

Harvatek Surface Mount CHIP LEDs Approval Sheet
Model No.: HT-191USD-K580

Official Product	HT Part No. HT-191USD-K580	Your Part No.		Data Sheet No.
Tentative Product	*****	*****		HDS-191-K580
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INTRODUCTION.....錯誤! 尚未定義書籤。 4

PRODUCT SPECIFICATION 4

ATTENTION: ELECTRICSTATIC DISCHARGE (ESD) PROTECTION..... 4

LABEL SPEC.:..... 5

PRODUCT FEATURE..... 7

 ELECTRO-OPTICAL CHARACTERISTICS..... 7

 PACKAGE OUTLINE DIMENSION AND RECOMMENDED SOLDERING PATTERN FOR REFLOW
 SOLDERING 7

 ABSOLUTE MAXIMUM RATINGS 7

 CHARACTERISTICS OF HT-191 SERIES..... 8

PACKAGING TAPE, REEL, AND PACKING MODEL..... 9

 TAPE DIMENSION 9

 REEL DIMENSION..... 9

 PACKING MODEL 10

DRY PACK..... 10

CAUTIONS OF PICK AND PLACE..... 11

PRECAUTIONS..... 11

REFLOW SOLDERING..... 11

 REWORK..... 12

 CLEANING..... 13

RELIABILITY TEST 13

Official Product	HT Part No. HT-191USD-K580	Your Part No.		Data Sheet No.
Tentative Product	*****	*****		HDS-191-K580
Specifications are subject to changes for improvement without advance notice. Proprietary data, drawings, and company confidential all rights reserved.		2007/9/4	Version of 1.0	Page 2/13

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HARVATEK's products are not authorized for use as critical components in life support devices or systems without the express written approval of the President of HARVATEK or HARVATEK INTERNATIONAL. As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury of the user.

2. A critical component in 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.

Official Product	HT Part No. HT-191USD-K580	Your Part No.		Data Sheet No.
Tentative Product	*****	*****		HDS-191-K580
Specifications are subject to changes for improvement without advance notice. Proprietary data, drawings, and company confidential all rights reserved.		2007/9/4	Version of 1.0	Page 3/13

Product Specification

	Specification	Material	Quantity
Iv	45-180mcd @20mA/ Ta= 25° C Tolerance: ± 10%		
lambda(λ _D)	615-630 nm @20mA/ Ta= 25° C Tolerance: ± 0.5nm		
Vf	1.6-2.4 V @20mA/ Ta= 25° C Tolerance: ± 0.05V		
Ir	< 100 μA @ V _R = 5 V		
Resin	Milky White	Epoxy resin	
Carrier tape	According to EIA 481-1A specs	Transparent type	4000pcs per reel
Reel	According to EIA 481-1A specs	Plastic/ White	
Label	HT standard	Paper	
Packing bag	220x240mm	Aluminum laminated bag/ no-zipper	One reel one bag
Carton	HT standard	Paper	Non-specified

Others:

Every mid-box will be loaded 5 reels. These 5 reels can be different in lot, Iv, lambda, or Vf. Every reel will have an independent label to identify its specification and the mid-box there will have a corresponding label post on it.

ATTENTION: Electricstatic Discharge (ESD) protection









The symbol shown on the page herein to introduce 'Electro-Optical Characteristics'. ESD protection for GaP and AlGaAs based chips is still necessary even though they are safe in low static-electric discharge. Parts built with AlInGaP, GaN, or/and InGaN based chips are **STATIC**

SENSITIVE devices. ESD protection has to considered and taken in the initial design stage.

If manual work/process is needed, please ensure the device is well protected from ESD during all the process.

Official Product	HT Part No. HT-191USD-K580	Your Part No.	Data Sheet No.
Tentative Product	*****	*****	HDS-191-K580
Specifications are subject to changes for improvement without advance notice. Proprietary data, drawings, and company confidential all rights reserved.		2007/9/4	Version of 1.0 Page 4/13

Label Spec.:

HARVATEK 	DATE: dd/mm/yyyy	
CUSTOMER P/N:		
		
HARVATEK P/N:	QTY:	PCS
		
LOT NO:	QC:	
	VF:	
IV BIN:	COLOR BIN:	

■ Customer P/N: To Be Defined

■ Harvatek P/N

H T - 1 9 1 USD-K580



Series Name	Emitting Color
HT-191: 1.6x0.8x0.6mm	USD: Ultra Bright Red @20mA Kxxx Product code

■ Lot No.

