

Reflective Sensor for Touchless Switch

Description

TCND3000 is a reflective optical sensor for applications using the HALIOS® (High Ambient Light Independent Optical System) principle. It consists of an infrared emitter and a photodetector forming the optical sensing path. According to the HALIOS principle a second infrared emitter is used for compensation of disturbing ambient light. Optoelectronic parameters of the sensor are matched to the corresponding integrated circuit E909.01, manufactured by ELMOS Semiconductor AG (www.elmos.de).



Features

- Package type: Surface mount
- Detector type: PIN Photodiode
- Dimensions:
L 4.83 mm x W 2.54 mm x H 2.21 mm
- Peak operating distance: 20 mm
- Peak operating range: 10 mm to 20 mm
- Typical output current under test: $I_C = 5.6 \mu A$
- Lead (Pb)-free soldering released
- Lead (Pb)-free component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC
- Emitter wavelength 885 nm
- Daylight blocking filter
- Touch distance: 10 mm*)
- Proximity distance: 20 mm*)
- High ambient light suppression for sunlight:
 $\leq 200 \text{ klx}$
- High ambient light suppression for CIE standard illuminant A: $\leq 100 \text{ klx}$
- Minimum order quantity 800 pcs, 800 pcs/reel

*) Using E909.01 interface ASIC and Kodak grey card with 20 % diffuse reflection



Applications

- Optical switches for general purpose

Absolute Maximum Ratings

$T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified

Sensor

Parameter	Test condition	Symbol	Value	Unit
Power dissipation	$T_{amb} \leq 25\text{ }^{\circ}\text{C}$	P_V	180	mW
Storage temperature range		T_{stg}	- 40 to + 100	$^{\circ}\text{C}$
Operating temperature range		T_{amb}	- 40 to + 85	$^{\circ}\text{C}$
Thermal resistance junction/ambient		R_{thJA}	450	K/W
Soldering temperature	acc. figure 7	T_{sd}	260	$^{\circ}\text{C}$

IR Emitter LEDS (Transmitter)

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_{RS}	5	V
Forward current		I_{FS}	50	mA
Peak forward current	$T_s = 8\text{ }\mu\text{s}$ $t_{ps} = 4\text{ }\mu\text{s}$	I_{FS}	100	mA
Junction temperature		T_{js}	105	$^{\circ}\text{C}$

IR Emitter LEDC (Compensation)

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_{RC}	5	V
Forward current		I_{FC}	50	mA
Peak forward current	$T_s = 8\text{ }\mu\text{s}$ $t_{pc} = 4\text{ }\mu\text{s}$	I_{FC}	100	mA
Junction temperature		T_{js}	105	$^{\circ}\text{C}$

Detector

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_{RD}	5	V
Junction temperature		T_{jD}	105	$^{\circ}\text{C}$

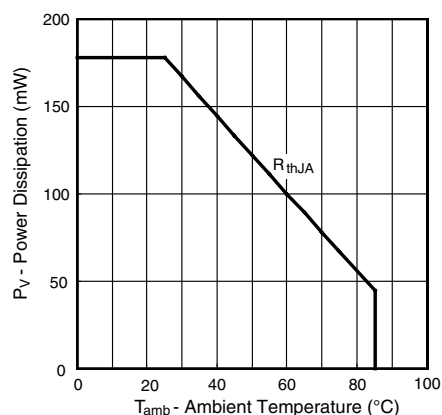


Figure 1. Power Dissipation Limit vs. Ambient Temperature