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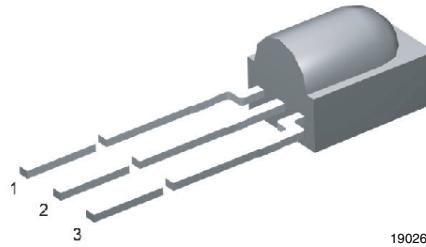
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[Vishay Semiconductor/Opto Division](#)
[TSMP58000](#)

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IR Sensor Module for Remote Control Systems



19026



RoHS
COMPLIANT
HALOGEN
FREE
GREEN
(S-2008)

FEATURES

- Photo detector and preamplifier in one package
- AC coupled response from 20 kHz to 60 kHz, all data formats
- Improved shielding against electrical field disturbance
- TTL and CMOS compatibility
- Output active low
- Supply voltage 2.5 V to 5.5 V, typically the device works in the range between 2.0 V and 5.5 V
- Carrier out signal for code learning functions
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

MECHANICAL DATA

Pinning:

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

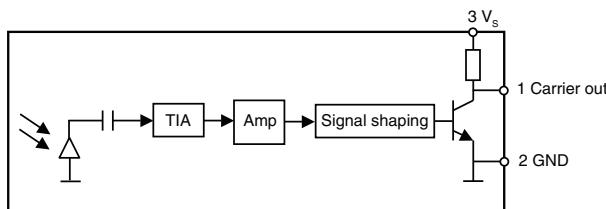
DESCRIPTION

The TSMP58000 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.

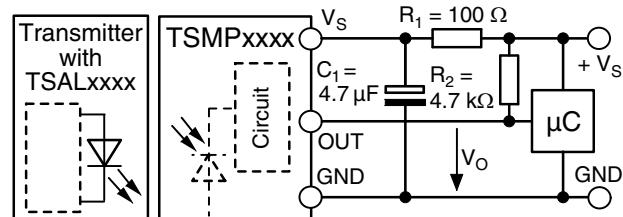
PARTS TABLE	
Carrier frequency	20 kHz to 60 kHz
Package	TSMP58000
Pinning	Minicast
Dimensions (mm)	1 = carrier OUT, 2 = GND, 3 = V_S
Mounting	5.0 W x 6.95 H x 4.8 D
Application	Leaded
	Code learning

BLOCK DIAGRAM



19746

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.

ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25^{\circ}C$, 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	$^{\circ}C$
Storage temperature range		T_{stg}	-25 to +85	$^{\circ}C$
Operating temperature range		T_{amb}	-25 to +85	$^{\circ}C$
Soldering temperature	$t \leq 10$ s, 1 mm from case	T_{sd}	260	$^{\circ}C$

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						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply current (pin 3)	$E_v = 0$	I_{SD}	0.55	0.7	0.9	mA
Supply voltage		V_S	2.5		5.5	V
Transmission distance	$E_v = 0$, test signal see fig. 1, IR diode TSAL6200, $I_F = 400$ mA	d		5		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)	E_e min.		12	25	mW/m ²
Maximum irradiance	test signal see fig. 1, (20 kHz to 60 kHz)	E_e max.	50	80		W/m ²
Directivity	Angle of half transmission distance	$\phi_{1/2}$		± 45		deg
Output accuracy	$f_C = 20$ kHz to 60 kHz, $E_e = 25$ mW/m ² to 50 W/m ² , testsignal see fig. 1, BER $\leq 2\%$	N carrier pulses	input burst length - 1 cycle	input burst length	input burst length + 1 cycle	counts

TYPICAL CHARACTERISTICS ($T_{amb} = 25^{\circ}C$, unless otherwise specified)