1 2 3 4 5 6 7 8 9 10
P 1 2 2 3 0 A - D T

Code 1	Code 2	Code 3	Code 4, 5	Code 6, 7	Code 9	Code 10
	Mfg. Year	Mfg. Month	Mfg. Date	Lots	Resin Color	Packaging
Internal Tracing Code	Z: 2000 1: 2001 2: 2002 3: 2003	1: Jan. 2: Feb. 9: Sep. A: Oct. B: Nov. C: Dec.	1~31/ (30)	01~99, A,B,C...	D: Milky White	T: Taped Reel

Official Product	HT Part No. HT-191USD-K580	Your Part No.	Data Sheet No.
Tentative Product	*****	*****	HDS-191-K580
Specifications are subject to changes for improvement without advance notice. Proprietary data, drawings, and company confidential all rights reserved.		2007/9/4	Version of 1.0 Page 5/13

■ Iv Bin:

Color	Bin Code	Spec. Range
Red	P	45-71.5mcd
	Q	71.5-112.5mcd
	R	112.5-180mcd

■ Color Bin:

Color	Bin Code	Spec. Range
Red	-	615-630nm

■ Vf Bin:

Color	Bin Code	Spec. Range
Red	-	1.6-2.4V

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Product Feature

Electro-Optical Characteristics

($I_F @ 20mA, T_a 25^\circ C$)

Code for parts	Lighting Color	Material	$V_F(V)$		$\lambda (nm)$			$I_V^*(mcd)$
			typ	max	λ_D	λ_P	$\Delta\lambda$	Min
HT-191USD-xxxx	Ultra Bright Red	AllnGaP	1.9	2.4	622	636	17	45

Package Outline Dimension and Recommended Soldering Pattern for Reflow Soldering

Unit: mm Tolerance: +/-0.1

Outline Dim.	Soldering Pattern
<p>Cathode mark</p> <p>LED Die</p> <p>0.8</p> <p>1.6</p> <p>0.6</p> <p>1.0</p> <p>0.4</p> <p>Resin</p> <p>PCB</p> <p>Cathode side</p> <p>Polarity</p> <p>0.8</p> <p>0.7</p> <p>0.8</p> <p>0.8</p> <p>Unit:mm</p>	
Soldering terminal may shift in x, y direction.	

Absolute Maximum Ratings

($T_a 25^\circ C$)

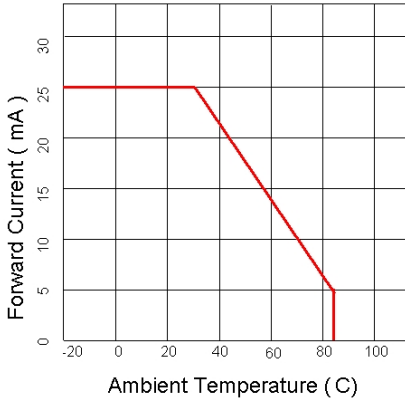
Series	$P_d (mW)$	$I_F (mA)$	$I_{FP} (mA)$	$V_R (V)$	$I_R (\mu A)$	$T_{OP} (^\circ C)$	$T_{ST} (^\circ C)$
HT-191USD	72	30	100**	5	<100@ $V_R = 5$	-30~+80	-40~+85

** Condition for I_{FP} is pulse of 1/10 duty and 0.1msec width

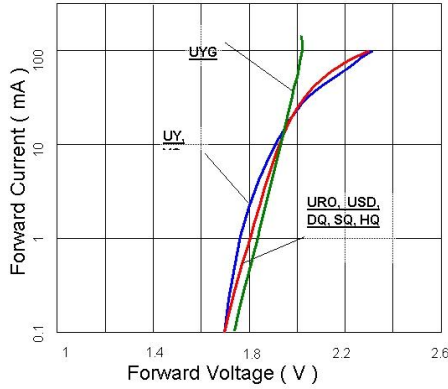
Official Product	HT Part No. HT-191USD-K580	Your Part No.		Data Sheet No.
Tentative Product	*****	*****		HDS-191-K580
Specifications are subject to changes for improvement without advance notice. Proprietary data, drawings, and company confidential all rights reserved.		2007/9/4	Version of 1.0	Page 7/13

