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PIT3005S-01

Transmissive Type Photo-Interrupter

Features

- High reliability
- Gap width = 3mm
- Slit width = 0.45mm
- Good spectral matching to Si photo detector
- RoHS compliance

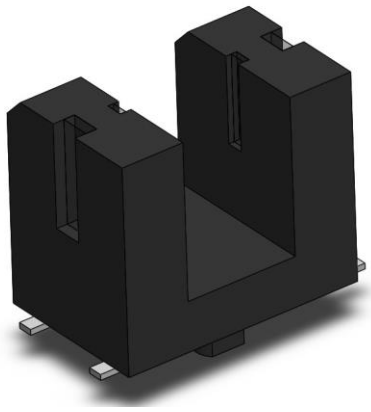
Description

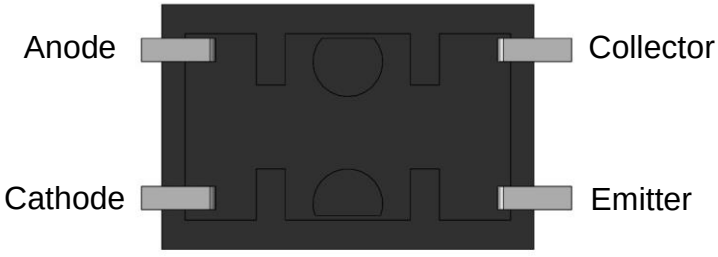
The PIT3005S-01 is a transmissive type photo-interrupter which consist of an infrared emitting diode and an NPN silicon photo-transistor.

Applications

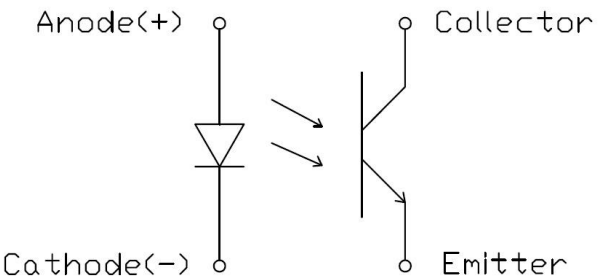
- Infrared sensor
- Printers
- Switch scanner

Package Outline





Schematic



Absolute Maximum Rating at 25^{0}C

Symbol	*Parameters*	*Ratings*	*Units*	*Notes*
T_{opr}	Operating Temperature	-25 ~ +80	^{0}C	
T_{stg}	Storage Temperature	-40 ~ +85	^{0}C	
T_{sol}	Soldering Temperature	260	^{0}C	1
Emitter				
I_F	Continuous Forward Current	50	mA	
V_R	Reverse Voltage	5	V	
P_D	Power Dissipation at(or below) 25℃ Free Air Temperature	80	mW	
Detector				
P_C	Collector Power Dissipation	75	mW	
I_C	Collector Current	20	mA	
B_{VCEO}	Collector-Emitter Voltage	30	V	
B_{VECO}	Emitter-Collector Voltage	5	V	

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

Emitter Characteristics

Symbol	*Parameters*	*Test Conditions*	*Min*	*Typ*	*Max*	*Units*	*Notes*
V_F	Forward Voltage	I_F=20mA	1.00	1.25	1.50	V	
		I_F=50mA	1.10	1.35	1.60		
I_R	Reverse Current	V_R=5V	-	-	10	μA	
λp	Peak Wavelength	I_F=20mA	-	940	-	nm	

Detector Characteristics

Symbol	*Parameters*	*Test Conditions*	*Min*	*Typ*	*Max*	*Units*	*Notes*
B_{VCEO}	Collector-Emitter Breakdown	I_C=100μA	35	-	-	V	
B_{VECO}	Emitter-Collector Breakdown	I_E=100μA	5	-	-	V	
I_{CEO}	Dark Current	V_{CE}=20V	-	-	100	nA	

