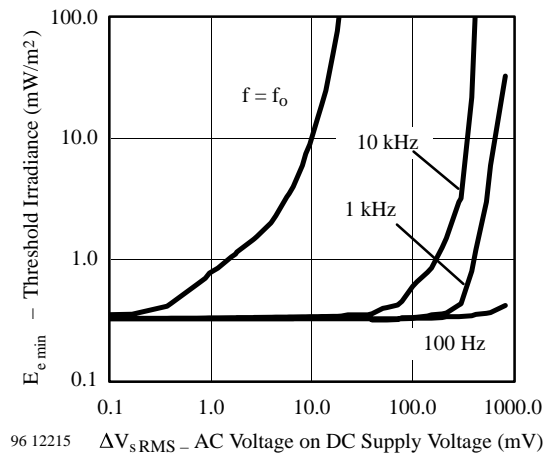
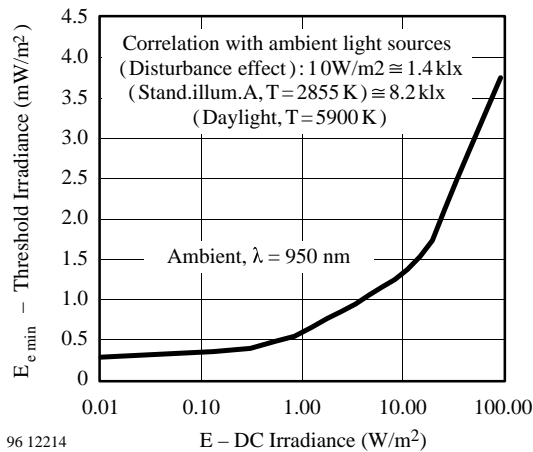
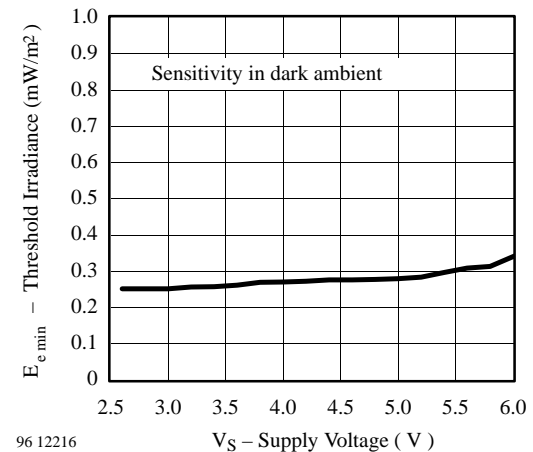
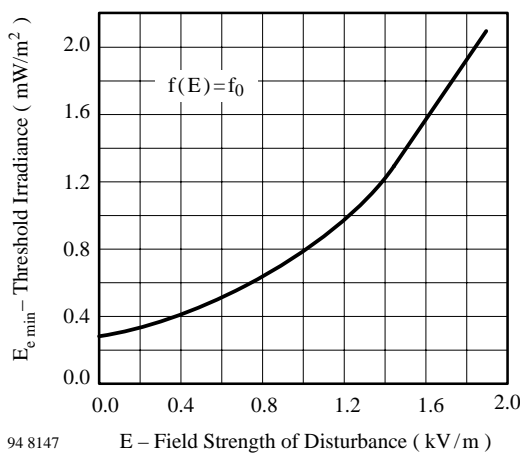
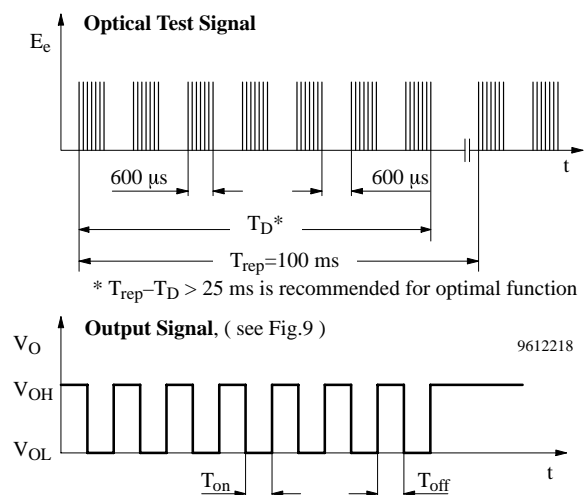
Parameter	Test Conditions	Symbol	Min	Typ	Max	Unit
Supply Current (Pin 3)	$V_S = 5\text{ V}$, $E_v = 0$	I_{SD}	0.8	1	1.2	mA
	$V_S = 5\text{ V}$, $E_v = 40\text{ klx}$, sunlight	I_{SH}		1.2		mA
Transmission Distance	$E_v = 0$, test signal see fig.6, IR diode TSAL6200, $I_F = 300\text{ mA}$	d		35		m
Output Voltage Low (Pin 1)	$I_{OSL} = 0.5\text{ mA}$, $E_e = 0.7\text{ mW/m}^2$, $f = f_o$	V_{OSL}			250	mV
Irradiance (30 – 40 kHz)	Pulse width tolerance: $t_{pi} - 5/f_o < t_{po} < t_{pi} + 5/f_o$, test signal (see fig.6)	$E_{e\text{ min}}$		0.3	0.5	mW/m^2
Irradiance (56 kHz)	Pulse width tolerance: $t_{pi} - 5/f_o < t_{po} < t_{pi} + 5/f_o$, test signal (see fig.6)	$E_{e\text{ min}}$		0.4	0.7	mW/m^2
Irradiance		$E_{e\text{ max}}$	30			W/m^2
Directivity	Angle of half transmission distance	$\phi_{1/2}$		± 45		deg

