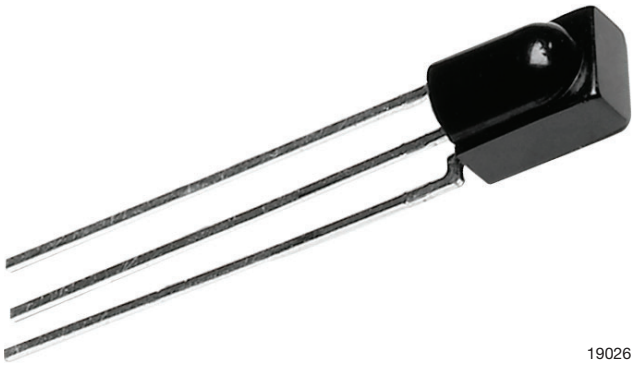
IR Sensor Module for Remote Control Systems



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LINKS TO ADDITIONAL RESOURCES

Product Page | Marking | Packages | Holders | Bends and Cuts

DESCRIPTION

The TSMP98000 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.

FEATURES

- Photo detector and preamplifier in one package
- AC coupled response from 30 kHz to 60 kHz, all data formats
- Improved shielding against electrical field disturbance
- TTL and CMOS compatibility
- Output active low
- Supply voltage 2.0 V to 5.5 V
- Carrier out signal for code learning functions
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb-free

e3

RoHS COMPLIANT

HALOGEN FREE GREEN (5-2008)

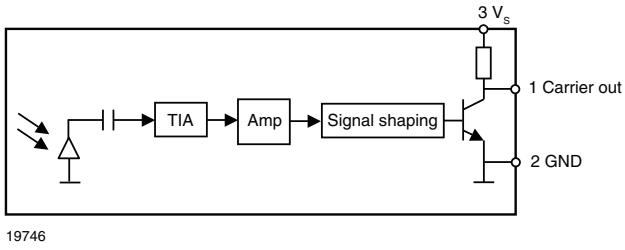
APPLICATIONS

- Infrared code learning

DESIGN SUPPORT TOOLS

- 3D models
- Window size calculator

BLOCK DIAGRAM



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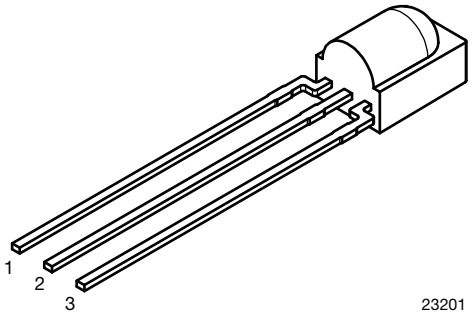
MECHANICAL DATA

Pinning:

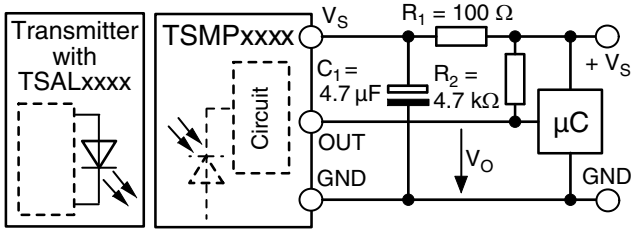
1 = carrier OUT, 2 = GND, 3 = V_S



ORDERING CODE

TSMP98000 - 1500 pieces in bags

APPLICATION CIRCUIT



R_1 + C_1 recommended to suppress power supply disturbances.
R_2 recommended to get faster slopes and a correct high level of the output pulses.

