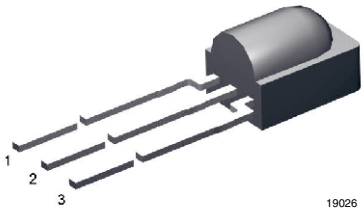
IR Sensor Module for Remote Control Systems



FEATURES

- Photo detector and preamplifier in one package
- AC coupled response from 20 kHz to 455 kHz, all data formats
- Improved shielding against electrical field disturbance
- TTL and CMOS compatibility
- Output active low
- Supply voltage: 2.7 V to 5.5 V
- Carrier out signal for code learning functions
- Compliant to RoHS Directive 2011/65/EU and in accordance to WEEE 2002/96/EC

Pb-free

e3

RoHS COMPLIANT

GREEN (5-2008)**

Note

** Please see document “Vishay Material Category Policy”: www.vishay.com/doc?99902

MECHANICAL DATA

Pinning:

1 = Carrier OUT, 2 = GND, 3 = V_S

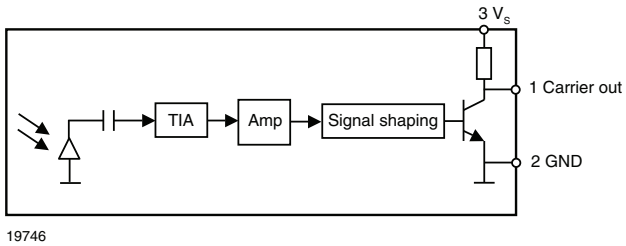
DESCRIPTION

The TSOP98200 is a miniaturized sensor for receiving the modulated signal of infrared remote control systems. A PIN diode and preamplifier are assembled on a lead frame, the epoxy package is designed as an IR filter. The modulated output signal, carrier out, can be used for code learning applications.

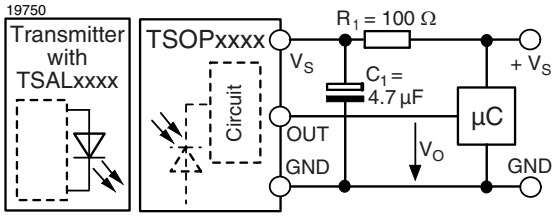
This component has not been qualified according to automotive specifications.

PARTS TABLE	
CARRIER FREQUENCY	CODE LEARNING APPLICATIONS
20 kHz to 455 kHz	TSOP98200

BLOCK DIAGRAM



APPLICATION CIRCUIT



R_1 + C_1 recommended to suppress power supply disturbances.

ABSOLUTE MAXIMUM RATINGS				
PARAMETER	**TEST CONDITION**	**SYMBOL**	**VALUE**	**UNIT**
Supply voltage (pin 3)		V_S	- 0.3 to + 5.5	V
Output voltage (pin 1)		V_O	- 0.3 to (V_S + 0.3)	V
Output current (pin 1)		I_O	10	mA
Junction temperature		T_j	100	°C
Storage temperature range		T_{stg}	- 25 to + 85	°C
Operating temperature range		T_{amb}	- 25 to + 85	°C
Soldering temperature	t ≤ 10 s, 1 mm from case	T_{sd}	260	°C

Note

- T_{amb} = 25 °C, unless otherwise specified
  Stresses beyond those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect the device reliability.

ELECTRICAL AND OPTICAL CHARACTERISTICS CARRIER OUT (1)						
PARAMETER	**TEST CONDITION**	**SYMBOL**	**MIN.**	**TYP.**	**MAX.**	**UNIT**
Supply current (pin 3)	E_v = 0	I_{SD}		0.6	0.8	mA
Supply voltage		V_S	2.7		5.5	V
Transmission distance	E_v = 0, test signal see fig. 1, IR diode TSAL6200, I_F = 400 mA	d		1		m
Output voltage low (pin 1)	I_{OSL} = 0.5 mA, test signal see fig. 1	V_{OSL}			250	mV
Minimum irradiance	V_S = 3 V, (20 kHz to 60 kHz (2))	$E_{e\ min.}$		0.3	0.5	W/m²
Maximum irradiance	Test signal see fig. 1, (20 kHz to 60 kHz (2))	$E_{e\ max.}$	300	500		W/m²
Directivity	Angle of half transmission distance	$\varphi_{1/2}$		± 45		deg
Carrier out rise time	V_S = 3 V, C_L = 10 pF	T_R		100		ns
Carrier out fall time	V_S = 3 V, C_L = 10 pF	T_F		10		ns
Output pulse width	T_{PI} = 10 µs, C_L = 10 pF	T_{PO}	0.6	1.1	1.6	µs

