

Triple Channel Transmissive Optical Sensor With Phototransistor Outputs for “Turn and Push” Encoding



DESCRIPTION

The TCUT1630X01 is a compact transmissive sensor that includes an infrared emitter and three phototransistor detectors, located face-to-face in a surface-mount package. The tall dome design supports an additional transistor and additional mechanical room for vertical signal encoding.

FEATURES

- Package type: surface-mount
- Detector type: phototransistor
- Dimensions (L x W x H in mm): 5.5 x 5.85 x 7
- AEC-Q101 qualified
- Gap (in mm): 3
- Aperture (in mm): 0.3
- Typical output current under test: $I_C = 1.3$ mA
- Emitter wavelength: 950 nm
- Lead (Pb)-free soldering released
- Moisture sensitivity level (MSL): 1
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

AUTOMOTIVE
GRADE

RoHS
COMPLIANT
HALOGEN
FREE
GREEN
(5-2008)

APPLICATIONS

- Automotive optical sensors
- Accurate position sensor for encoder
- Sensor for motion, speed, and direction
- Sensor for “turn and push” encoding

PRODUCT SUMMARY

PART NUMBER	GAP WIDTH (mm)	APERTURE WIDTH (mm)	TYPICAL OUTPUT CURRENT UNDER TEST ⁽¹⁾ (mA)	DAYLIGHT BLOCKING FILTER INTEGRATED
TCUT1630X01	3	0.3	1.3	No

Note

⁽¹⁾ Conditions like in table basic characteristics / coupler

ORDERING INFORMATION

ORDERING CODE	PACKAGING	VOLUME ⁽¹⁾	REMARKS
TCUT1630X01	Tape and reel	MOQ: 1100 pcs, 1100pcs/reel	Drypack, MSL 1

Note

⁽¹⁾ MOQ: minimum order quantity



ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
COUPLER				
Junction temperature		T_j	110	$^{\circ}\text{C}$
Ambient temperature range		T_{amb}	-40 to +105	$^{\circ}\text{C}$
Storage temperature range		T_{stg}	-40 to +125	$^{\circ}\text{C}$
Soldering temperature	In accordance with Fig. 17	T_{sd}	260	$^{\circ}\text{C}$
INPUT (EMITTER)				
Reverse voltage		V_R	5	V
Forward current	$T_{amb} \leq 95\text{ }^{\circ}\text{C}$	I_F	25	mA
Forward surge current	$t_p \leq 10\text{ }\mu\text{s}$	I_{FSM}	200	mA
Total power dissipation	$T_{amb} \leq 95\text{ }^{\circ}\text{C}$	P_V	37.5	mW
OUTPUT (DETECTOR)				
Collector emitter voltage		V_{CEO}	20	V
Emitter collector voltage		V_{ECO}	7	V
Collector current		I_C	20	mA
Collector dark current	$T_{amb} = 85\text{ }^{\circ}\text{C}$, $V_{CE} = 5\text{ V}$	I_{CEO}	3.3	μA
Total power dissipation	$T_{amb} \leq 95\text{ }^{\circ}\text{C}$	P_V	37.5	mW

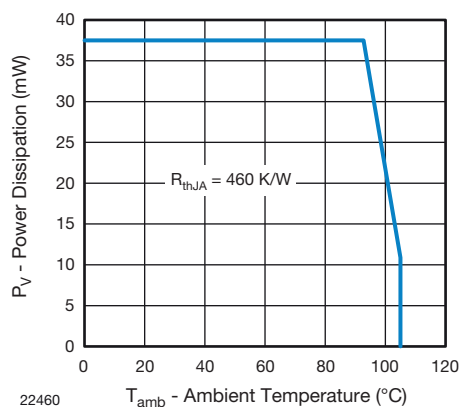
ABSOLUTE MAXIMUM RATINGS

Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

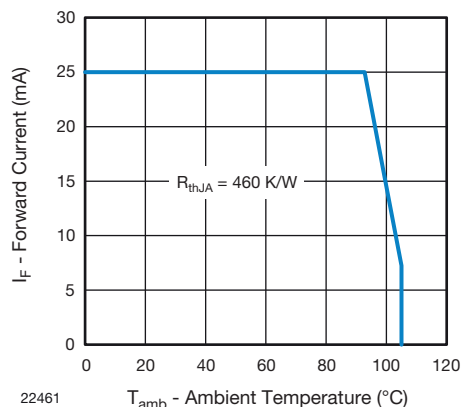


Fig. 2 - Forward Current Limit vs. Ambient Temperature