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PIT5005T-01

Optical Logic Output Interrupter Switch

Features

- No Contact Sensing
- 5.0mm gap
- 0.5mm aperture
- Opaque black plastic housing
- RoHS compliance

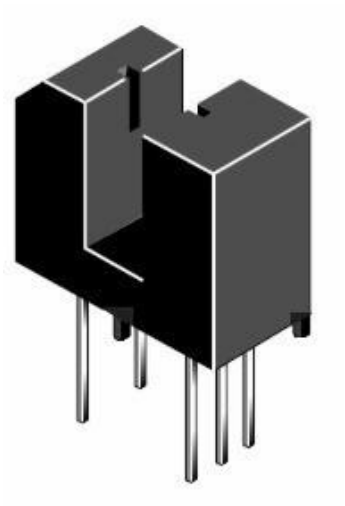
The PIT5005T/01 is a slotted optical switch designed for multipurpose non contact sensing. It consists of a GaAs LED and a silicon LOGIC OUPUT sensor packaged in an injection molded housing, facing each other across a 5mm gap. The product is TTL/ CMOS compatible.

Applications

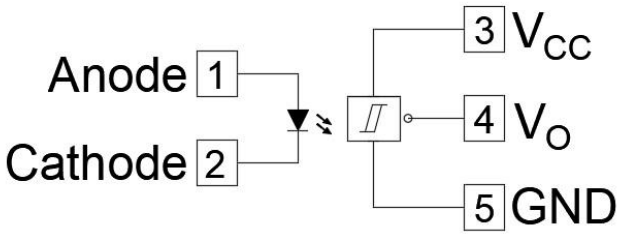
- Infrared sensor

Description

Package Outline



Schematic



Absolute Maximum Rating at 25^{0}C

Symbol	*Parameters*	*Ratings*	*Units*	*Notes*
T_{opr}	Operating Temperature	-40 ~ +85	^{0}C	
T_{stg}	Storage Temperature	-40 ~ +85	^{0}C	
T_{sol-I}	Soldering Temperature(Solder Iron)	240 for 5 sec	^{0}C	3,4,5,6
T_{sol-F}	Soldering Temperature (Solder Flow)	240 for 10 sec	^{0}C	3,5,6
Emitter				
I_F	Continuous Forward Current	50	mA	6
V_R	Reverse Voltage	5	V	
P_D	Power Dissipation	100	mW	1
Sensor				
I_O	Output Current	50	mA	
V_{CC}	Supply Voltage	16	V	
V_O	Output Voltage	30	V	
P_D	Power Dissipation	150	mW	2

Notes:

1. Derate power dissipation linearly, on Emitter, 1.67 mW/^{0}C above 25^{0}C.
2. Derate power dissipation linearly, 2.50 mW/^{0}C above 25^{0}C.
3. RMA Flux is recommended.
4. Methanol or isopropyl alcohols are recommended as cleaning agents.
5. Soldering iron tip 1.6mm from housing.
6. As long as leads are not under stress or spring tension.

Electro-Optical Characteristics *TA = 25°C (unless otherwise specified)*

Symbol	*Parameters*	*Test Conditions*	*Min*	*Typ*	*Max*	*Units*
V_{CC}	Recommended Operating Supply Voltage	-	4.5	-	5.5	V
Emitter						
V_F	Forward Voltage	I_F=20mA	-	-	1.7	V
I_R	Reverse Leakage Current	V_R=5V	-	-	10	μA
Coupled						
I_{CC}	Operating Supply Current	I_F=15mA, or 0mA, V_{CC}=5V	-	-	5	mA
V_{OL}	Low Level Output Voltage	I_F=0mA , V_{CC}=5V, R_L=360Ω	-	-	0.4	V
I_{OH}	High Level Output Current	I_F=15mA, or V_{CC}=5V, V_{OH}=30V	-	-	100	μA
$IF^{(+)}$	Turn on Threshold Current	V_{CC}=5V, R_L=360Ω	-	-	15	mA
$IF^{(-)}$	Turn off Threshold Current	V_{CC}=5V, R_L=360Ω	0.50	-	-	mA
$I_F^{(+)}/I_F^{(-)}$	Hysteresis Ratio	-	-	1.2	-	-
P_{PLH}, P_{PHL},	Propagation Delay	V_{CC}=5V, R_L=360Ω	-	5	-	μs
Tr	Rise Time	V_{CC}=5V, R_L=360Ω	-	70	-	μs
Tf	Fall Time			70		μs