Characteristics of HT-191 Series

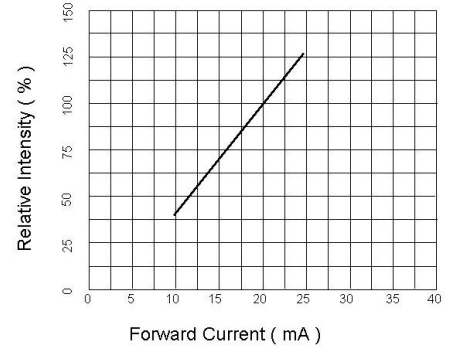
Forward Current vs. Ambient Temperature



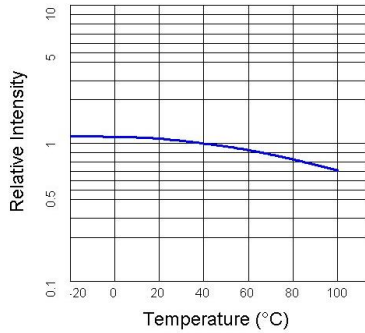
Forward Voltage vs. Forward Current



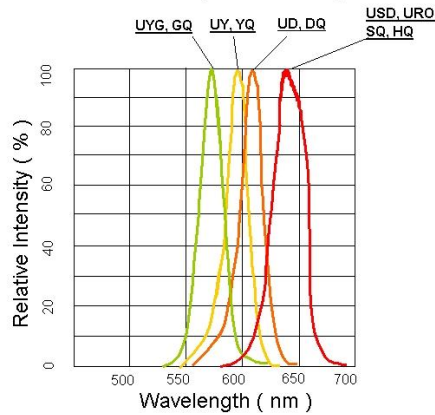
Relative Intensity vs. Forward Current



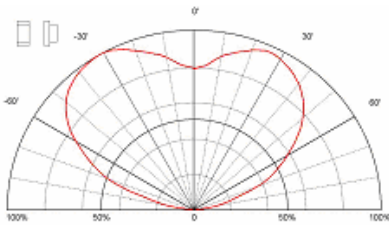
Relative Intensity vs. Ambient Temperature
Plused 20mA, 300us pulse, 10ms period



