

**Harvatek High Power SMD LED Datasheet****HT-N178TWU & HT-N178TWV**

Official Product	HT-N178TWU & HT-N178TWV	Your Part No.		Data Sheet No.
Tentative Product	*****	*****		HT-N178TW Series
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## Introduction

- The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by HARVATEK for any infringements of intellectual property or other rights of the third parties which may result from it use.
- HARVATEK is continually making an effort to improve the quality of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing HARVATEK products, to comply with the standards of safety in making a safe design for the entire system, and to avoid situations in which a malfunction or failure of such HARATEK products cause loss of human life, bodily injury or damage to property.
- The HARVATEK products listed in this document are intended for usage in general electronics (computer, personal equipment, office equipment, industrial robotics, domestic, etc...) These products are neither intended nor warranted for usage in equipment that requires extraordinarily high quality and/or reliability or a malfunction or failure of which may cause loss of human life or bodily injury.
- In developing your designs, please ensure that HARVATEK products are used within specified operating ranges as set forth in the most recent HARVATEK products specifications.
- Also, please keep in mind of the precautions listed in this document.

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## Product Specification

	Specification	Material	Quantity
Total Flux	HT-N178TWU: Typical 75 lm @350mA/ Ta= 25°C HT-N178TWV: Typical 140 lm @700mA/ Ta=25°C		
Correlated Color Temperature	HT-N178TWU: 3000K~9000K @350mA/ Ta=25°C HT-N178TWV: 3000K~9000K @700mA/ Ta=25°C		
V <sub>F</sub>	3.03-3.99V @700mA/ Ta=25°C & @350mA/ Ta=25°C		
I <sub>R</sub>	HT standard		
Resin	White	Epoxy resin	
Tube	HT standard	Conductive	50pcs per tube
Label	HT standard	Paper	
Carton	HT standard	Paper	Non-specified

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Others:

**ATTENTION: Electric Static 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.

**Compliance and Certification**

RoHS compliant and IS9002, QS9000 and ISO14001 certified.



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**Description of Model No. and Lot No.**

**Model No.**

HT - N 1 7 8 T W X

Company	Product Name	Dice	Package	Emitter Color	Current code
HT: For Harvatek	N: Ultra Bright chip	1: Single . .	Outline dimension	TW: White	U:350mA V:700mA

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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 .....	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

### Product Feature

- Wide view angle
- Easy to fixed
- No UV
- Long operating time (Up to 50,000hrs)
- Lower forward voltage operated
- More energy efficient than incandescent and most halogen lamps
- ESD with 2KV
- Instant light (less than 100nS)

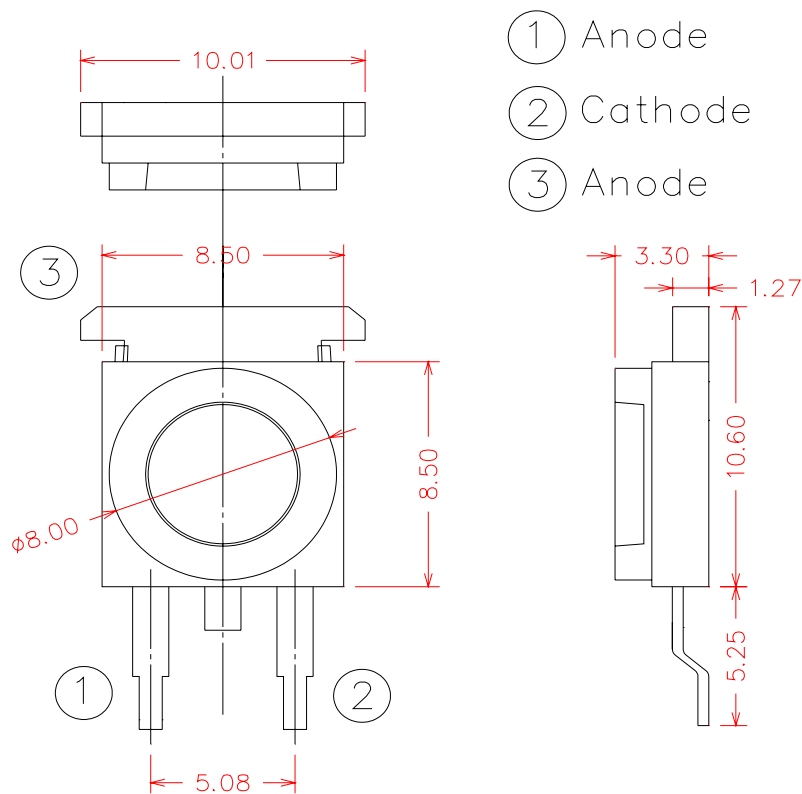
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### Application