Typical Characteristic Curves

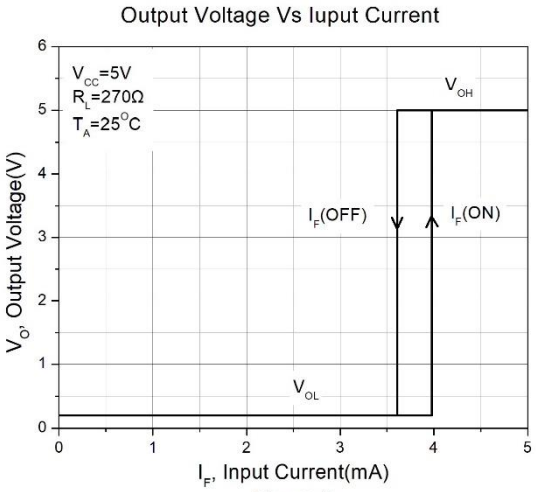


Figure 1

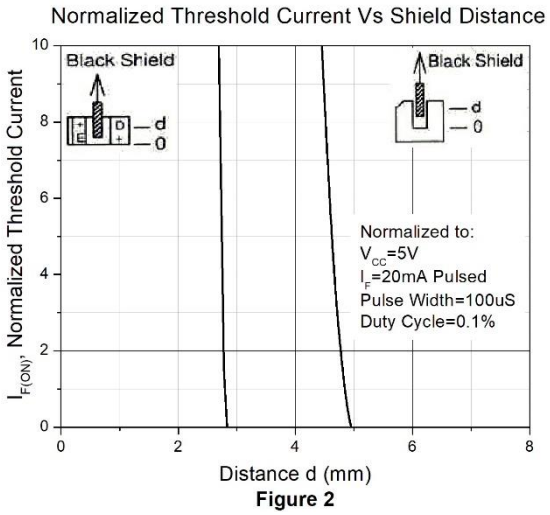


Figure 2

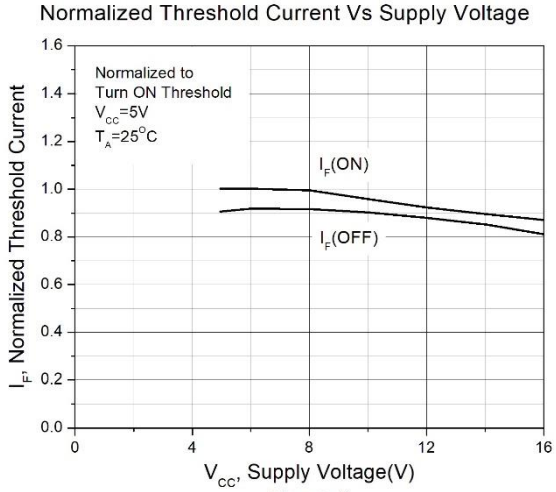


Figure 3

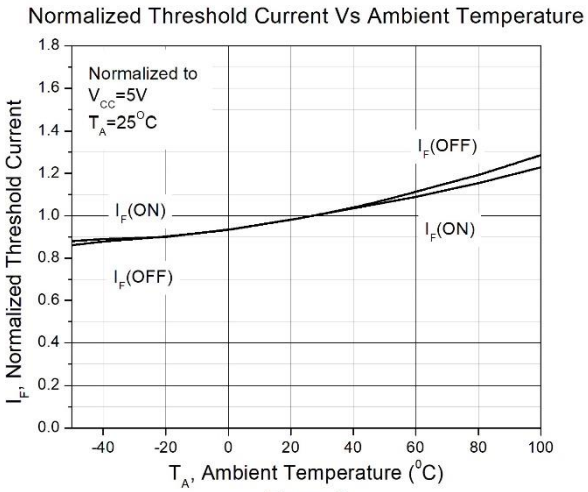


Figure 4

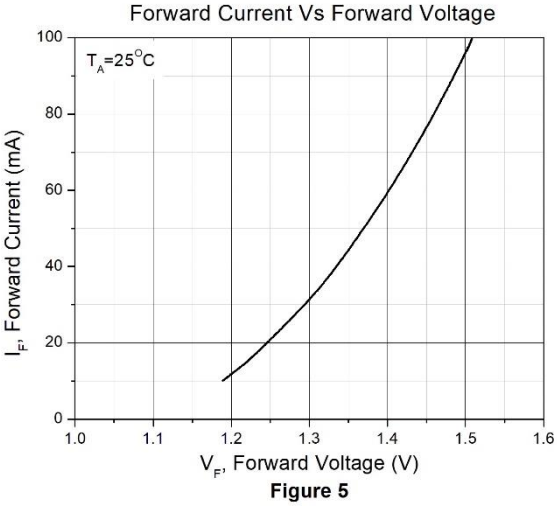