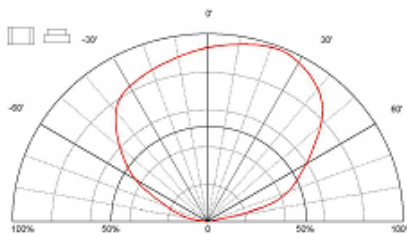
Relative Intensity vs. Wavelength



Directive Characteristics

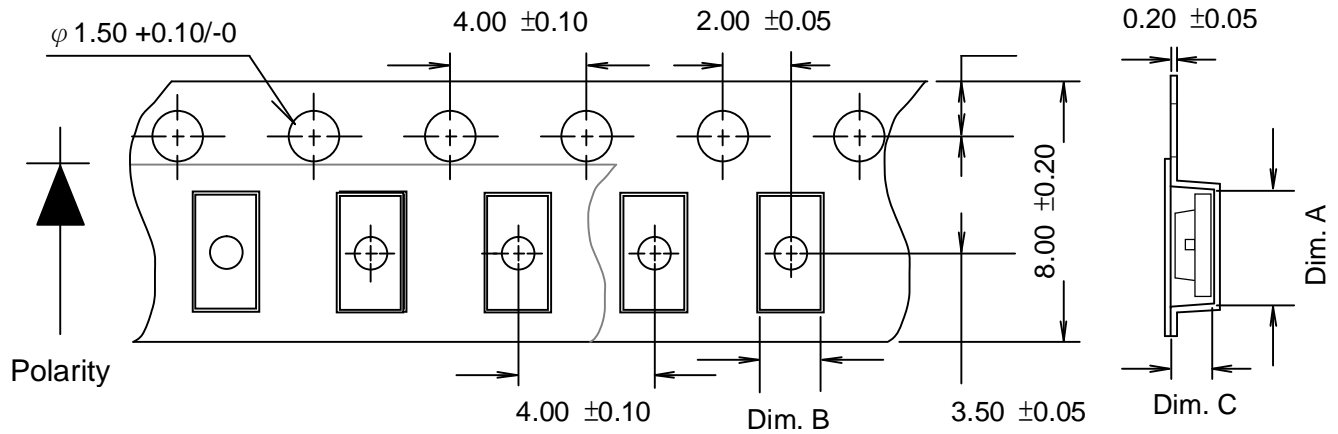


Directive Characteristics



Official Product	HT Part No. HT-191USD-K580	Your Part No.	Data Sheet No.
Tentative Product	*****	*****	HDS-191-K580
Specifications are subject to changes for improvement without advance notice. Proprietary data, drawings, and company confidential all rights reserved.		2007/9/4	Version of 1.0
			Page 8/13

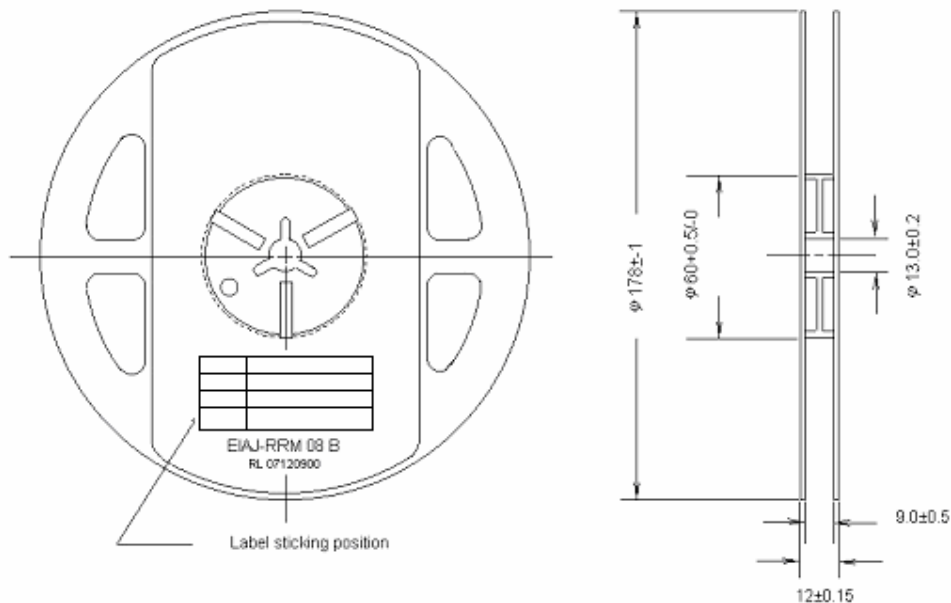
Packaging Tape, Reel, and Packing Model Tape Dimension



Part No.	Dim. A	Dim. B	Dim. C	Q'ty/Reel
HT-191	1.80 ± 0.10	0.95 ± 0.10	0.75 ± 0.10	4K

