



Quad Channel Transmissive Optical Sensor With Phototransistor Outputs for Absolute and Incremental Encoding



DESCRIPTION

The TCUT1800X01 is a compact transmissive sensor that includes two infrared emitters and four phototransistor detectors, located face-to-face in a surface mount package.

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: $I_C = 1.3 \text{ mA}$
- 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



APPLICATIONS

- Automotive optical sensors
- Accurate position sensor for encoder
- Sensor for motion, speed, and direction
- 4 bit transmissive sensor, that can detect up to 16 positions

PRODUCT SUMMARY				
PART NUMBER	GAP WIDTH (mm)	APERTURE WIDTH (mm)	TYPICAL OUTPUT CURRENT UNDER TEST ⁽¹⁾ (mA)	DAYLIGHT BLOCKING FILTER INTEGRATED
TCUT1800X01	3	0.3	1.3	No

Note

⁽¹⁾ Conditions like in table basic characteristics / coupler

ORDERING INFORMATION			
ORDERING CODE	PACKAGING	VOLUME ⁽¹⁾	REMARKS
TCUT1800X01	Tape and reel	MOQ: 1100 pcs, 1100 pcs/reel	Drypack, MSL 1

Note

⁽¹⁾ MOQ: minimum order quantity



ABSOLUTE MAXIMUM RATINGS (T _{amb} = 25 °C, unless otherwise specified)				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
COUPLER				
Junction temperature		T _j	110	°C
Ambient temperature range		T _{amb}	-40 to +105	°C
Storage temperature range		T _{stg}	-40 to +125	°C
Soldering temperature	In accordance with Fig. 16	T _{sd}	260	°C
INPUT (EMITTER)				
Reverse voltage		V _R	5	V
Forward current	T _{amb} ≤ 95 °C	I _F	25	mA
Forward surge current	t _p ≤ 10 μs	I _{FSM}	200	mA
Total power dissipation	T _{amb} ≤ 95 °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 °C, V _{CE} = 5 V	I _{CEO}	3.3	μA
Total power dissipation	T _{amb} ≤ 95 °C	P _V	37.5	mW

ABSOLUTE MAXIMUM RATINGS

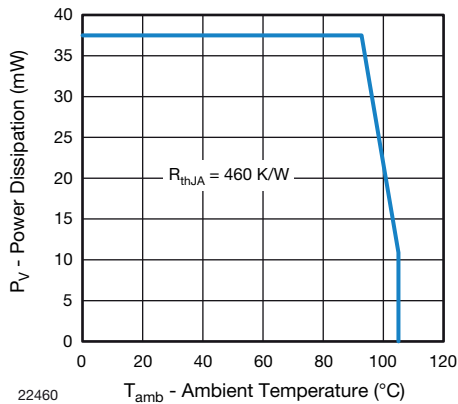


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

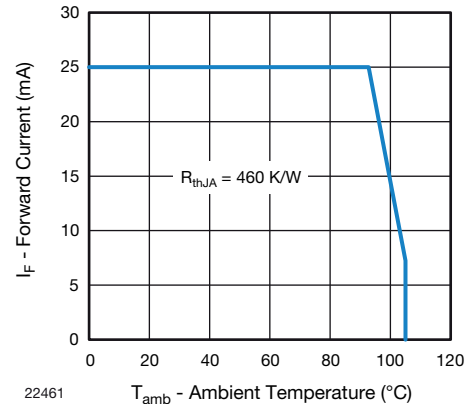


Fig. 2 - Forward Current Limit vs. Ambient Temperature