- Reading lights (car, bus, aircraft)
- Portable (flashlight, bicycle)
- Task lighting
- Garden lighting
- Rail lighting
- Wayside lighting
- LCD Backlights
- Light Guides
- Traffic signaling
- Architectural lighting

### Product Out Line Dimension (HT-N178TW series)

Tolerance: +/-0.1



Unit: mm

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### Absolute Maximum Ratings

(T<sub>a</sub> =25°C)

Parameter	Rating	Unit	Conditions
DC Forward Current <sup>*1</sup>	800	mA	-
Peak Pulsed Forward Current <sup>*2</sup>	1000	mA	-
Reverse Voltage	5	V	-
LED junction Temperature	120	°C	-
Operating Temperature	-30~+85	°C	-
Storage Temperature	-40~+120	°C	-
Soldering Temperature	260	°C	For 5 sec. Max.

\*1: Proper current derating must be observed to maintain junction temperature below the maximum

\*2:tp ≤ 10μs, Duty cycle=0.01

### Electro-Optical Characteristics

(T<sub>a</sub> =25°C)

( HT-N178TWU )

Parameter	Symbol	Min.	TYP.	Max.	Unit
Viewing angle	2θ ½	-	110	-	Deg.
Forward Voltage (I <sub>F</sub> =700mA)	V <sub>F</sub>	3.03	-	3.99	V
Luminous Flux	Flux	60	75	-	lm
Correlated Color Temperature	CCT	3000	-	9000	K
Temperature Coefficient of Forward Voltage	ΔV <sub>F</sub> /ΔT	-	-2	-	mV/°C
Thermal Resistance Junction to Board (I <sub>F</sub> =350mA)	Rθ <sub>J-B</sub>	-	8	-	°C/W

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( HT-N178TWV )

Parameter	Symbol	Min.	TYP.	Max.	Unit
Viewing angle	$2\theta \frac{1}{2}$	-	110	-	Deg.
Forward Voltage ( $I_F=700mA$ )	$V_F$	3.03	-	3.99	V
Luminous Flux	Flux	87.4	140	-	lm
Correlated Color Temperature	CCT	3000	-	9000	K
Temperature Coefficient of Forward Voltage	$\Delta V_F/\Delta T$	-	-2	-	mV/°C
Thermal Resistance Junction to Board ( $I_F=700mA$ )	$R\theta_{J-B}$	-	8	-	°C/W

### Luminous Flux Rank

HT-N178TWU

Rank Code	Symbol	Condition	Min.	Typ.	Max.	Unit
Full	$\Phi V$	$I_F= 350mA$	67.2	-	113.6	lm
PT			67.2	-	87.4	
PU			87.4	-	113.6	

Note: It maintains a tolerance of  $\pm 10\%$  on flux

HT-N178TWV

Rank Code	Symbol	Condition	Min.	Typ.	Max.	Unit
Full	$\Phi V$	$I_F=700mA$	87.4	-	192.0	lm
				-		
PU			87.4	-	113.6	
PV			113.6	-	147.7	
PW			147.7	-	192.0	

Note: It maintains a tolerance of  $\pm 10\%$  on flux

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## Electrical Rank

### HT-N178TWU

Rank Code	Symbol	Condition	Min.	Typ.	Max.	Unit
Full	V <sub>F</sub>	I <sub>F</sub> = 350mA	3.03	-	3.99	V
P05			3.03	-	3.27	
P06			3.27	-	3.51	
P07			3.51	-	3.75	
P08			3.75	-	3.99	

Note: It maintains a tolerance of  $\pm 0.1V$  on forward voltage measurements

### HT-N178TWV

Rank Code	Symbol	Condition	Min.	Typ.	Max.	Unit
Full	V <sub>F</sub>	I <sub>F</sub> =700mA	3.03	-	3.99	V
P05			3.03	-	3.27	
P06			3.27	-	3.51	
P07			3.51	-	3.75	
P08			3.75	-	3.99	

