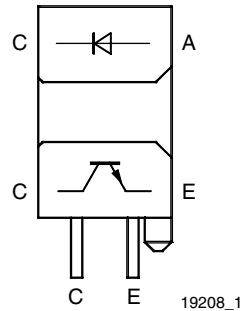


## Transmissive Optical Sensor with Phototransistor Output

21834



### FEATURES

- Package type: leaded
- Detector type: phototransistor
- Dimensions (L x W x H in mm): 14.3 x 6 x 9.5
- Gap (in mm): 2.7
- Aperture (in mm): 0.5
- Typical output current under test:  $I_C = 1.5$  mA
- Daylight blocking filter
- Emitter wavelength: 950 nm
- Lead (Pb)-free soldering released
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC


**RoHS**  
COMPLIANT

### DESCRIPTION

The TCST5250 is a transmissive sensor that includes an infrared emitter and a phototransistor, located face-to-face on the optical axes in a leaded package which blocks visible light.

### APPLICATIONS

- Optical switch
- Shaft encoder

### PRODUCT SUMMARY

PART NUMBER	GAP WIDTH (mm)	APERTURE WIDTH (mm)	TYPICAL OUTPUT CURRENT UNDER TEST <sup>(1)</sup> (mA)	DAYLIGHT BLOCKING FILTER INTEGRATED
TCST5250	2.7	0.5	1.5	Yes

**Note**

<sup>(1)</sup> Conditions like in table basic characteristics/coupler

### ORDERING INFORMATION

ORDERING CODE	PACKAGING	VOLUME <sup>(1)</sup>	REMARKS
TCST5250	Tube	MOQ: 4860 pcs, 30 pcs/tube	-

**Note**

<sup>(1)</sup> MOQ: minimum order quantity

### ABSOLUTE MAXIMUM RATINGS <sup>(1)</sup>

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
<b>COUPLER</b>				
Total power dissipation	$T_{amb} \leq 25$ °C	$P_{tot}$	250	mW
Ambient temperature range		$T_{amb}$	- 25 to + 85	°C
Storage temperature range		$T_{stg}$	- 40 to + 100	°C
Soldering temperature	Distance to package 1.6 mm, $t \leq 5$ s	$T_{sd}$	260	°C
<b>INPUT (EMITTER)</b>				
Reverse voltage		$V_R$	6	V
Forward current		$I_F$	60	mA
Forward surge current	$t_p \leq 10$ $\mu$ s	$I_{FSM}$	3	A
Power dissipation	$T_{amb} \leq 25$ °C	$P_V$	100	mW
Junction temperature		$T_j$	100	°C
<b>OUTPUT (DETECTOR)</b>				
Collector emitter voltage		$V_{CEO}$	70	V
Emitter collector voltage		$V_{ECO}$	7	V
Collector current		$I_C$	100	mA

ABSOLUTE MAXIMUM RATINGS (1)				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
<b>OUTPUT (DETECTOR)</b>				
Power dissipation	$T_{amb} \leq 25\text{ }^{\circ}\text{C}$	$P_V$	150	mW
Junction temperature		$T_j$	100	$^{\circ}\text{C}$

**Note**

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

**ABSOLUTE MAXIMUM RATINGS**



Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

BASIC CHARACTERISTICS (1)						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
<b>COUPLER</b>						
Collector current	$V_{CE} = 10\text{ V}$ , $I_F = 20\text{ mA}$	$I_C$	0.5	1.5	15	mA
Collector emitter saturation voltage	$I_F = 20\text{ mA}$ , $I_C = 0.2\text{ mA}$	$V_{CEsat}$			0.4	V
<b>INPUT (EMITTER)</b>						
Forward voltage	$I_F = 60\text{ mA}$	$V_F$		1.25	1.5	V
Junction capacitance	$V_R = 0\text{ V}$ , $f = 1\text{ MHz}$	$C_j$		50		pF
<b>OUTPUT (DETECTOR)</b>						
Collector emitter voltage	$I_C = 1\text{ mA}$	$V_{CEO}$	70			V
Emitter collector voltage	$I_E = 10\text{ }\mu\text{A}$	$V_{ECO}$	7			V
Collector dark current	$V_{CE} = 25\text{ V}$ , $I_F = 0\text{ A}$ , $E = 0\text{ lx}$	$I_{CEO}$		10	100	nA
<b>SWITCHING CHARACTERISTICS</b>						
Turn-on time	$I_C = 1\text{ mA}$ , $V_{CE} = 5\text{ V}$ , $R_L = 100\text{ }\Omega$ (see figure 2)	$t_{on}$		15		$\mu\text{s}$
Turn-off time	$I_C = 1\text{ mA}$ , $V_{CE} = 5\text{ V}$ , $R_L = 100\text{ }\Omega$ (see figure 2)	$t_{off}$		10		$\mu\text{s}$

**Note**

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