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PIT5005T-CL

Transmissive Type Photo-Interrupter

Features

- High reliability
- Gap width = 5mm
- Slit width = 0.5mm
- Good spectral matching to Si photo detector
- RoHS compliance

Description

The PIT5005T-CL is a transmissive type photo-interrupter which consist of an infrared emitting diode and an NPN silicon photo-transistor.

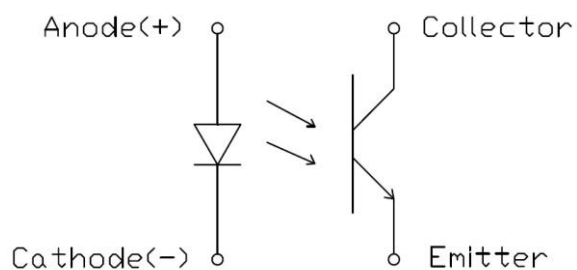
Applications

- Infrared sensor
- Printers
- Switch scanner

Package Outline



Schematic



**Absolute Maximum Rating at 25°C**

Symbol	Parameters	Ratings	Units	Notes
T _{opr}	Operating Temperature	-25 ~ +80	°C	
T _{stg}	Storage Temperature	-40 ~ +85	°C	
T _{sol}	Soldering Temperature	260	°C	1
Emitter				
I _F	Continuous Forward Current	50	mA	
I _{FP}	Peak Forward Current	1	A	2
V _R	Reverse Voltage	5	V	
P _D	Power Dissipation at(or below) 25°C Free Air Temperature	75	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	



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Electro-Optical Characteristics $T_A = 25^{\circ}\text{C}$ (unless otherwise specified)

Emitter Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
V_F	Forward Voltage	$I_F=20\text{mA}$	-	1.20	1.60	V	2
		$I_F=100\text{mA}$	-	1.40	1.85		
		$I_F=1\text{A}$		2.60	4.00		
I_R	Reverse Current	$V_R=5\text{V}$	-	-	10	μA	
λ_p	Peak Wavelength	$I_F=20\text{mA}$	-	940	-	nm	

Detector Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
$B_{V_{CEO}}$	Collector-Emitter Breakdown	$I_C=100\mu\text{A}$	30	-	-	V	
$B_{V_{ECO}}$	Emitter-Collector Breakdown	$I_E=100\mu\text{A}$	5	-	-	V	
I_{CEO}	Dark Current	$V_{CE}=20\text{V}$	-	-	100	nA	

Transfer Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
I_C	Collect Current	$V_{CE}=5\text{V}$, $I_F=20\text{mA}$	0.5	10	-	mA	
$V_{CE(sat)}$	C-E Saturation Voltage	$I_C=2\text{mA}$, $E_e=1\text{mW/cm}^2$	-	-	0.4	V	
t_r	Rise Time	$V_{CE}=5\text{V}$, $I_C=1\text{mA}$ $R_L=1\text{k}\Omega$	-	15	-	μs	
t_f	Fall Time		-	15	-		

Notes:

1 : Soldering time ≤ 5 seconds.2 : I_{FP} Conditions--Pulse Width $\leq 100\mu\text{s}$ and Duty $\leq 1\%$.



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Typical Characteristic Curves