Note: It maintains a tolerance of  $\pm 0.1V$  on forward voltage measurements

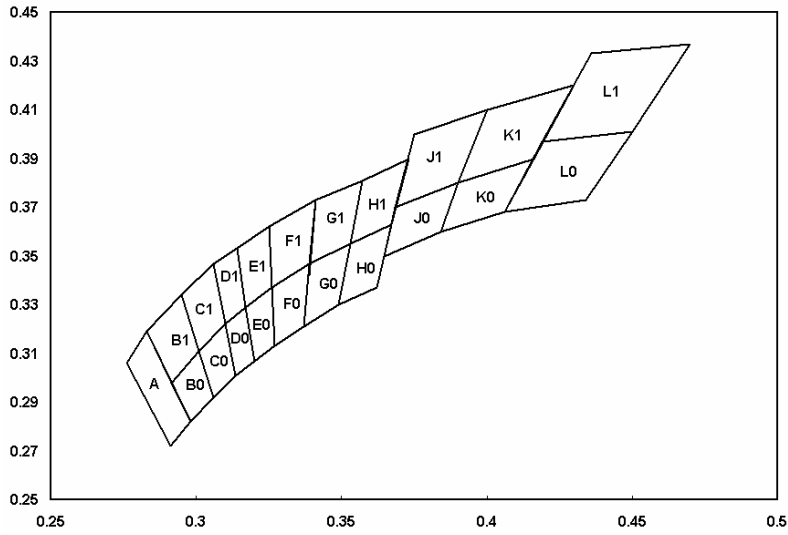
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### Correlated Color Temperature Rank

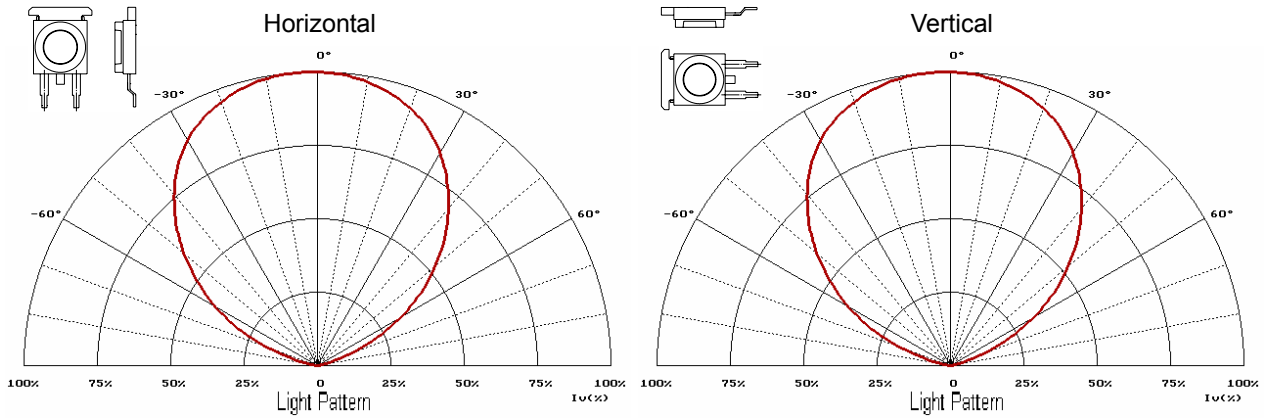
Color	Condition	Bin Code	Min.	Typ.	Max.	Unit
Warm White	I <sub>F</sub> =700mA or 350mA	L1	2,750	3,000	3,250	K
		L0	2,750	3,000	3,250	
		K1	3,250	3,500	3,750	
		K0	3,250	3,500	3,750	
		J1	3,750	4,000	4,250	
		J0	3,750	4,000	4,250	
		H1	4,250	4,500	4,750	
		H0	4,250	4,500	4,750	
Pure White		G1	4,750	5,000	5,250	
		G0	4,750	5,000	5,250	
		F1	5,250	5,500	5,750	
		F0	5,250	5,500	5,750	
		E1	5,750	6,000	6,250	
		E0	5,750	6,000	6,250	
		D1	6,250	6,500	6,750	
		D0	6,250	6,500	6,750	
Cold White	C1	6,750	7,000	7,500		
	C0	6,750	7,000	7,500		
	B1	7,500	8,000	8,500		
	B0	7,500	8,000	8,500		
	A	8,500	9,000	9,500		