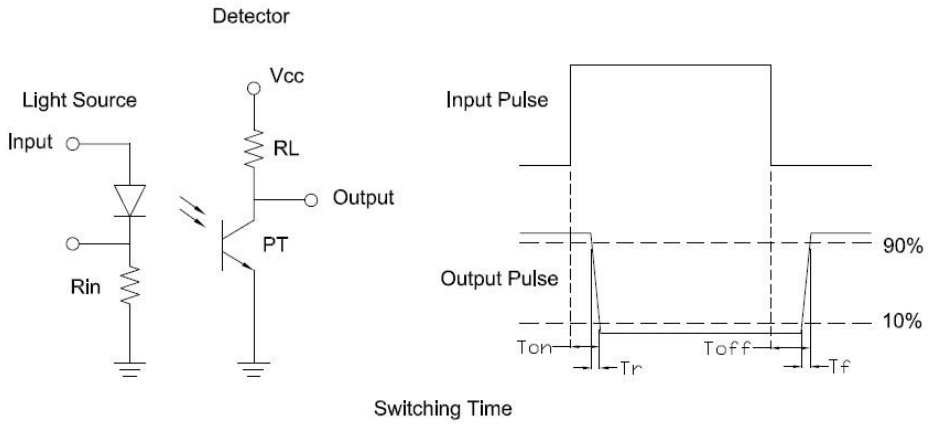
Transfer Characteristics

Symbol	*Parameters*	*Test Conditions*	*Min*	*Typ*	*Max*	*Units*	*Notes*
I_C	Collect Current	V_{CE}=5V, I_F=20mA	0.5	-	5.0	mA	
$V_{CE(sat)}$	C-E Saturation Voltage	I_F=20mA, I_C=1.6mA	-	-	0.4	V	
t_r	Rise Time	V_{CE}=5V, I_C=1mA	-	17	-	μs	2
t_f	Fall Time	R_L=1kΩ	-	17	-		

Notes:

1 : Soldering time≦5 seconds.

2 : Test circuit:



Switching Time

Typical Characteristic Curves

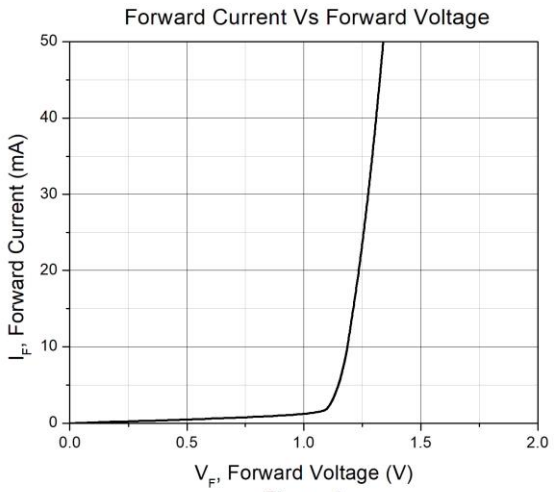


Figure 1

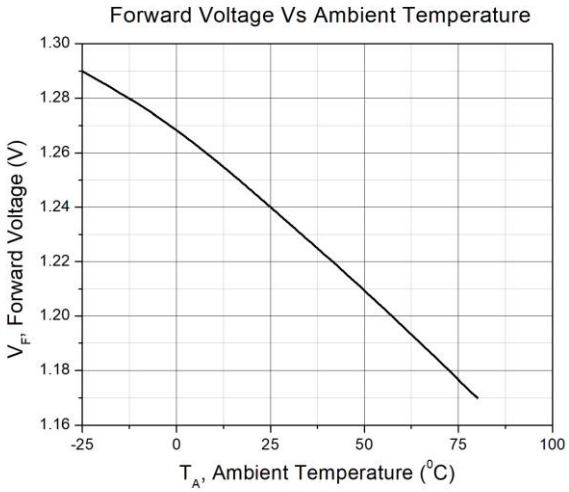


Figure 2

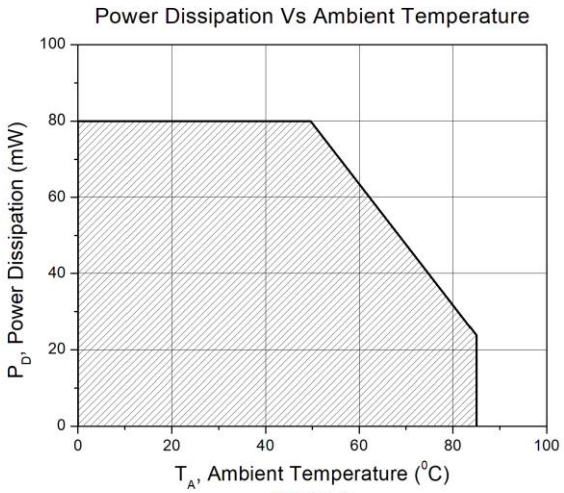


Figure 3

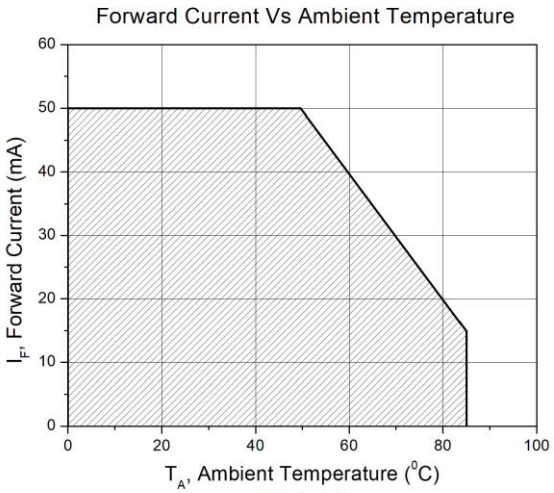