PARTS TABLE		
Carrier frequency	30 kHz to 60 kHz	TSMP98000
Package		Minicast
Pinning		1 = carrier OUT, 2 = GND, 3 = V_S
Dimensions (mm)		5.0 W x 6.95 H x 4.8 D
Mounting		Leaded
Application		Code learning

ABSOLUTE MAXIMUM RATINGS (T_{amb} = 25 °C, unless otherwise specified)

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Supply voltage (pin 3)		V_S	-0.3 to +6	V
Output voltage (pin 1)		V_O	-0.3 to (V_S + 0.3)	V
Output current (pin 1)		I_O	5	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

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

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply current (pin 3)	V_S = 3.3 V, E_v = 0	I_{SD}	0.25	0.35	0.45	mA
Supply voltage		V_S	2.0	-	5.5	V
Transmission distance	E_v = 0, test signal see Fig. 1, IR diode TSAL6200, I_F = 50 mA	d	-	1.8	-	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, (30 kHz to 60 kHz)	$E_{e\ min.}$	-	12	25	mW/m²
Maximum irradiance	Test signal see Fig. 1, (30 kHz to 60 kHz)	$E_{e\ max.}$	30	-	-	W/m²
Directivity	Angle of half transmission distance	$\varphi_{1/2}$	-	± 45	-	deg
Output accuracy	f_C = 30 kHz to 60 kHz, E_e = 25 mW/m² to 30 W/m², test signal see Fig. 1, BER ≤ 2%	N carrier pulses	input burst length - 1 cycle	input burst length	input burst length + 1 cycle	counts