Note: It maintains a tolerance of  $\pm 5\%$  on CCT

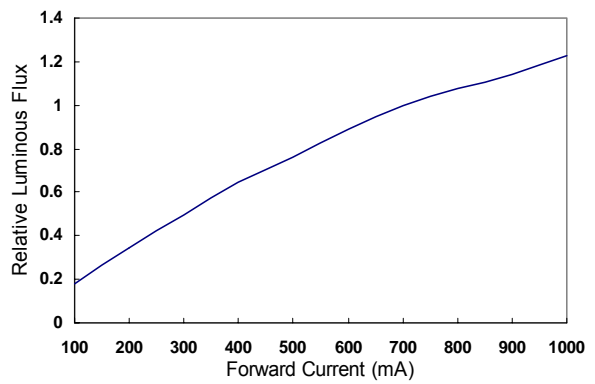
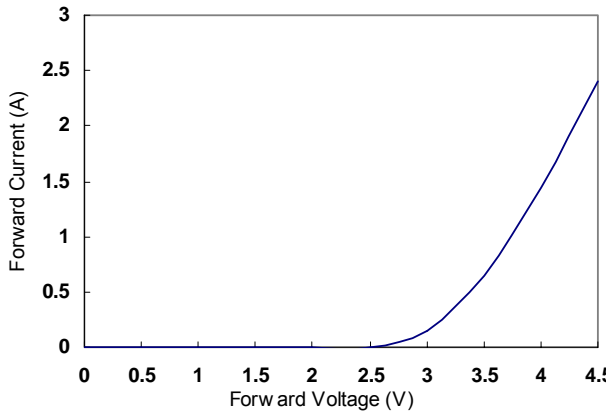
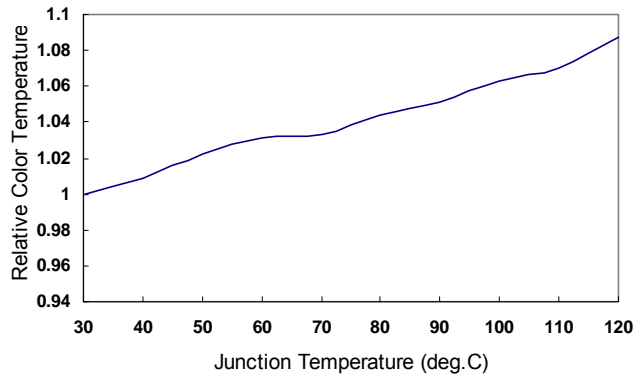
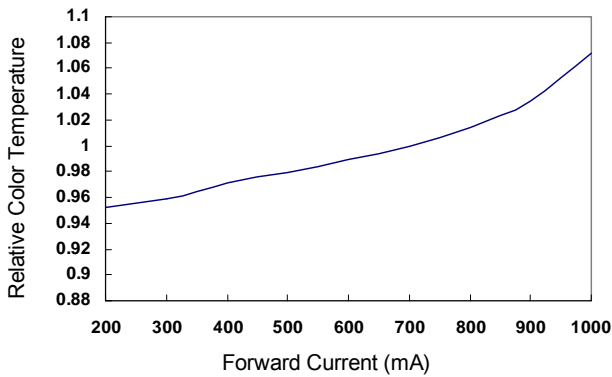