Figure 4

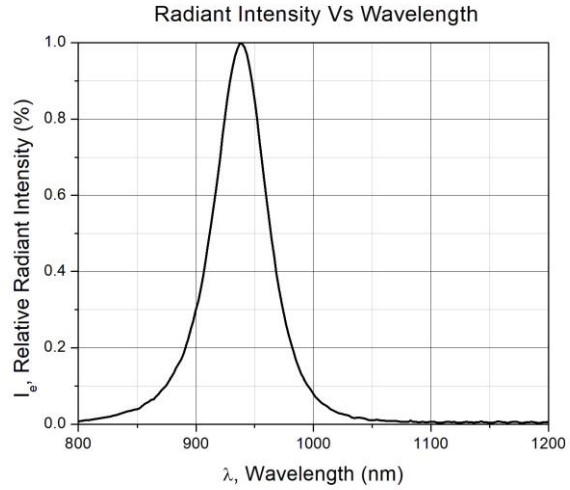


Figure 5

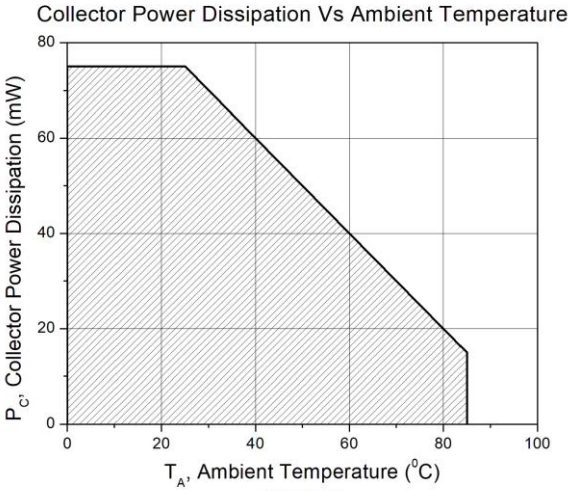


Figure 6

Typical Characteristic Curves

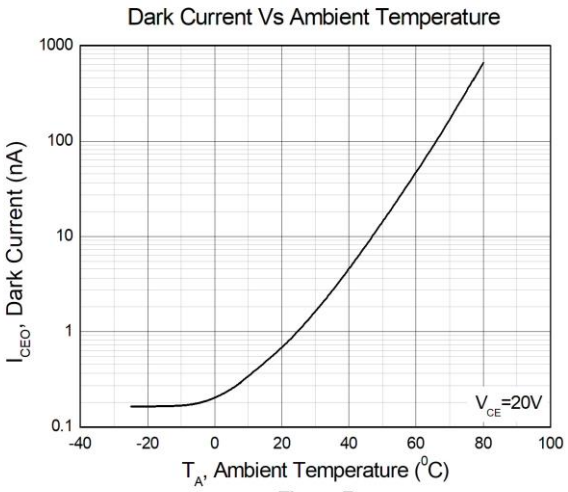


Figure 7

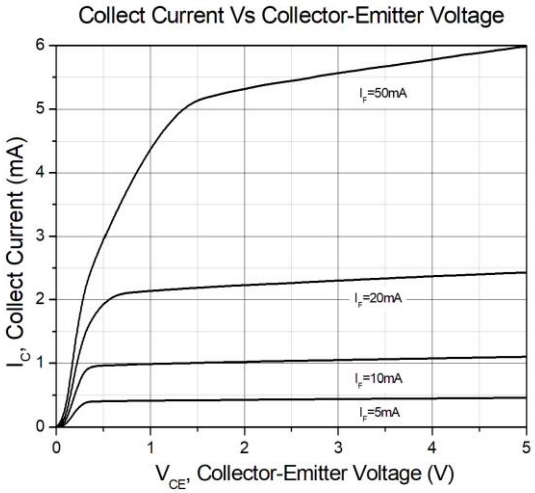