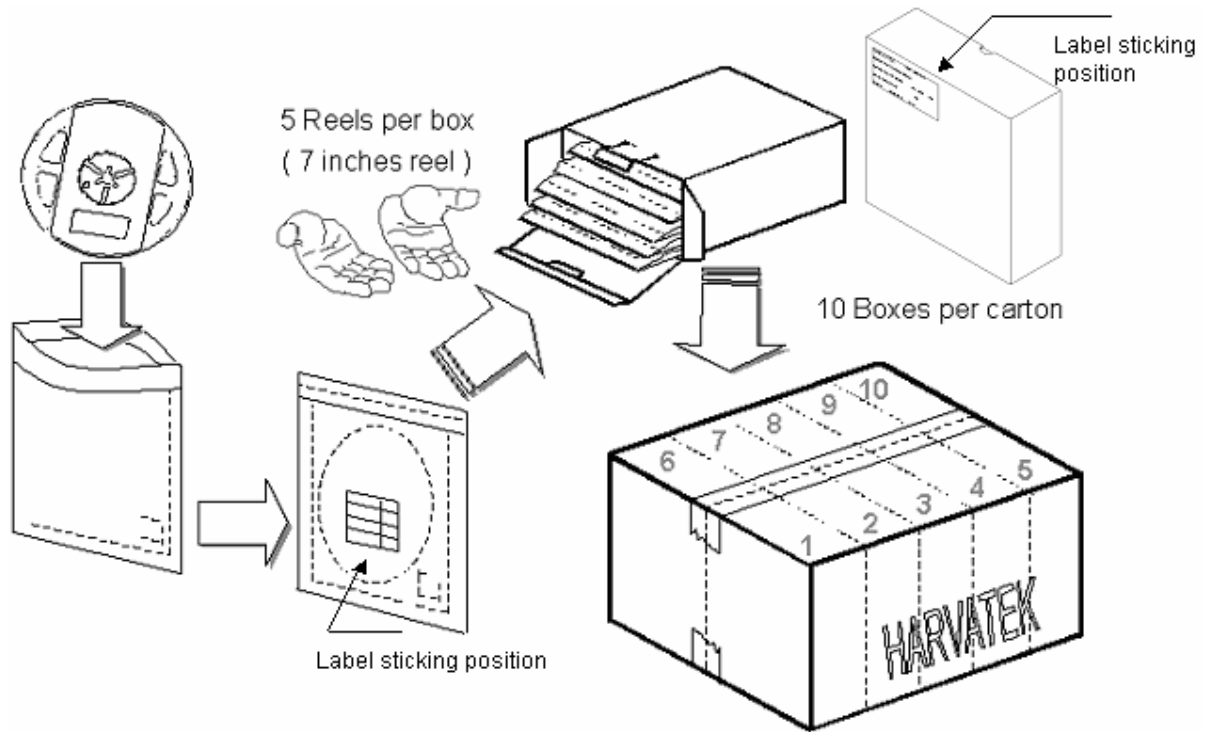
Unit: mm

Reel Dimension



Official Product	HT Part No. HT-191USD-K580	Your Part No.	Data Sheet No.
Tentative Product	*****	*****	HDS-191-K580
Specifications are subject to changes for improvement without advance notice. Proprietary data, drawings, and company confidential all rights reserved.		2007/9/4	Version of 1.0
			Page 9/13

Packing Model



5 boxes per carton is available according to shipping quantity.

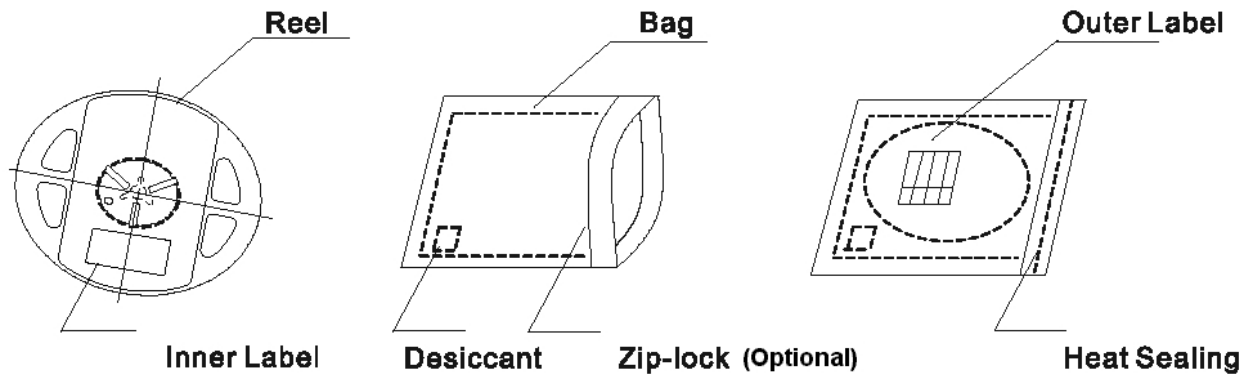
Dry Pack

Any SMD optical device, like this chip LED, is **MOISTURE SENSITIVE device**. Avoid absorbing moisture at any time during transportation or storage. Every reel will be packaged in the moisture barrier anti-static bag (Specific bag material will depend upon customers' requirement or option). And the bag is well sealed before shipment.

By customer's requirement, we will put a humidity indicator in each moisture barrier anti-static bag before shipment.

The package is the following:

Official Product	HT Part No. HT-191USD-K580	Your Part No.	Data Sheet No.
Tentative Product	*****	*****	HDS-191-K580
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Cautions of Pick and Place

It should be avoided to load stress on the resin during high temperature.