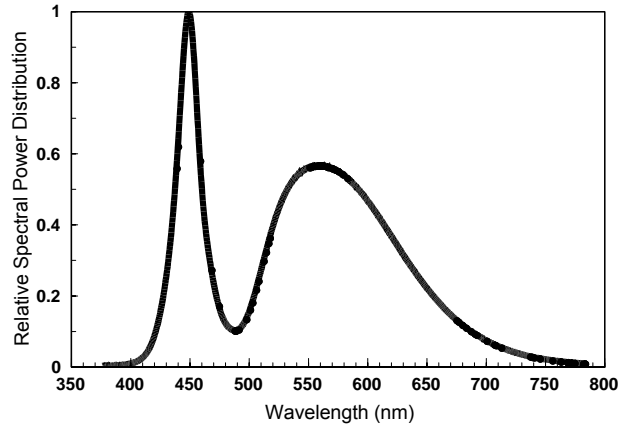
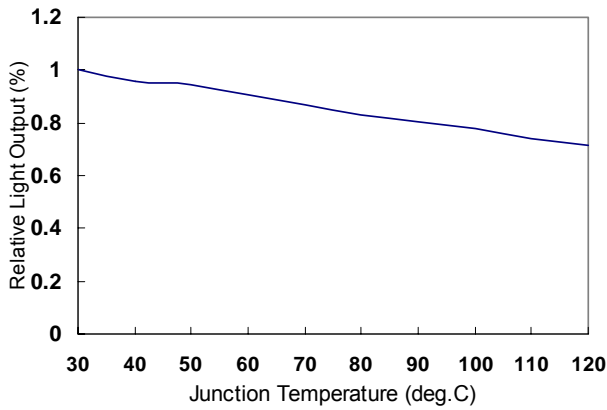
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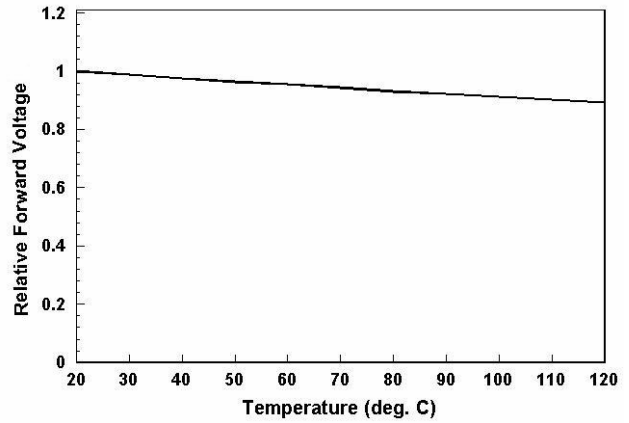
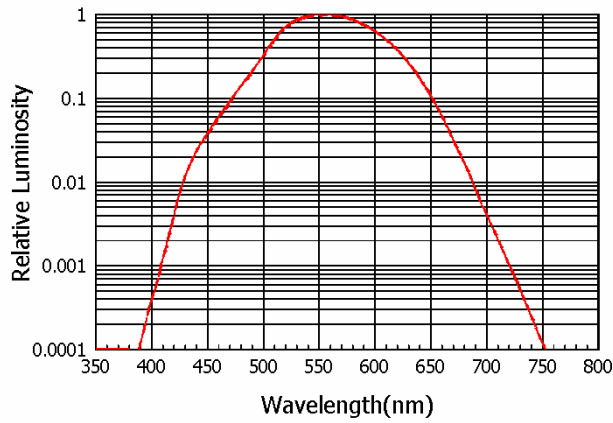
## Characteristics