Figure 5

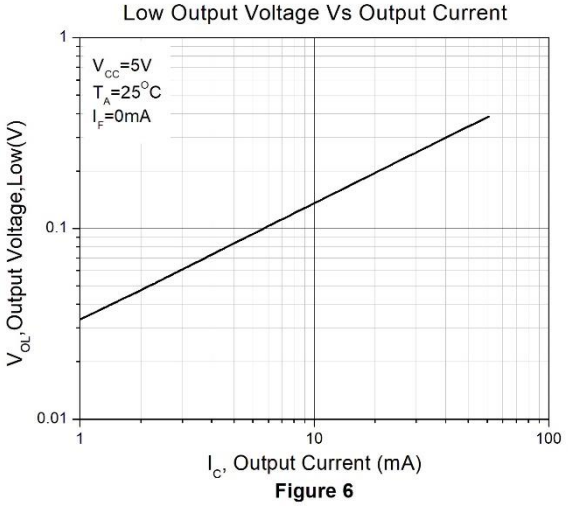


Figure 6

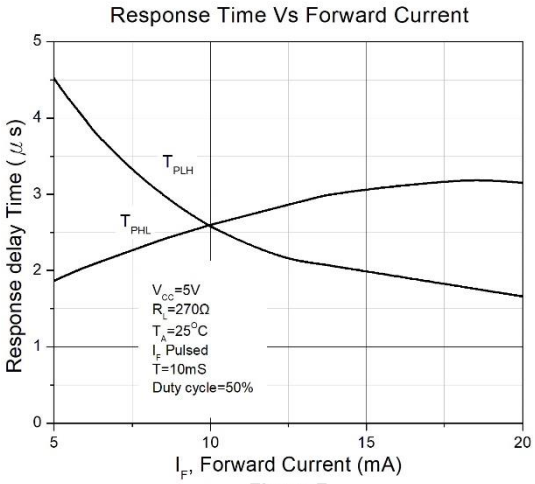
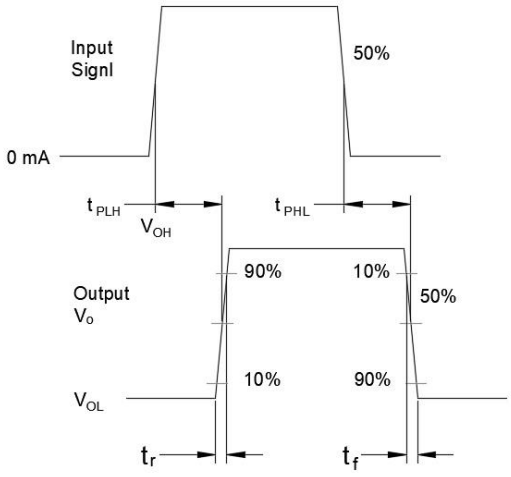


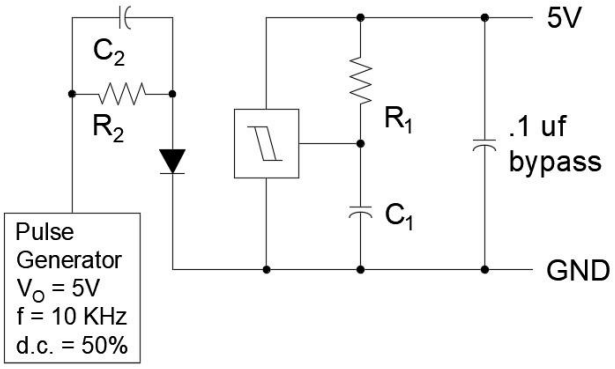
Figure 7

Typical Performance Characteristics (Continued)