Avoid rubbing or scraping the resin by any object.

Electric-static may cause damage to the component. Please confirm that the equipment grounding well. Using an ionizer fan is recommended.

PRECAUTIONS

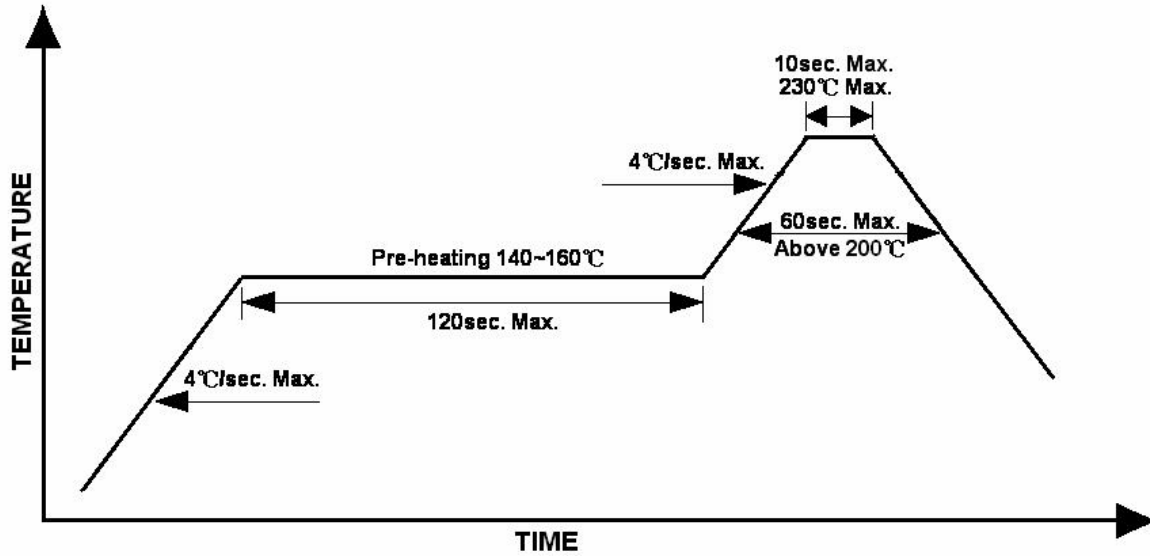
1. Avoid absorbing moisture at any time during transportation or storage.
2. Anti-Static process is needed especially when handling GaN, InGaN, and AlInGaP products.
3. It is suggested to connect the unit with a proper series current limit resistor. Avoid driving reverse voltage over the specification of LEDs when turning the unit ON/OFF.
4. Any application should refer to the specifications of absolute maximum ratings.
5. Avoid any direct contact with the viewing area.
6. If possible, assemble the unit in a clean room or dust-free environment.

Reflow Soldering

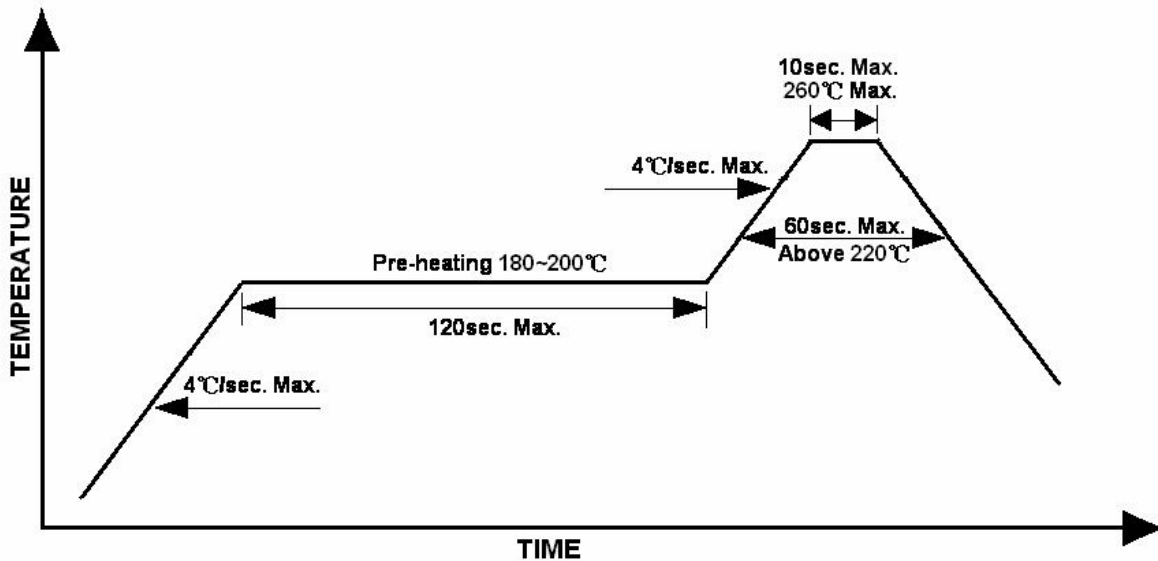
- ◆ Recommend tin glue specifications:
Melting temperature: 178~192 °C
- ◆ Never take next process until the component is cooled down to room temperature after reflow.
- ◆ The recommended reflow soldering profile (measuring on the surface of the LED resin) is following:

Official Product	HT Part No. HT-191USD-K580	Your Part No.		Data Sheet No.
Tentative Product	*****	*****		HDS-191-K580
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Lead Solder



Lead-free Solder



Rework

- ◆ Customer must finish rework within 5 sec. under 260 °C.
- ◆ The head of iron cannot touch copper foil.
- ◆ Twin-head type is preferred.

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Tentative Product	*****	*****	HDS-191-K580
Specifications are subject to changes for improvement without advance notice. Proprietary data, drawings, and company confidential all rights reserved.		2007/9/4	Version of 1.0
			Page 12/13

Cleaning

The conditions of cleaning after soldering:

An alcohol-based solvent such as isopropyl alcohol (IPA) is recommended.

Temperature×Time: <50 °C×30sec, or <30 °C×3min

Ultra sonic cleaning: < 15W/ bath; Bath volume: 1liter max.

Curing: 100 °C max, <3min

Do not contact with component on the assembly board.

Reliability Test

Item	Frequency/ lots/ samples/ failures	Standards Reference	Conditions
Precondition	For all reliability monitoring tests according to JEDEC Level 2	J-STD-020	1.) Baking at 85°C for 24hrs 2.) Moisture storage at 85°C/ 60% R.H. for 168hrs
Solderability	1Q/ 1/ 22/ 0	JESD22-B102-B And CNS-5068	Accelerated aging 155°C/ 24hrs Tinning speed: 2.5±0.5cm/s Tinning: A: 215°C/ 3±1s or B: 260°C/ 10±1s
Resistance to Soldering heat	1/100/0	JESD22-A113	3x IR-reflow-soldering according to soldering profile
Operating life test	1Q/ 1/ 40/ 0	CNS-11829	1.) Precondition: 85°C baking for 24hrs 85°C/ 60%R.H. for 168hrs 2.) T _{amb} 25°C; I _F =20mA; duration 1000hrs
High humidity, high temperature bias	1Q/ 1/ 45/ 0	JESD-A101-B	T _{amb} : 85°C Humidity: 85% R.H., I _F =5mA Duration: 1000hrs
High temperature bias	1Q/ 1/ 20	HT specs.	T _{amb} : 55°C I _F =20mA Duration: 1000hrs
Pulse life test	1Q/ 1/ 40/ 0		T _{amb} 25°C, I _F =20mA,, I _P =100mA, Duty cycle=0.125 (tp=125 μs, T=1sec) Duration 500hrs)
Temperature cycle	1Q/ 1/ 76/ 0	JESD-A104-A IEC 68-2-14, Nb	A cycle: -40 degree C 15min; +85 degree C 15min Thermal steady within 5 min.. 300 cycles 2 chamber/ Air-to-air type
High humidity storage test	1Q/ 1/ 40/ 0	CNS-6117	60±3°C 90+5/-10% R.H. for 500hrs
High temperature storage test	1Q/ 1/ 40/ 0	CNS-554	100±10°C for 500hrs
Low temperature storage test	1Q/ 1/ 40/ 0	CNS-6118	-40±5°C for 500hrs

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Tentative Product	*****	*****	HDS-191-K580
Specifications are subject to changes for improvement without advance notice. Proprietary data, drawings, and company confidential all rights reserved.		2007/9/4	Version of 1.0 Page 13/13