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**LEDs and Eye Safety:**

In the 1993 edition of IEC-60825-1, LEDs were included: “Throughout this part 1 light emitting diodes (LED) are included whenever the word “laser” is used.”The CENELEC document EN 60825-1 contains all the technical content of the IEC standard.

The scope of the IEC standard states that “...products which are sold to other manufacturers for use as components of any system for subsequent sale are not subject to IEC 60825-1, since the final product will itself be subject to this standard. ”Therefore, it is important to determine the Laser Safety Class of the final product. However, it is important that employees working with LEDs are trained to use them safely.

Most of the products containing LEDs will fall in either Class 1 or Class 2. A Class 1 label is optional:

**CLASS 1 LED PRODUCT**

If a label is not used, this description must be included in the information for the user.

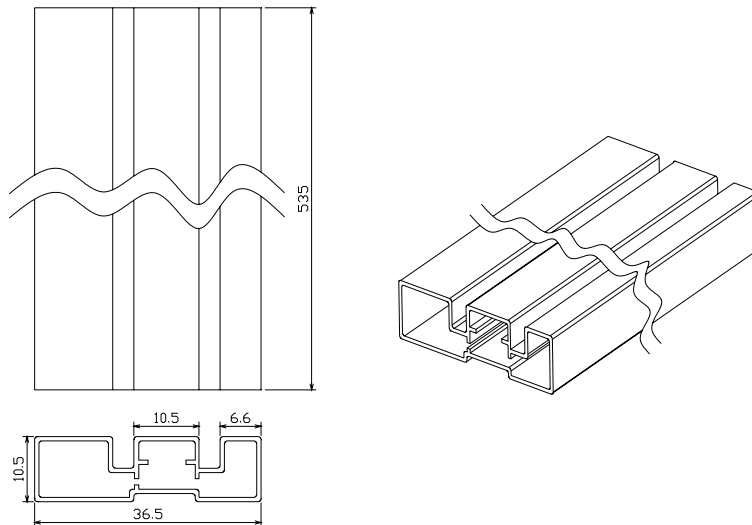
Amendment 2 to IEC 60825-1 is expected to be published in January 2001. The CENELEC equivalent is expected to follow three months after the IEC publication. This document contains increased Class 1 and Class 2 limits, as well as the introduction of less restrictive Class 1M and Class 2M.

For the exact classification and further information, the IEC document can be used:

IEC-60825-1 ISBN 2-8318-4169-0

**Tube and Packing**

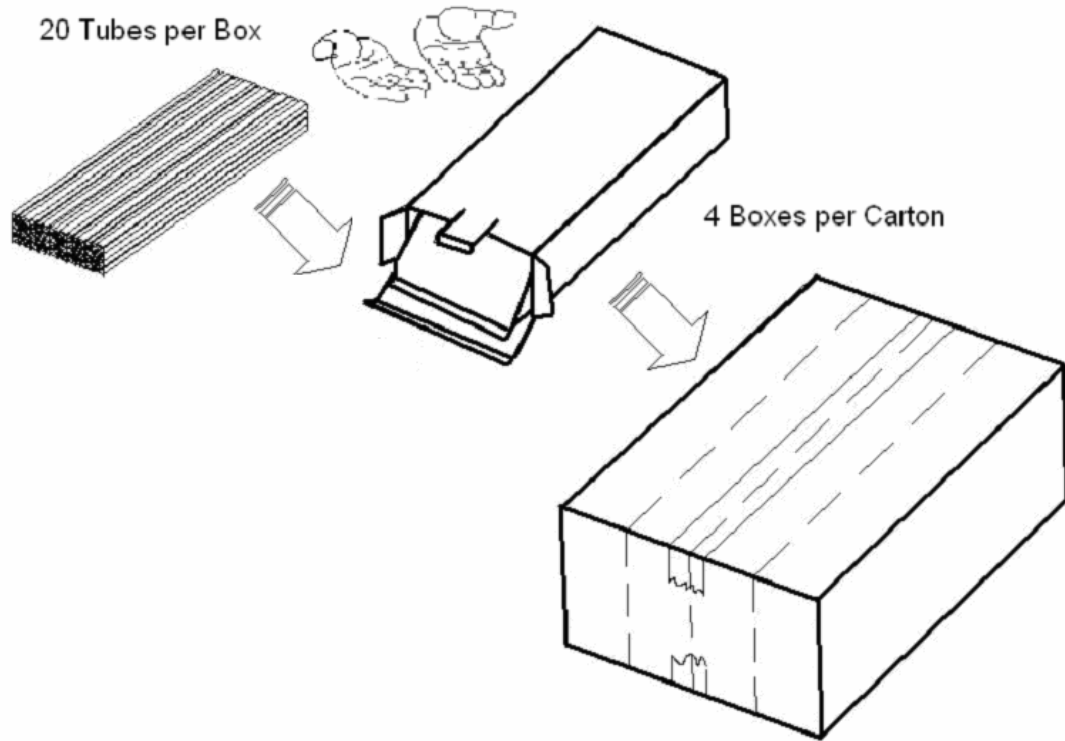
**Tube Dimension**



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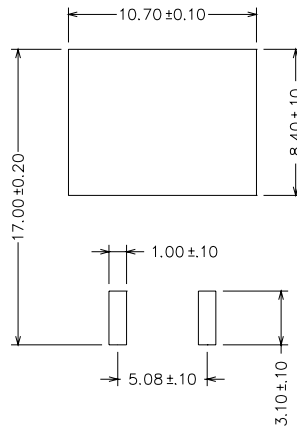
## Packing Model