Application Circuit



*) only necessary to suppress power supply disturbances

**) tolerated supply voltage range : $3\text{ V} < V_S < 6\text{ V}$

Typical Characteristics ($T_{amb} = 25^{\circ}\text{C}$ unless otherwise specified)

Figure 1. Frequency Dependence of Responsivity

Figure 4. Sensitivity vs. Supply Voltage Disturbances

Figure 2. Sensitivity in Bright Ambient

Figure 5. Sensitivity vs. Supply Voltage

Figure 3. Sensitivity vs. Electric Field Disturbances

Figure 6. Output Function

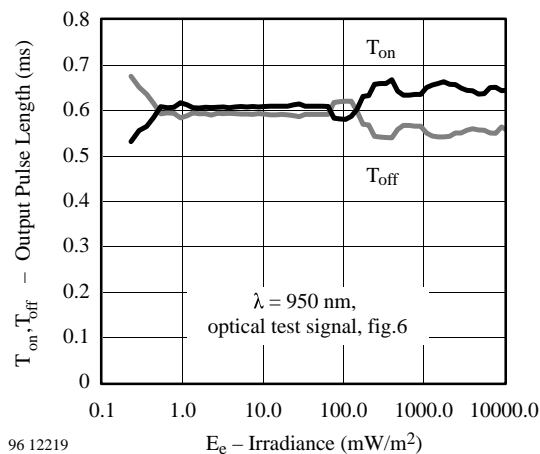


Figure 7. Output Pulse Diagram

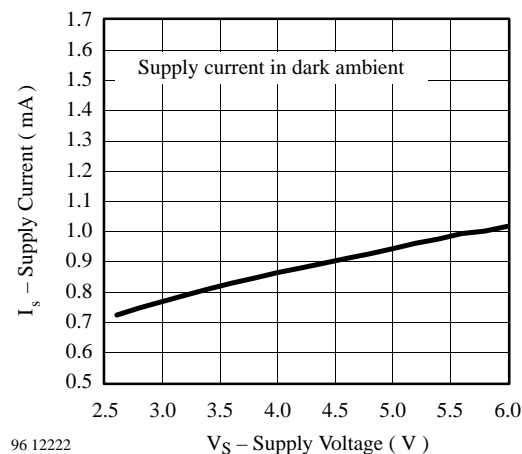


Figure 10. Supply Current vs. Supply Voltage

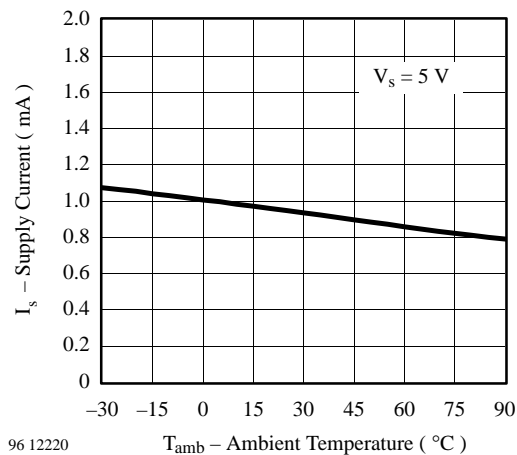


Figure 8. Supply Current vs. Ambient Temperature

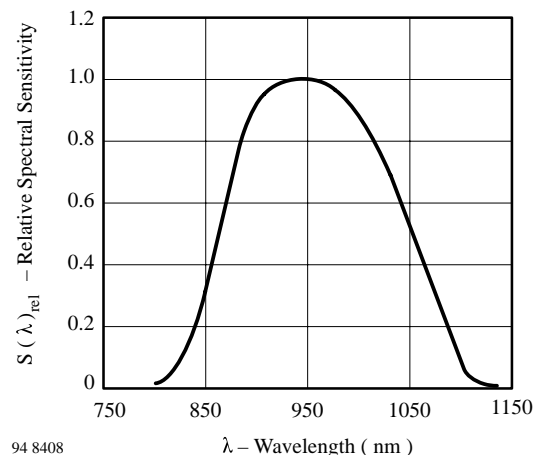


Figure 11. Relative Spectral Sensitivity vs. Wavelength

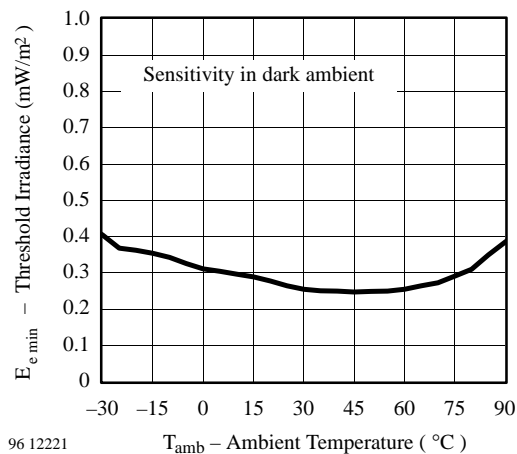


Figure 9. Sensitivity vs. Ambient Temperature

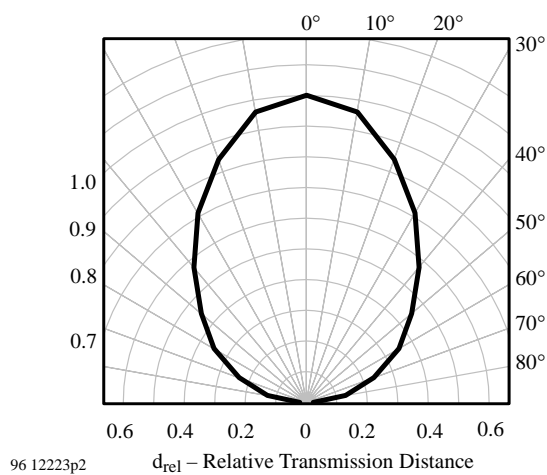
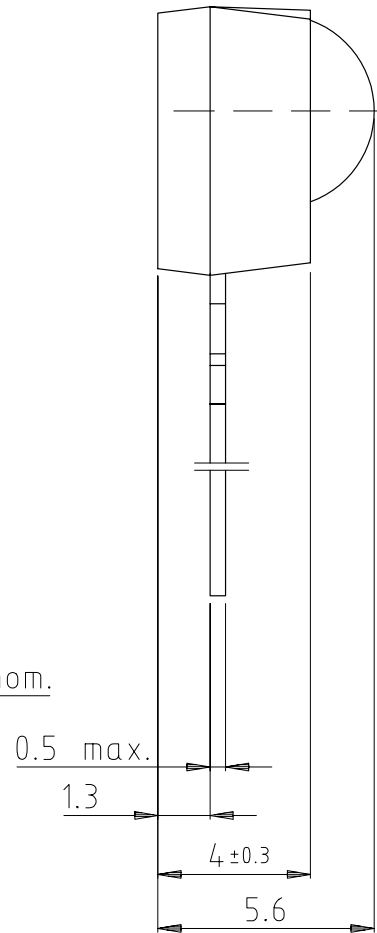
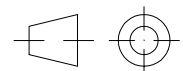


Figure 12. Directivity

The drawing shows the mechanical specifications for the 74VHC00 package. The top view is a square with a side length of 6 mm. The overall height of the package is 8.25 mm, with a mounting tab height of 5.55 mm. The mounting tab has a width of 1 mm. The package has three pins: OUT, GND, and Vcc. The pin pitch is 2.54 mm (nominal). The pin width is 0.85 mm (maximum). The pin height is 0.7 mm (maximum). The pin spacing is 2.54 mm (nominal). The pin diameter is 0.5 mm. The side view shows a rounded bottom with a radius of R2.5. A marking area is indicated on the side view.



Not indicated tolerances ± 0.2



technical drawings
according to DIN
specifications

9612211



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.

We reserve the right to make changes to improve technical design and may do so without further notice.

Parameters can vary in different applications. All operating parameters must be validated for each customer application by the customer. Should the buyer use Vishay-Telefunken products for any unintended or unauthorized application, the buyer shall indemnify Vishay-Telefunken against all claims, costs, damages, and expenses, arising out of, directly or indirectly, any claim of personal damage, injury or death associated with such unintended or unauthorized use.

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