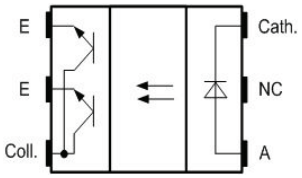
# Tall Dome Dual Channel Transmissive Optical Sensor with Phototransistor Outputs




## FEATURES

- Package type: surface mount
- Detector type: phototransistor
- Dimensions (L x W x H in mm): 5.5 x 4 x 5.7
- AEC-Q101 qualified
- Gap (in mm): 3
- Aperture (in mm): 0.3
- Channel distance (center to center): 0.8 mm
- Typical output current under test: $I_C$ = 1.6 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

Pb-free

e4

RoHS COMPLIANT

HALOGEN FREE GREEN (5-2008)

## DESCRIPTION

The TCUT1600X01 is a compact transmissive sensor that includes an infrared emitter and two phototransistor detectors, located face-to-face in a surface mount package. The tall dome design supports additional mechanical room for vertical signal encoding.

## 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 |
|---|---|---|---|---|
| TCUT1600X01 | 3 | 0.3 | 1.6 | No |

**Note**

(1) Conditions like in table basic characteristics/coupler

**ORDERING INFORMATION**

| ORDERING CODE | PACKAGING | VOLUME (1) | REMARKS |
|---|---|---|---|
| TCUT1600X01 | Tape and reel | MOQ: 1300 pcs, 1300 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** | | | | |
| Total power dissipation | $T_{amb} \leq 95$ °C | $P_{tot}$ | 37.5 | mW |
| 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 | $T_{amb} \leq 95$ °C | $I_F$ | 25 | mA |
| Forward surge current | $t_p \leq 10$ µs | $I_{FSM}$ | 200 | mA |
| Power dissipation | $T_{amb} \leq 95$ °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 |

## ABSOLUTE MAXIMUM RATINGS

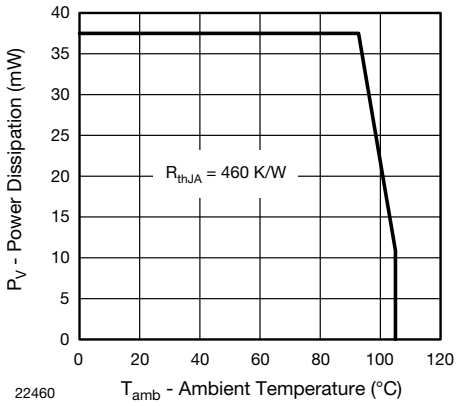



Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

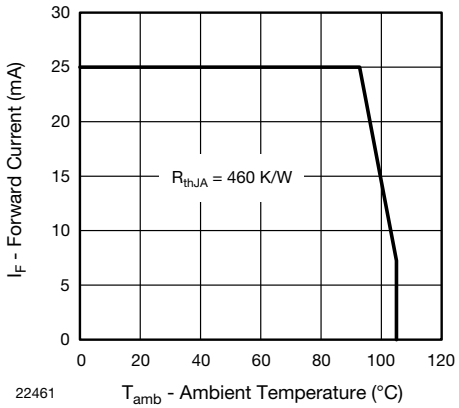



Fig. 2 - Forward Current Limit vs. Ambient Temperature