Figure 8

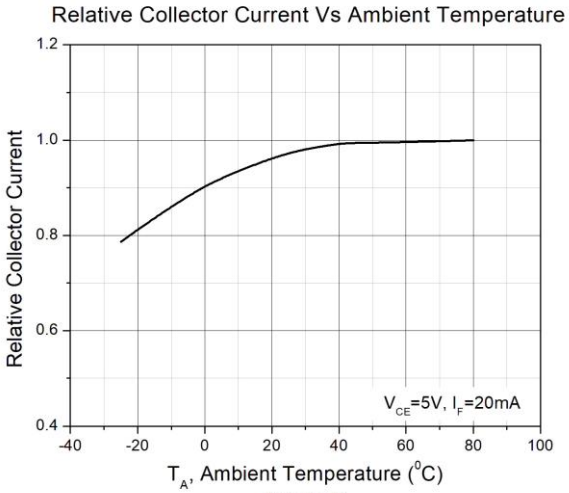


Figure 9

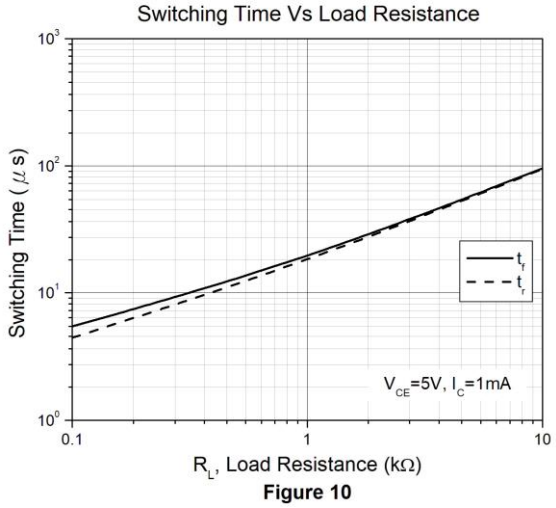


Figure 10

Typical Characteristic Curves

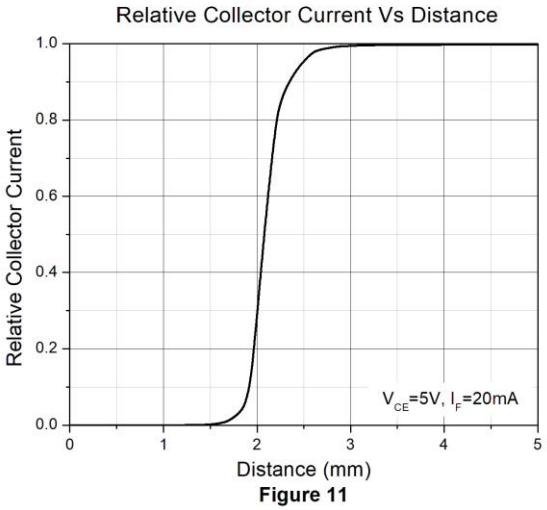
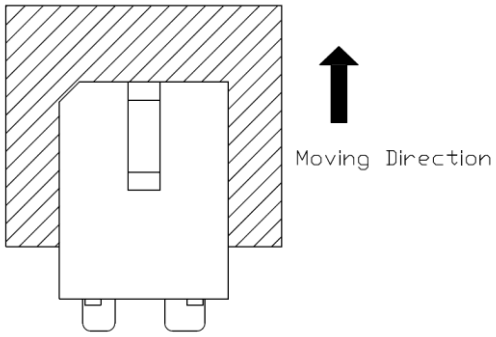