Notes

(1) T_{amb} = 25 °C, unless otherwise specified, V_S = 3 V

(2) These irradiance values are guaranteed to 60 kHz. The TSOP98200 will continue to function up to frequencies higher than 600 kHz, however the irradiance at frequencies above 60 kHz is dependent on the carrier frequency and the pulse pattern received.
Typical $E_{e\ min.}$ = 2 W/m² at 455 kHz.

TYPICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)

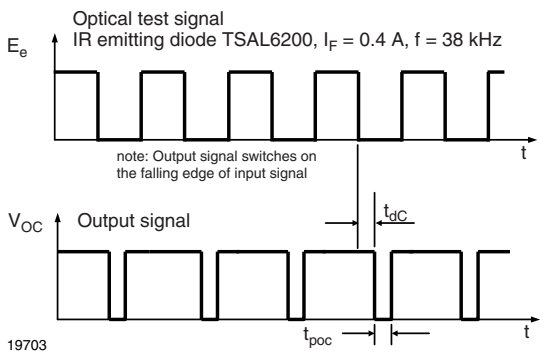


Fig. 1 - Carrier Output Pulse Diagram

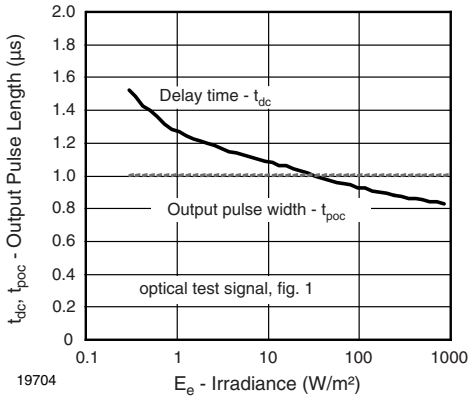


Fig. 2 - Carrier Output Function Diagram

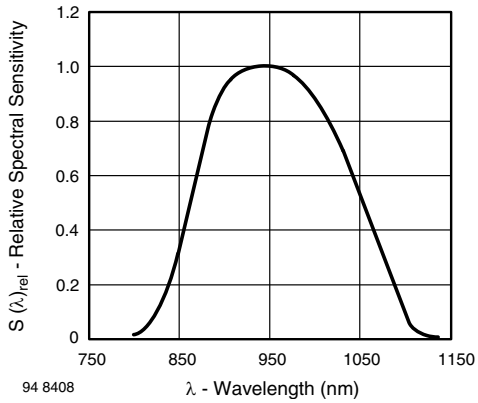


Fig. 3 - Relative Spectral Sensitivity vs. Wavelength

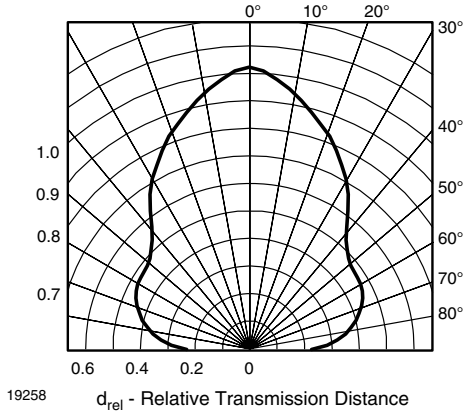


Fig. 4 - Horizontal Directivity

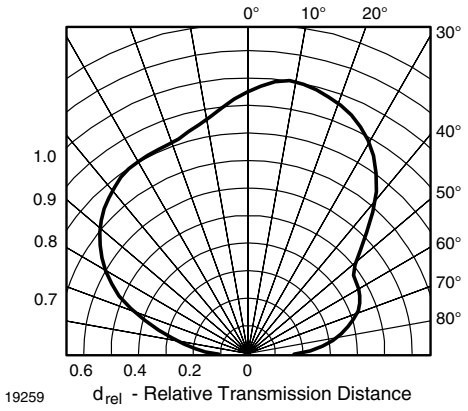
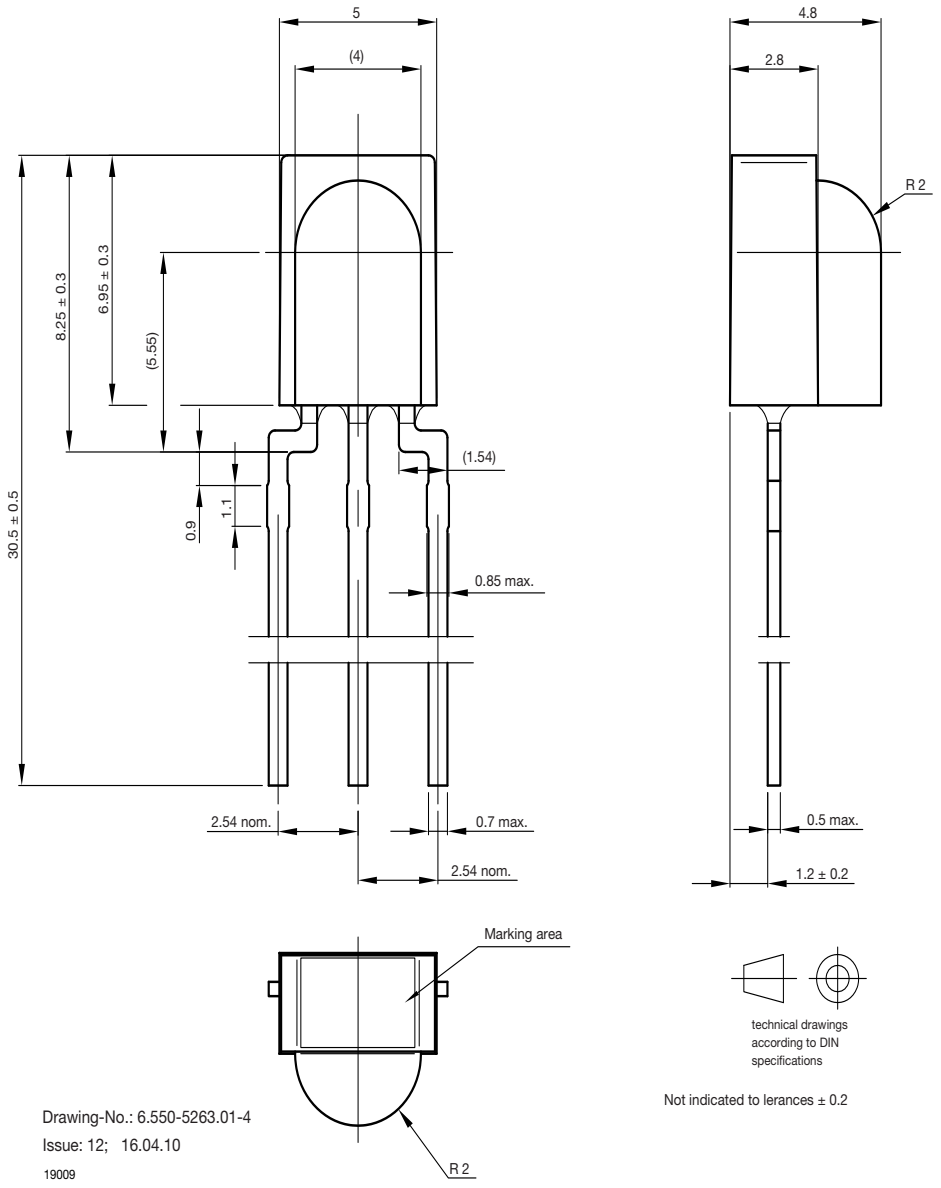


Fig. 5 - Vertical Directivity

PACKAGE DIMENSIONS in millimeters



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