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

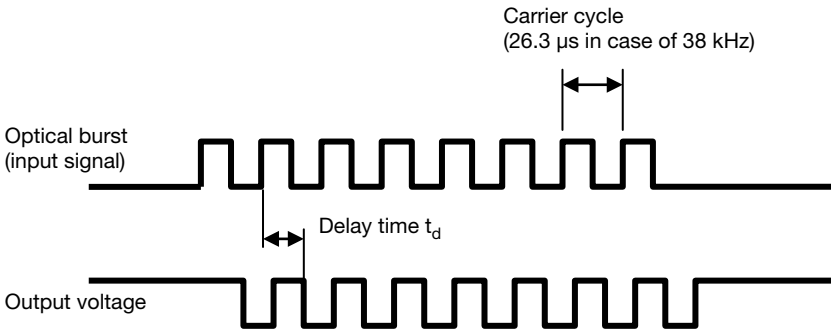

Fig. 1 - Testsignal

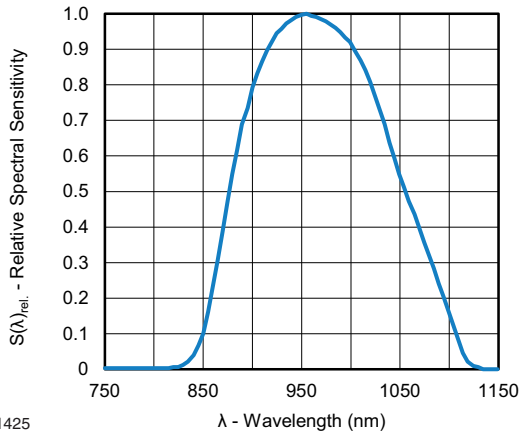

Fig. 2 - Relative Spectral Sensitivity vs. Wavelength

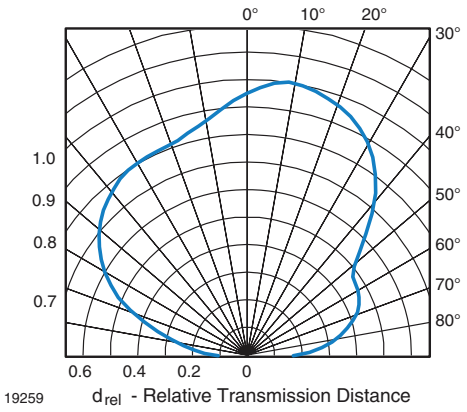

Fig. 4 - Vertical Directivity

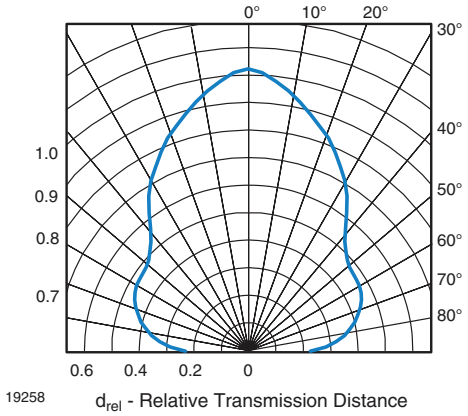

Fig. 3 - Horizontal Directivity

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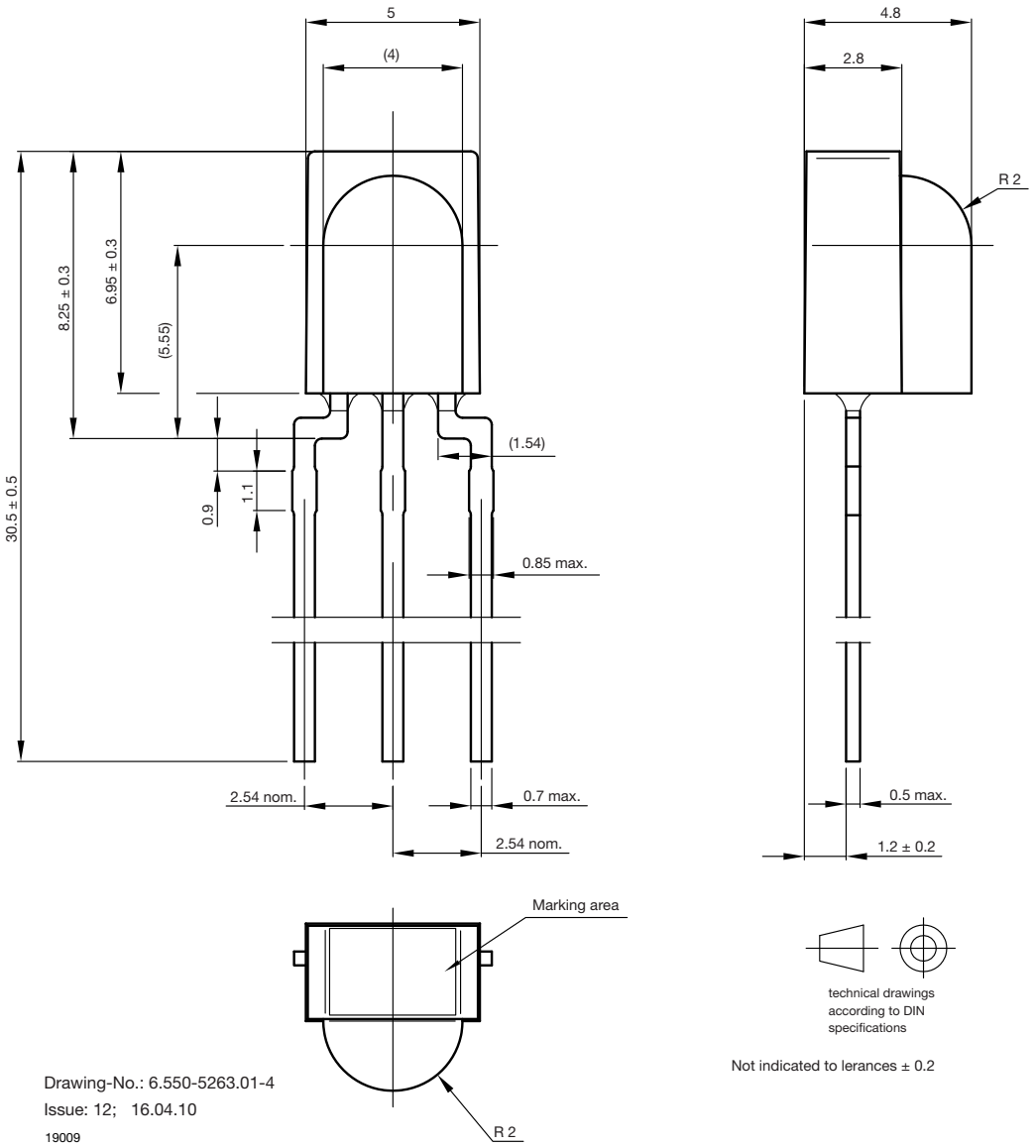
PACKAGE DIMENSIONS in millimeters



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