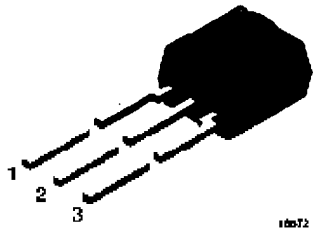
IR Receiver Modules for Remote Control Systems

Description

The TSOP48.. - series are miniaturized receivers for infrared remote control systems. PIN diode and preamplifier are assembled on lead frame, the epoxy package is designed as IR filter.

The demodulated output signal can directly be decoded by a microprocessor. TSOP48.. is the standard IR remote control receiver series, supporting all major transmission codes.



Features

- Photo detector and preamplifier in one package
- Internal filter for PCM frequency
- Improved shielding against electrical field disturbance
- TTL and CMOS compatibility
- Output active low
- Low power consumption

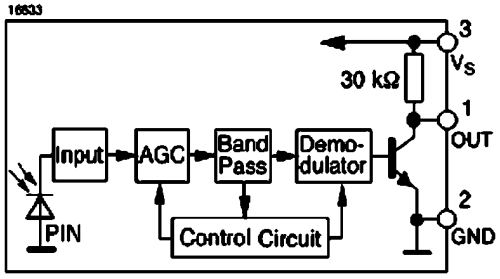
Special Features

- Improved immunity against ambient light
- Suitable burst length ≥ 10 cycles/burst

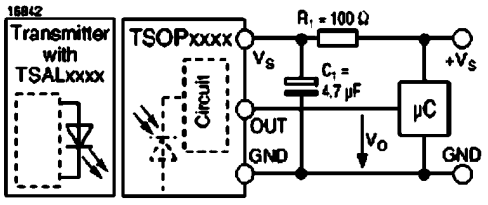
Parts Table

Part	Carrier Frequency
TSOP4830	30 kHz
TSOP4833	33 kHz
TSOP4836	36 kHz
TSOP4837	36.7 kHz
TSOP4838	38 kHz
TSOP4840	40 kHz
TSOP4856	56 kHz

Block Diagram



Application Circuit



$R_1 + C_1$ recommended to suppress power supply disturbances.

The output voltage should not be hold continuously at a voltage below V_O = 3.3 V by the external circuit.