Figure 11



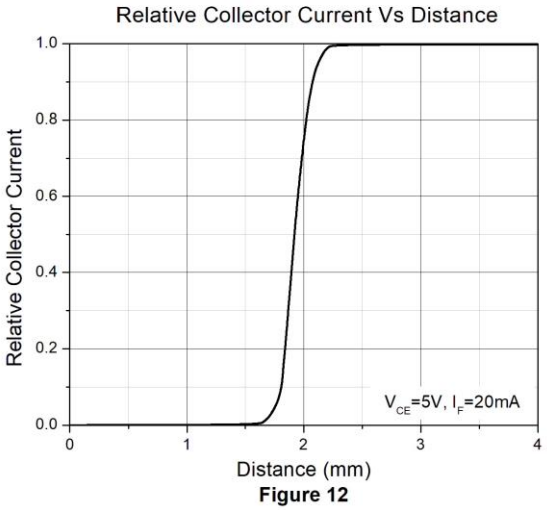
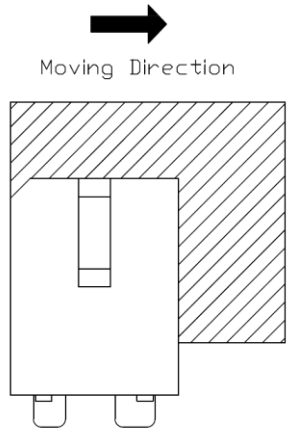
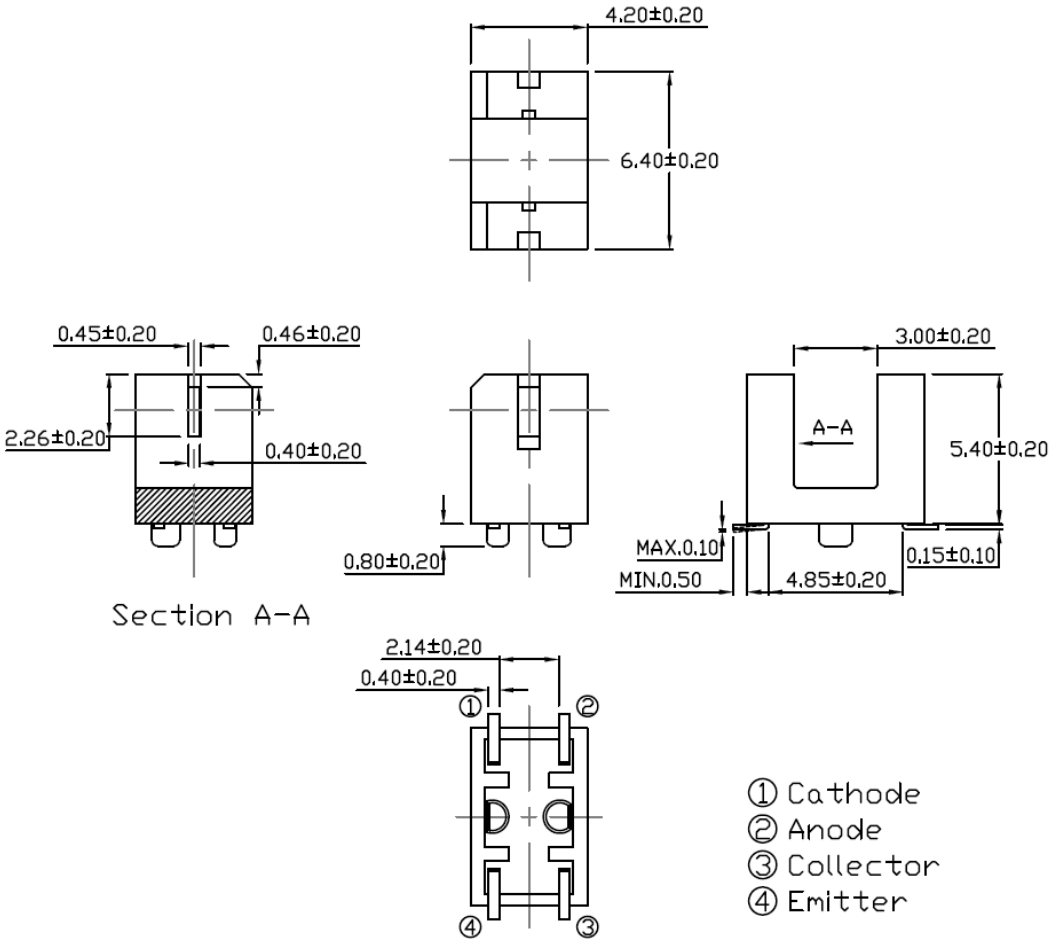


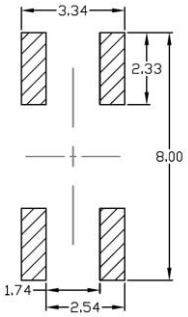
Figure 12



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



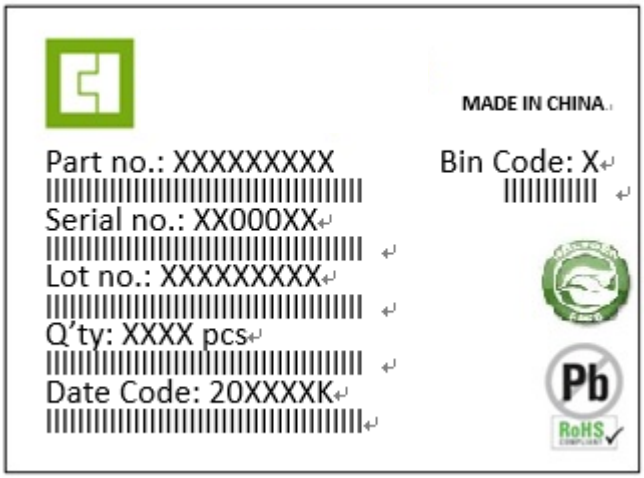
Recommended Soldering Footprint *All dimensions are in mm, unless otherwise stated*