Switching Test Curve for Buffers

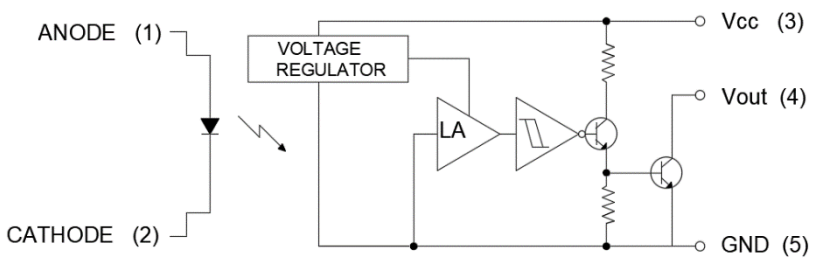


Switching Speed Test Circuit

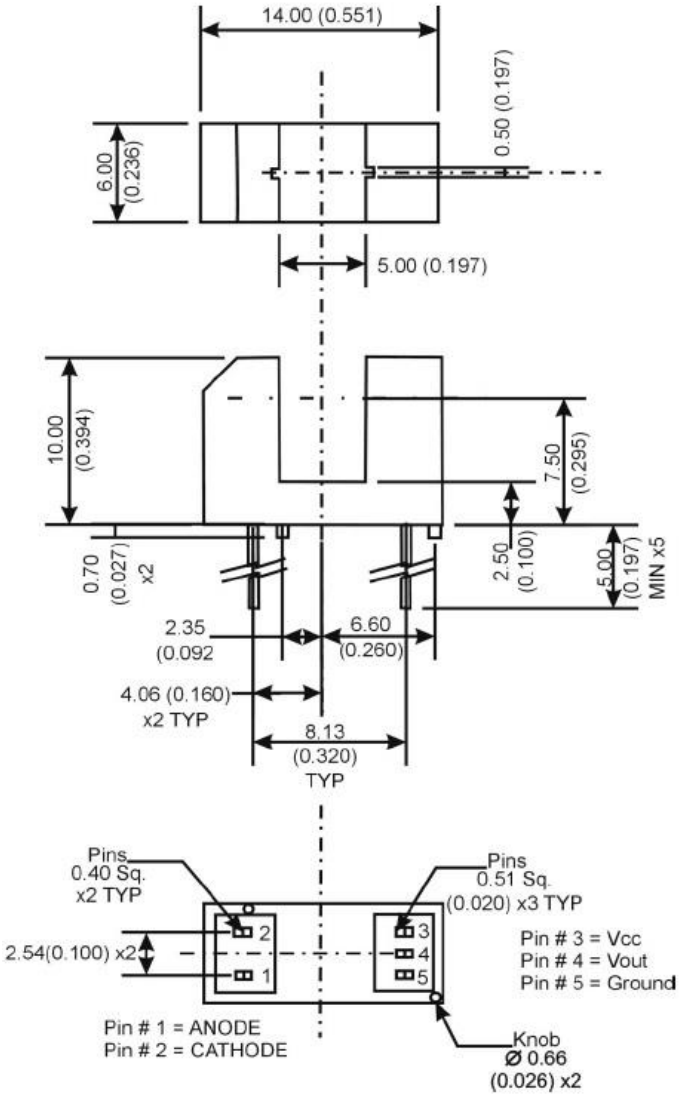


R_1 = 270 Ω C_1 = 15 pf C_1 and C_2 include probe and
R_2 = 360 Ω C_2 = 20 pf stray wire capacitance

Circuit schematics



Package Dimension *All dimensions are in mm, unless otherwise stated.*

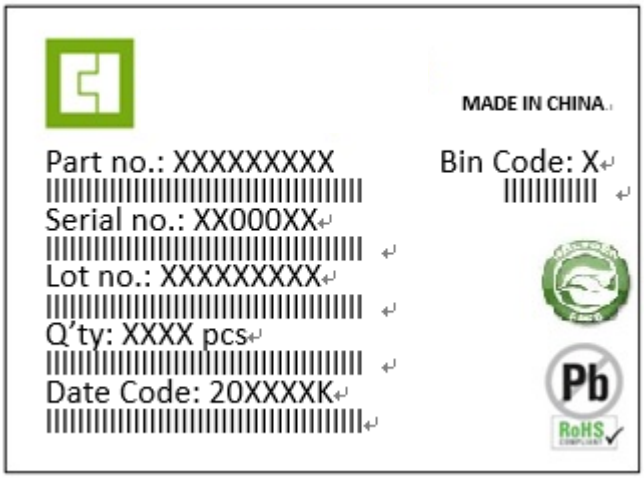


Notes:

1 : Dimensions for all drawings are in millimeters(inches).

2 : Tolerance of +/- 0.25mm (0.010) on all non nominal dimensions unless otherwise specified.