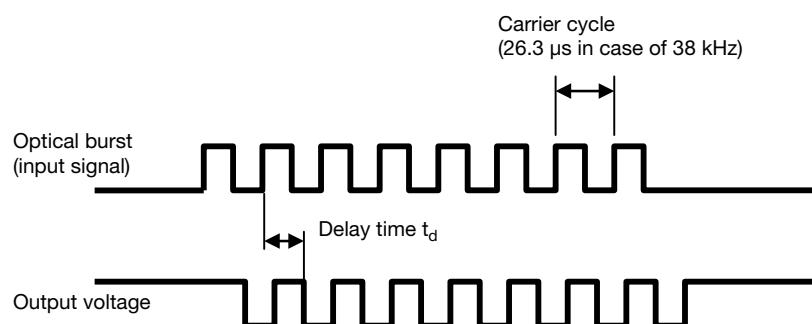


Fig. 1 - Testsignal

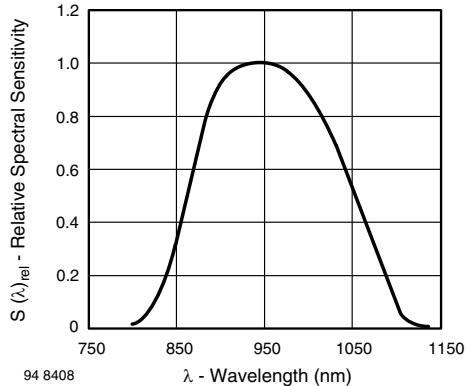


Fig. 2 - Relative Spectral Sensitivity vs. Wavelength

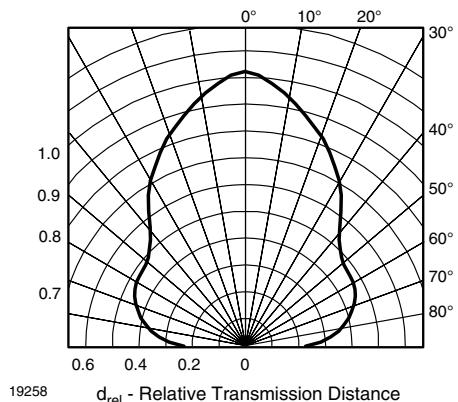


Fig. 3 - Horizontal Directivity

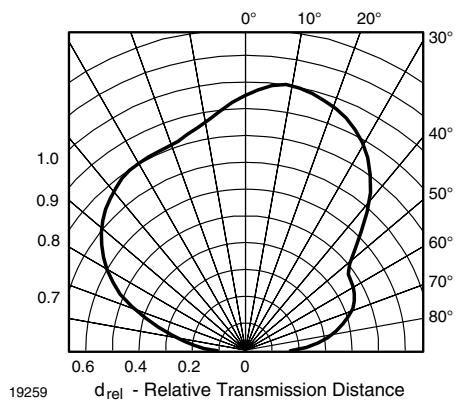
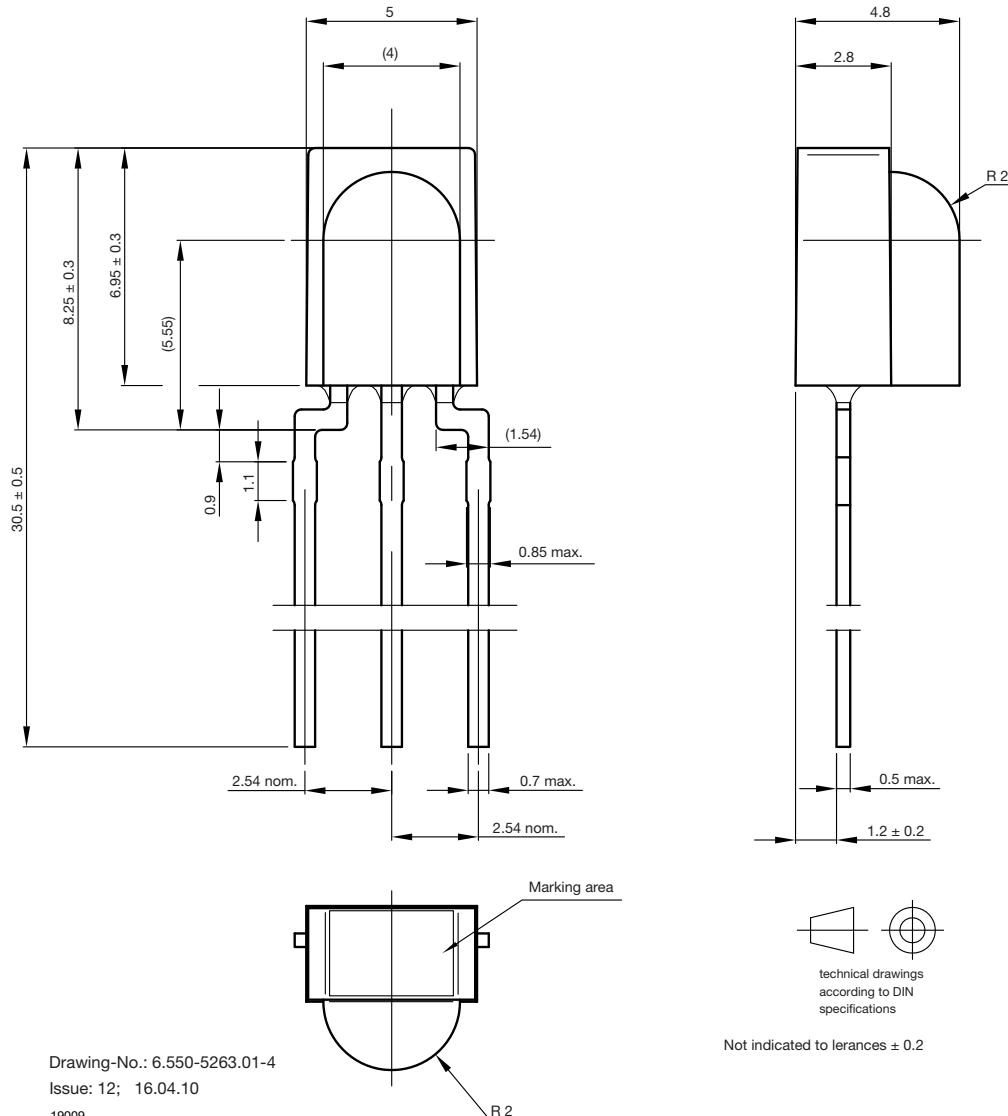


Fig. 4 - Vertical Directivity

PACKAGE DIMENSIONS in millimeters



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