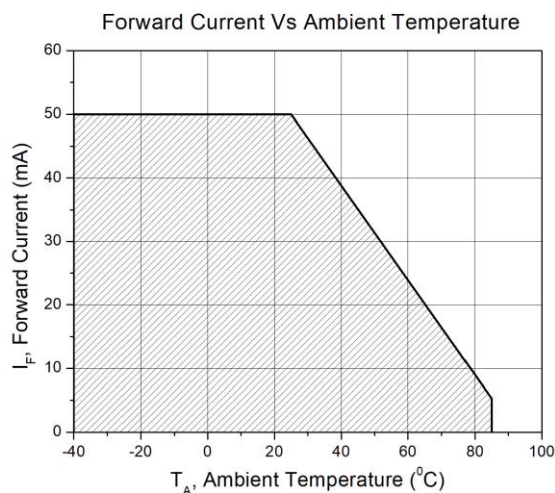


Figure 1

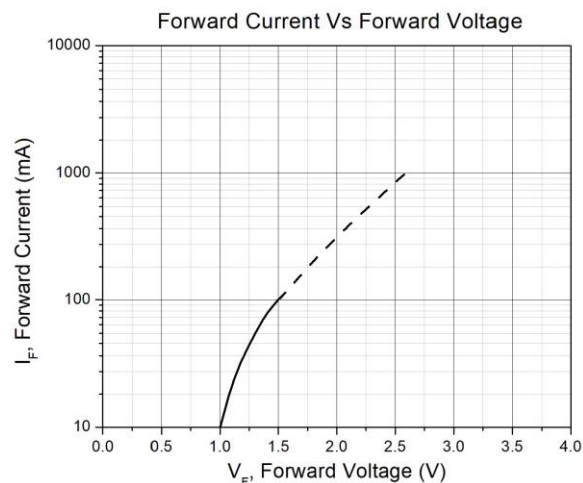


Figure 2

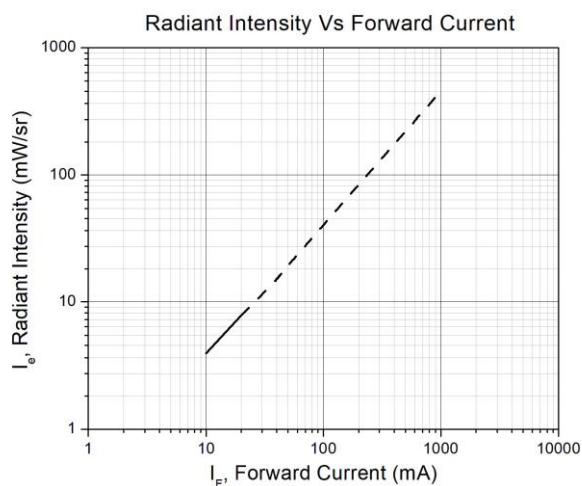


Figure 3

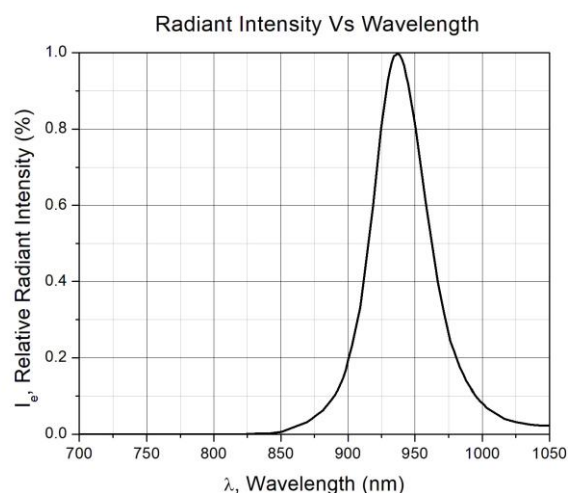


Figure 4

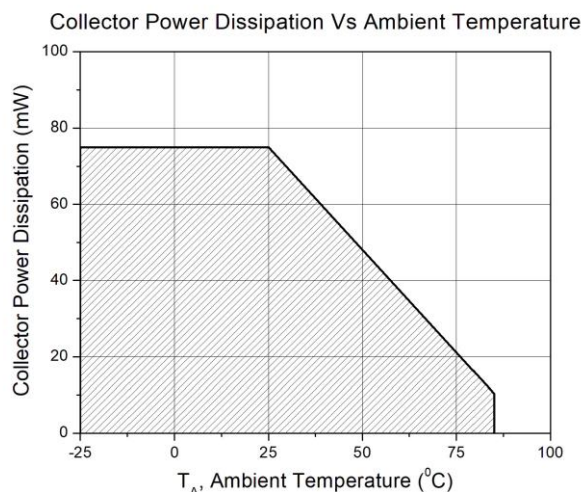


Figure 5