Ordering Information

Part Number	*Description*	*Quantity*
PIT3005S-01	1 Reel	200 Pcs

Label Form Specification



Part no: CTM Production Number

Serial no: Production Number

Lot no: Lot number

Q'ty: Packing Quantity

Date Code: Manufacture Date

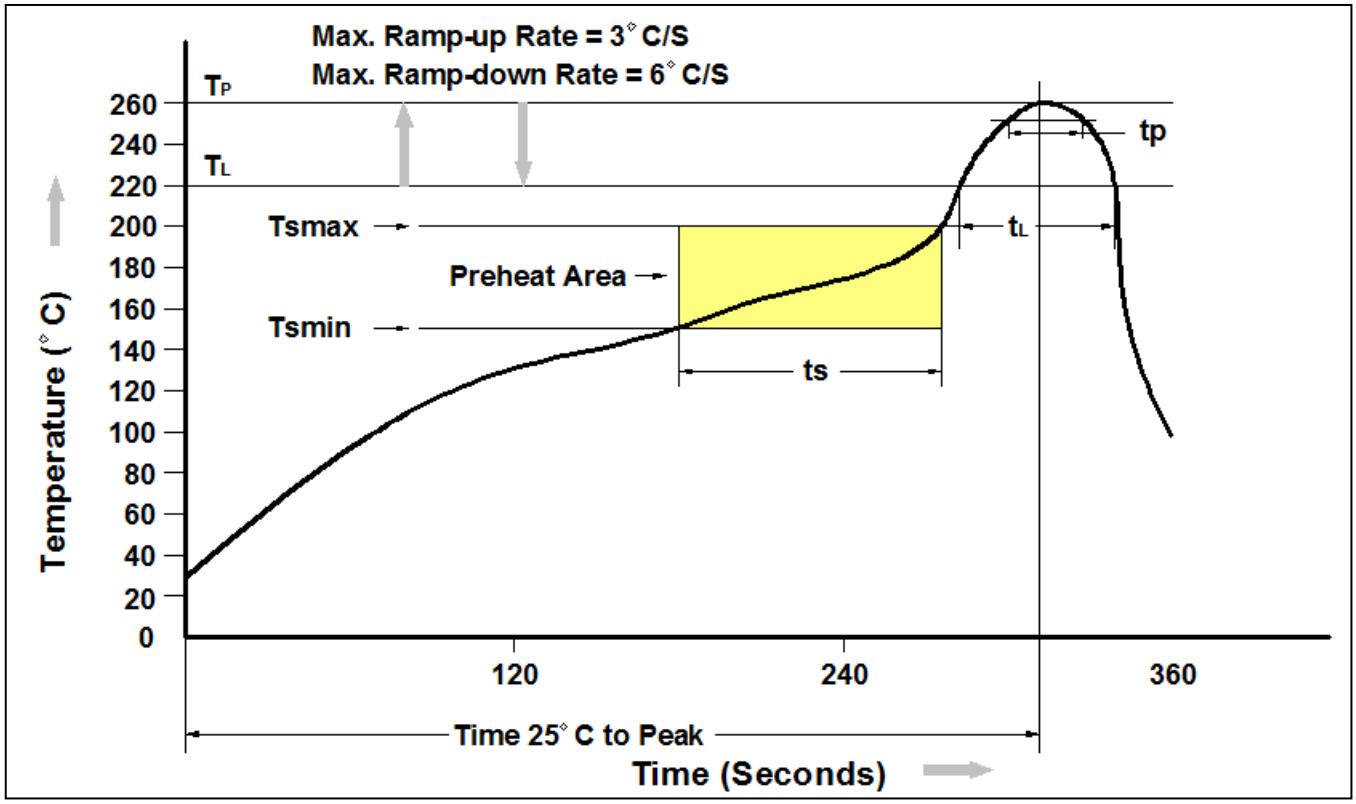
Bin Code: Ic Ranks

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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2. *A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.*