## Precaution of Application

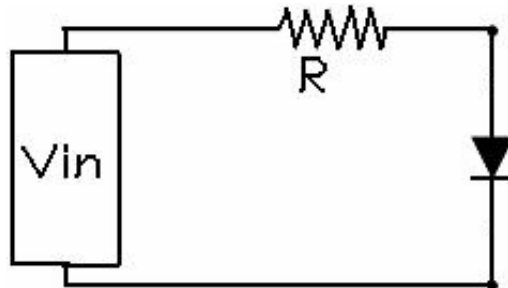
### Designing 1: Soldering Pattern

The dimensions of the recommended soldering pattern may not meet every user. Please confirm and study first before designing the soldering pattern in order to obtain the best performance of soldering. Recommended soldering pattern is listed below:



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## Designing 2: Circuit Layout



## Designing 3: Max Rating

Any application should refer to the specifications of absolute maximum ratings.

### Storage

It's recommended to store the products in the following conditions:

Humidity: 60 %RH Max.

Temperature:  $5^{\circ}\text{C} \sim 30^{\circ}\text{C}$  ( $41^{\circ}\text{F} \sim 86^{\circ}\text{F}$ )

### Soldering

Manual soldering

Soldering tin material: tin 6/4 alloy or contained Ag.

To prevent cracking, please bake before manual soldering.

Temperature at tip of iron :  $300^{\circ}\text{C} \pm 5^{\circ}\text{C}$  Max.(25W)

It's banned to load any stress on the resin during soldering.

Soldering time :  $3 \pm 1$ sec

### Cleaning

The conditions of cleaning after soldering:

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

Temperature Time:  $< 50^{\circ}\text{C} \times 30\text{sec}$ , or  $< 30^{\circ}\text{C} \times 3\text{min}$

Ultra sonic cleaning:  $< 15\text{W}$ / bath; Bath volume: 1liter max.

Curing:  $100^{\circ}\text{C}$  max,  $< 3\text{min}$

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**Revise Notes**

Rev.	Descriptions	Date	Name
1.0	Initial stamp off for	07-20-2007	
1.1	Revise binning	9-10-2007	
1.2	Revise 1 and 2 watt parameter	11-14-2007	

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[SZ5-M1-WW-C8-V1/V3-FA](#) [LTW-K140SZR57](#) [LTW-K140SZR27](#) [BXRE-50C2001-C-74](#) [MP-5050-8100-27-80](#) [MP-5050-6100-65-80](#) [MP-](#)  
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[CGLNM1.TG-Z6QF6-EBVFFCBB46-DFGA](#) [KW CULPM1.TG-Z6RF7-ebvFfcbB46-65G5](#) [KW DMLS33.SG-Z6M7-EBVFFCBB46-8E8G-](#)  
[700-S](#) [GW PSLT33.EM-LVL1-XX57-1-G3](#) [GW PSLT33.PM-LYL3-XX56-1-G3](#) [ASMT-MW05-NMNS1](#) [KW DPLS33.KD-HIJG-D30D144-](#)  
[HN-22C2-120-S](#) [KW DDLM31.EH-5J6K-A232-W4A4-140-R18](#) [KW DDLM31.EH-5J6K-A737-W4A4-140-R18](#) [KW DDLM31.EH-5J6K-](#)  
[A333-W4A4-140-R18](#) [KW DDLM31.EH-5J6K-A434-W4A4-140-R18](#) [KW DDLM31.EH-5J6K-A535-W4A4-140-R18](#) [GW JTLRS1.CM-](#)  
[K1LW-XX57-1-100-Q-R33](#) [KW DDLM31.EH-5J6K-A636-W4A4-140-R18](#) [KW DDLM31.EH-5J6K-A131-W4A4-140-R18](#) [GW PSLT33.PM-](#)  
[LYL3-XX57-1-G3](#) [SML-LXL8047MWCTR/3](#) [L2C5-40HG1203E0900](#) [JB3030AWT-P-U27EA0000-N0000001](#) [JK3030AWT-P-U30EA0000-](#)  
[N0000001](#) [JK3030AWT-P-B40EB0000-N0000001](#) [JK3030AWT-P-H30EB0000-N0000001](#) [JK3030AWT-P-H40EB0000-N0000001](#)  
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