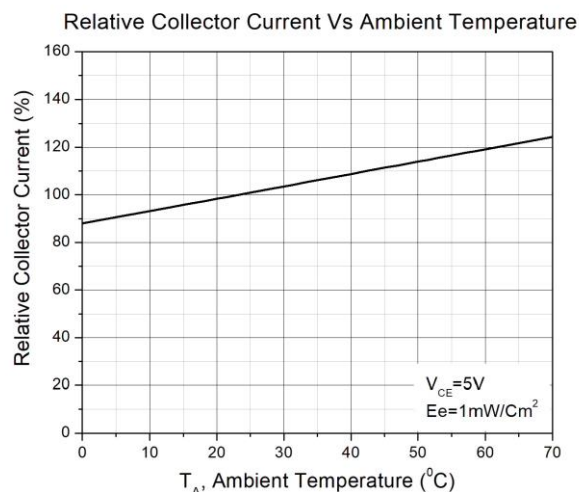
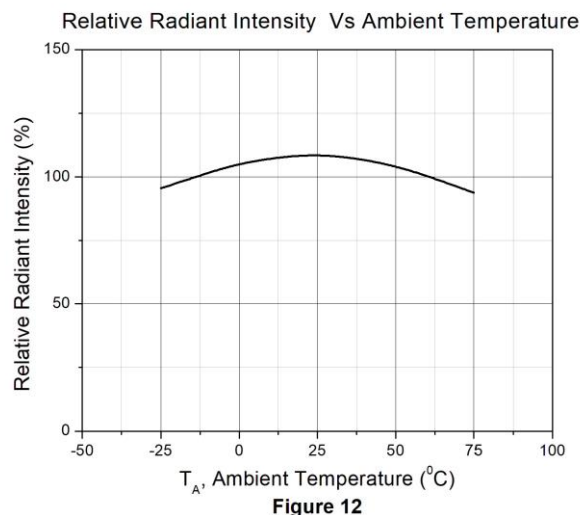
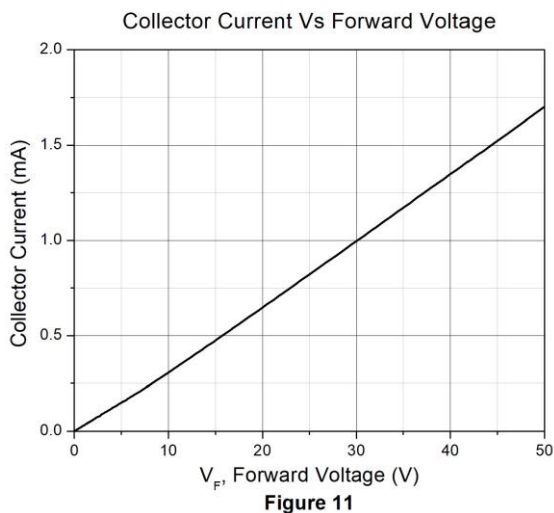
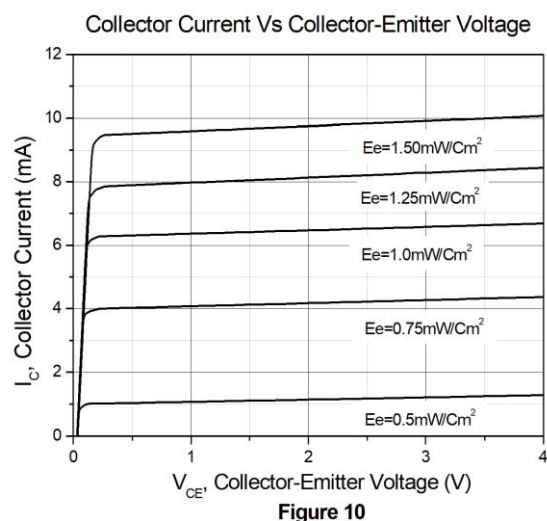
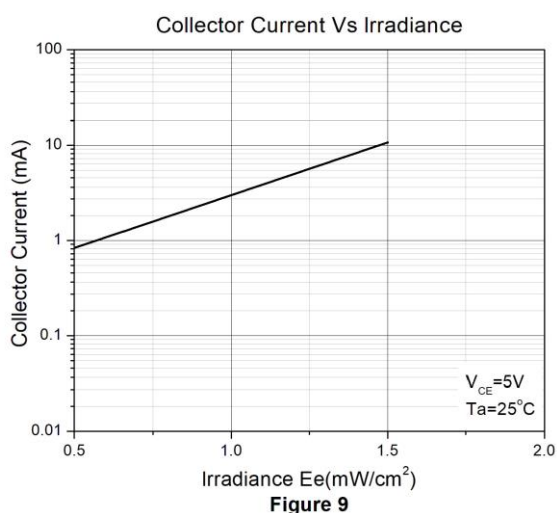
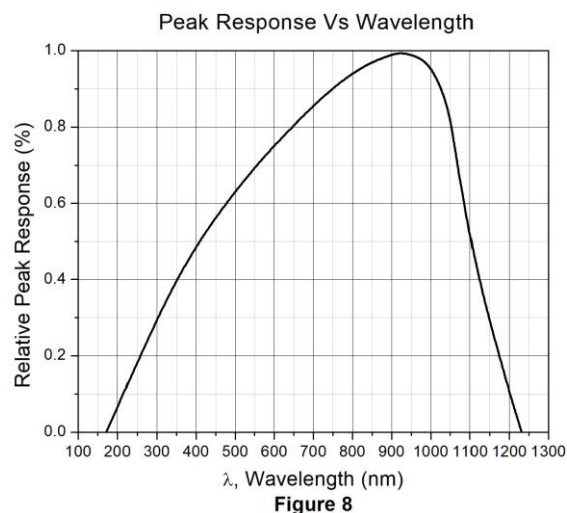
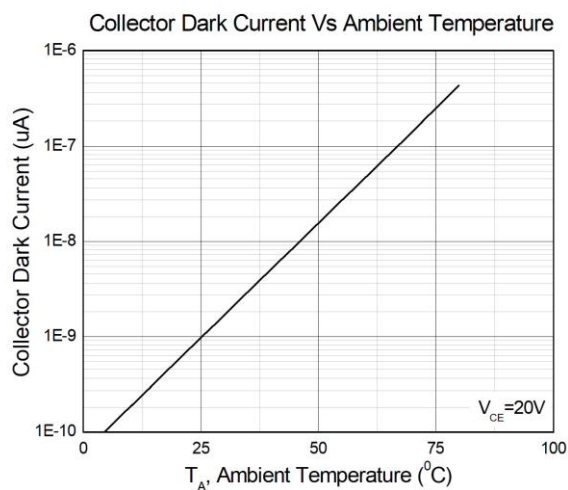