Absolute Maximum Ratings

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

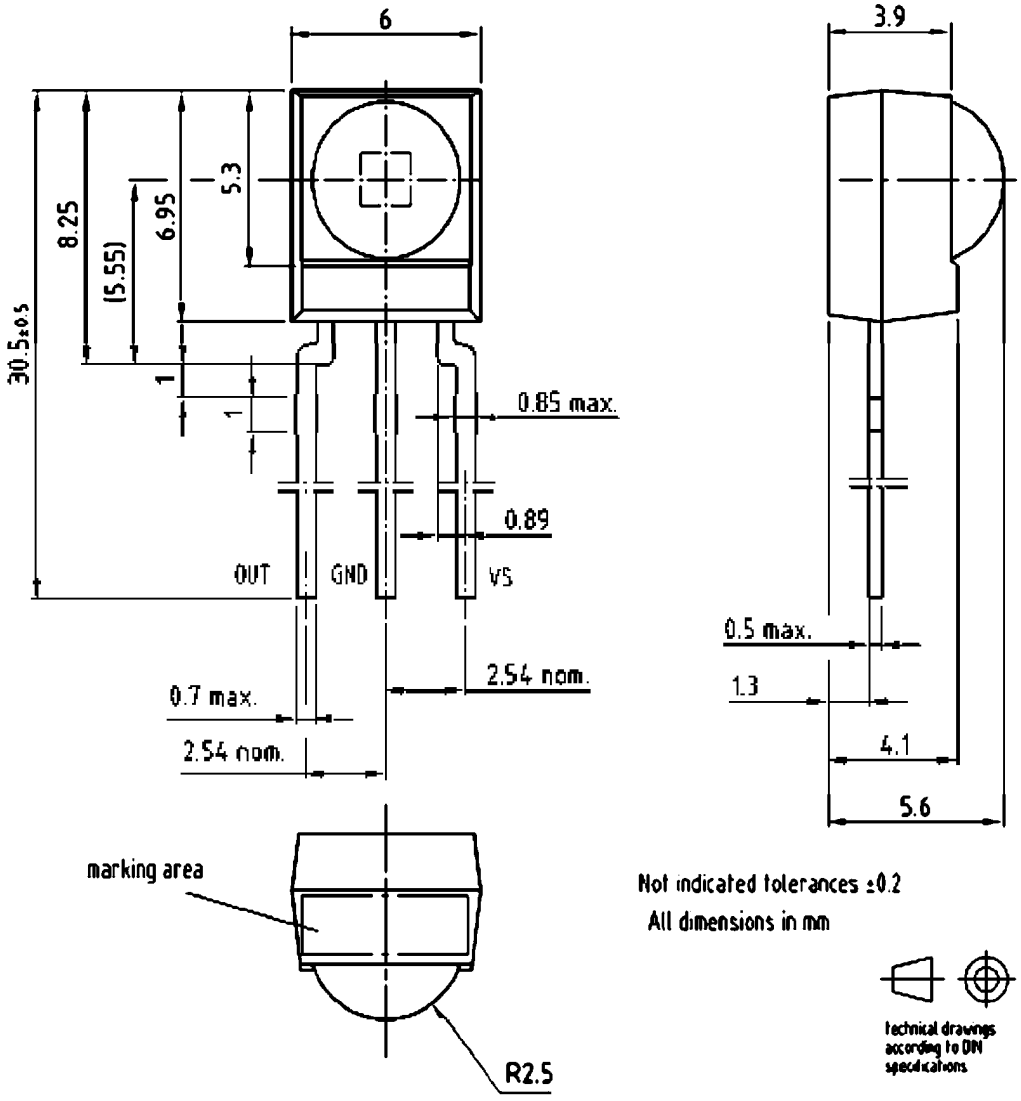
Parameter	Test condition	Symbol	Value	Unit
Supply Voltage	(Pin 3)	V_S	- 0.3 to + 6.0	V
Supply Current	(Pin 3)	I_S	5	mA
Output Voltage	(Pin 1)	V_O	- 0.3 to + 6.0	V
Output Current	(Pin 1)	I_O	5	mA
Junction Temperature		T_j	100	°C
Storage Temperature Range		T_{stg}	- 25 to + 85	°C
Operating Temperature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

Electrical and Optical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Supply Current (Pin 3)	V_S = 5 V, E_v = 0	I_{SD}	0.8	1.2	1.5	mA
	V_S = 5 V, E_v = 40 klx, sunlight	I_{SH}		1.5		mA
Supply Voltage		V_S	4.5		5.5	V
Transmission Distance	E_v = 0, test signal see fig.1, IR diode TSAL6200, I_F = 250 mA	d		35		m
Output Voltage Low (Pin 1)	I_{OSL} = 0.5 mA, E_e = 0.7 mW/m², test signal see fig. 1	V_{OSL}			250	mV
Minimum Irradiance (56 kHz)	Pulse width tolerance: t_{pi} - 5/f_o < t_{po} < t_{pi} + 6/f_o, test signal see fig.1	$E_{e\,min}$		0.3	0.5	mW/m²
Minimum Irradiance (30 - 40 kHz)	Pulse width tolerance: t_{pi} - 5/f_o < t_{po} < t_{pi} + 6/f_o, test signal see fig.1	$E_{e\,min}$		0.2	0.4	mW/m²
Maximum Irradiance	t_{pi} - 5/f_o < t_{po} < t_{pi} + 6/f_o, test signal see fig. 1	$E_{e\,max}$	30			W/m²
Directivity	Angle of half transmission distance	$\varphi_{1/2}$		± 45		deg

Package Dimensions in mm



Not indicated tolerances ±0.2

All dimensions in mm

technical drawings according to DIN specifications

Drawing-No.: 6.550-5169.11-4
Issue: 10; 08.06.04

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