Label Form Specification



Part no: CTM Production Number

Serial no: Production Number

Lot no: Lot number

Q'ty: Packing Quantity

Date Code: Manufacture Date

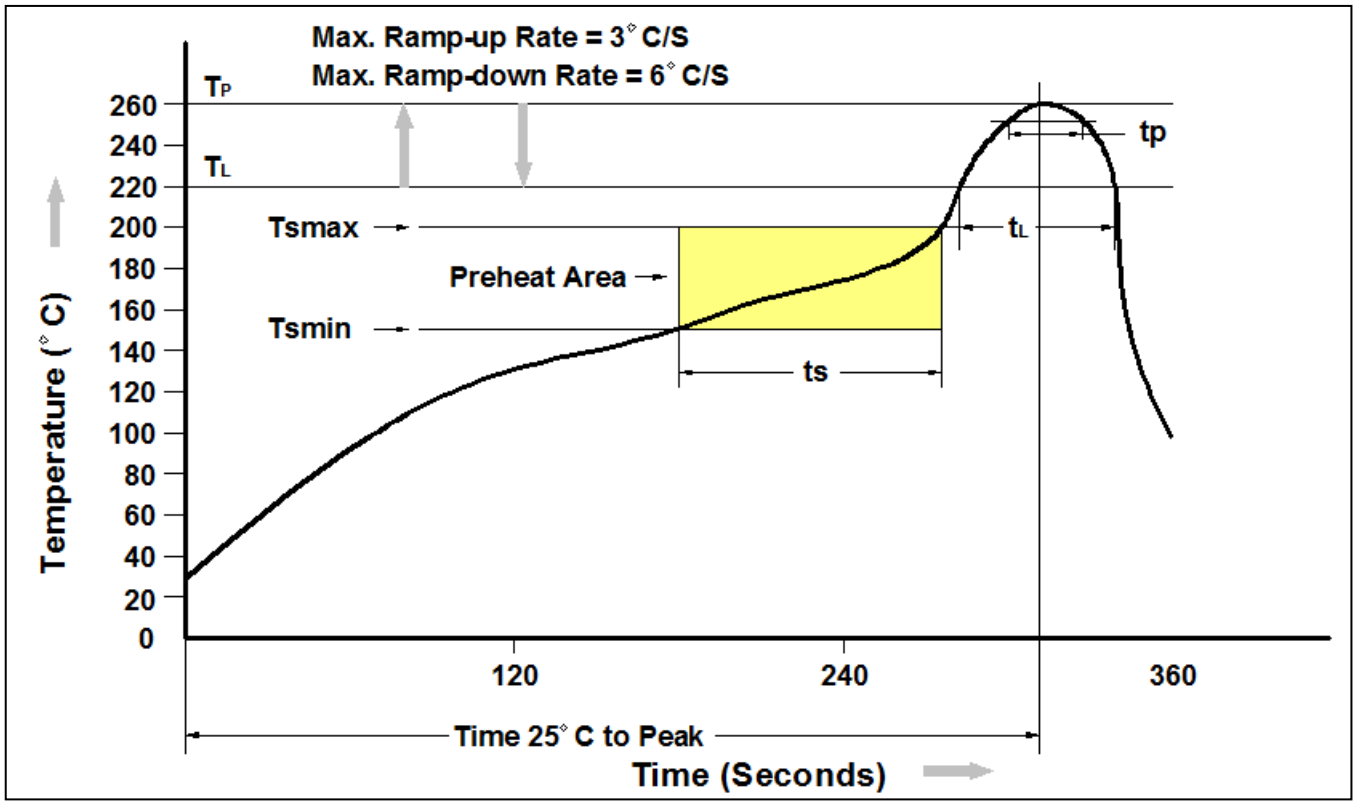
Bin Code: Ic Ranks

MADE IN CHINA: Production Place

Storage Condition

1. Do not open moisture proof bag before the products are ready to use.
2. The moisture barrier bag should be stored at 40°C and 90%R.H. max. before opening. Shelf life of non-opened bag is 12 months after the bag sealing date.
3. After opening the moisture barrier bag floor life is 72h at 30°C/60%RH. max. Unused LEDs should be resealed into moisture barrier bag. (Refer to J-STD-020 Standard)
4. If the moisture absorbent material has faded away or the LEDs have exceeded the storage time, baking treatment should be performed using the J-STD-033 Standard conditions.

Reflow Profile



Profile Feature	Pb-Free Assembly Profile
Temperature Min. (Tsmin)	150°C
Temperature Max. (Tsmax)	200°C
Time (ts) from (Tsmin to Tsmax)	60-120 seconds
Ramp-up Rate (t_L to t_P)	3°C/second max.
Liquidous Temperature (T_L)	217°C
Time (t_L) Maintained Above (T_L)	60 – 150 seconds
Peak Body Package Temperature	260°C +0°C / -5°C
Time (t_P) within 5°C of 260°C	30 seconds
Ramp-down Rate (T_P to T_L)	6°C/second max
Time 25°C to Peak Temperature	8 minutes max.

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