Figure 6

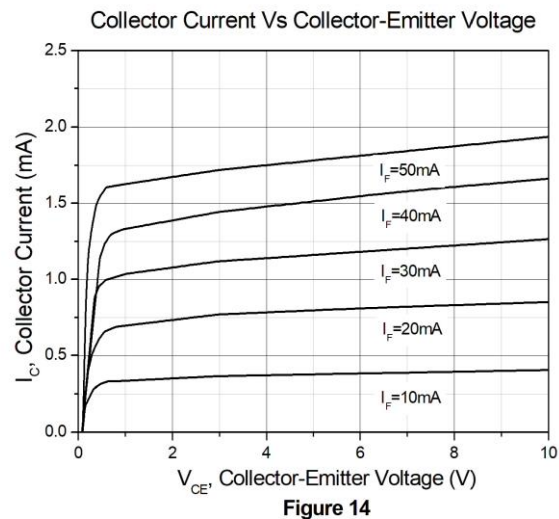
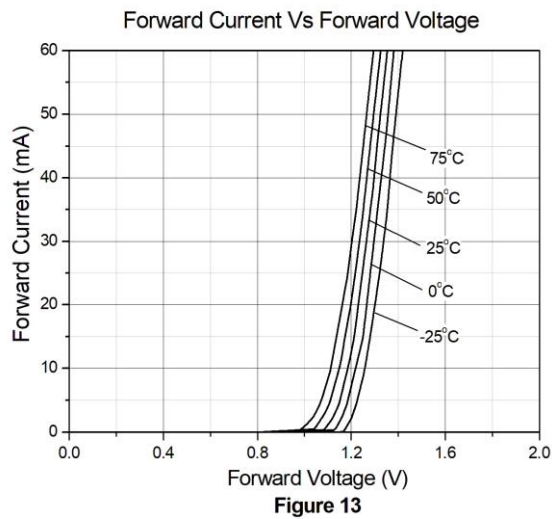


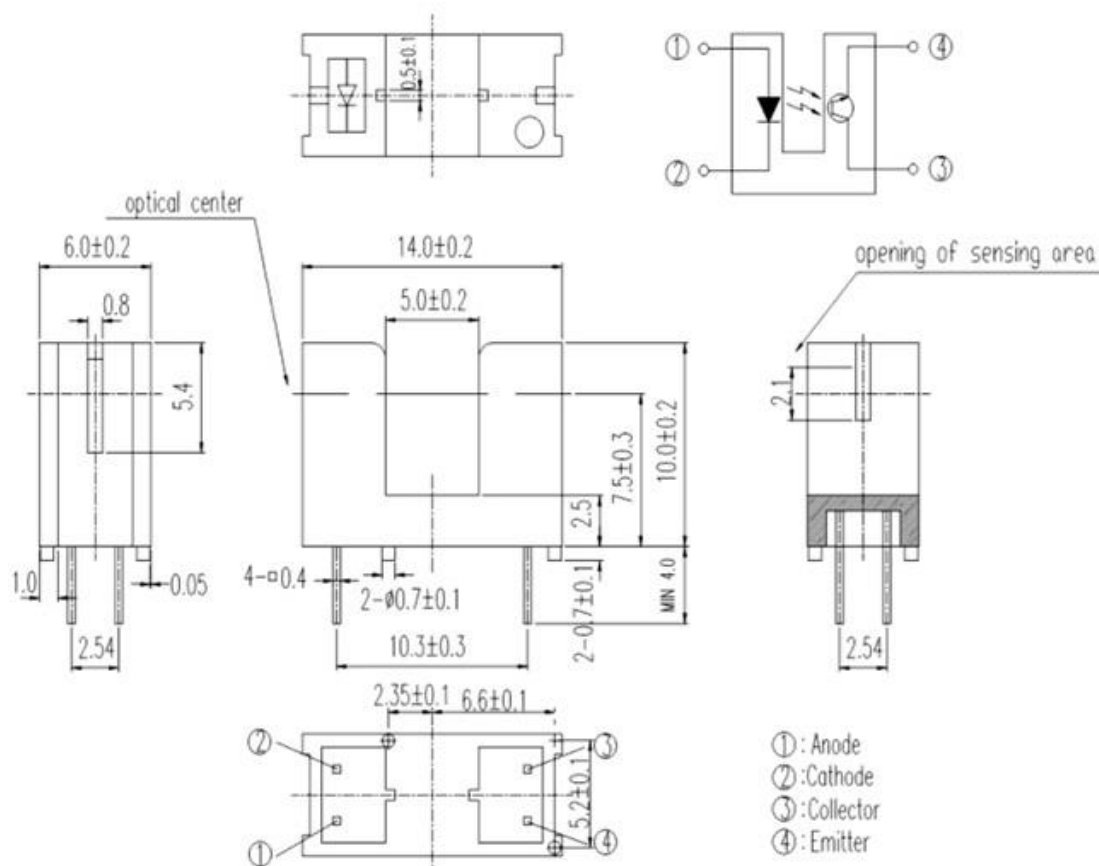
Typical Characteristic Curves





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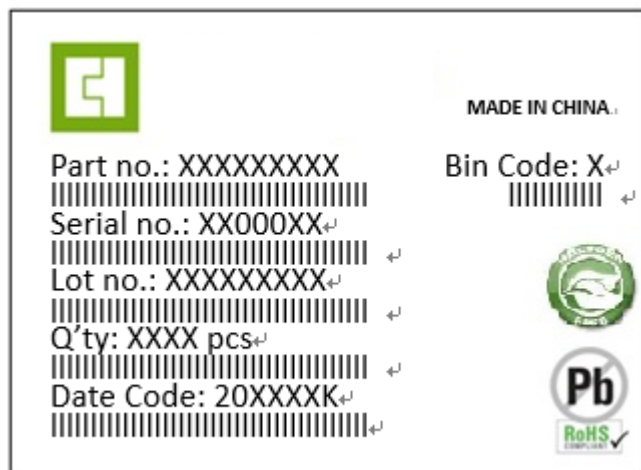


**Package Dimension** *All dimensions are in mm, unless otherwise stated.*



Transmissive Type Photo-Interrupter

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

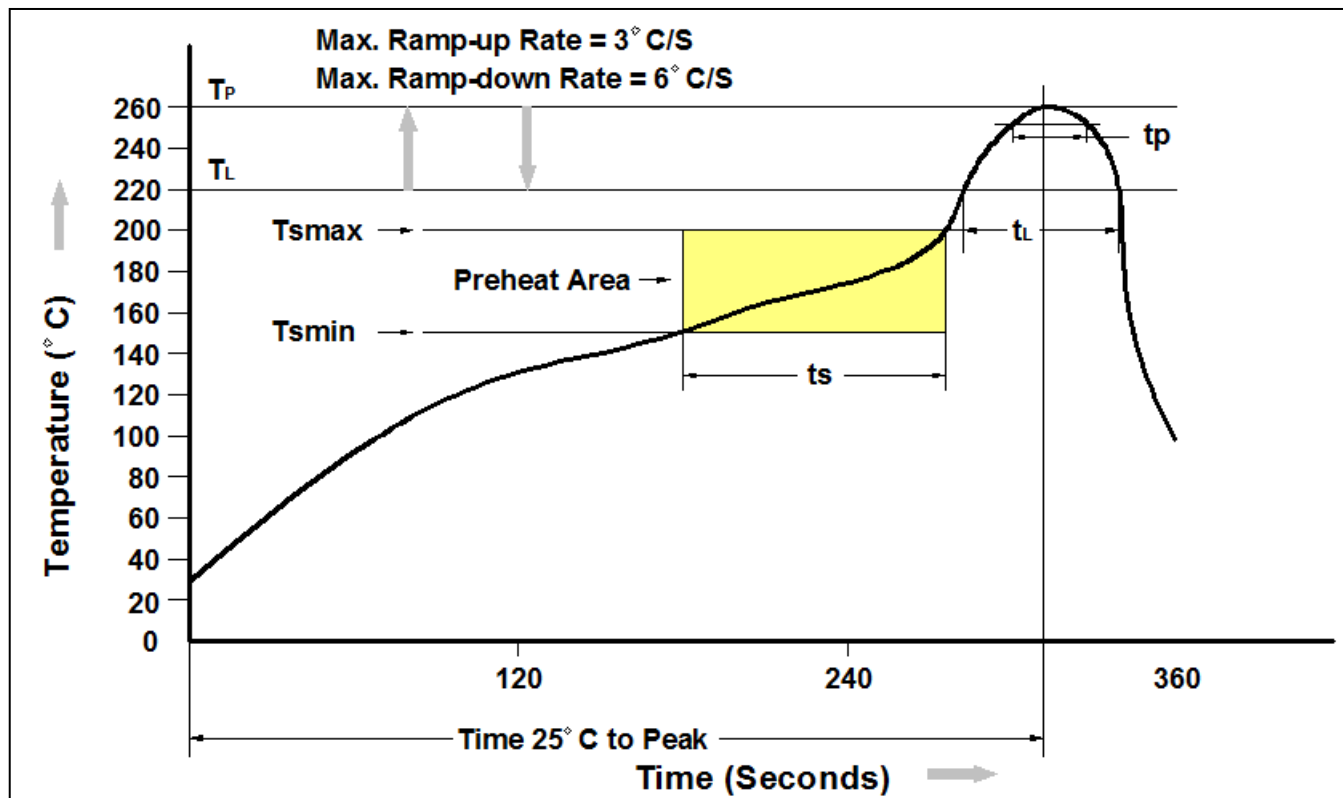
MADE IN CHINA: Production Place

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 (tL to tP)	3°C/second max.
Liquidous Temperature (TL)	217°C
Time (tL) Maintained Above (TL)	60 – 150 seconds
Peak Body Package Temperature	260°C +0°C / -5°C
Time (tP) within 5°C of 260°C	30 seconds
Ramp-down Rate (TP to TL)	6°C/second max
Time 25°C to Peak Temperature	8 minutes max.



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