

**Harvatek Surface Mount CHIP LED Data Sheet
HT-T169TWA-5785**

Official Product	HT Part No. HT-T169TWA-5785	Customer Part No.	Data Sheet No.
Tentative Product	*****	*****	
Specifications are subject to change without notice. Data and drawings herein are copyrighted.		2012/11/20	Version 2.0
			Page 1/17

DISCLAIMER	3
PRODUCT SPECIFICATIONS	4
ATTENTION: ELECTROSTATIC DISCHARGE (ESD) PROTECTION	4
LABEL SPECIFICATIONS	5
PRODUCT FEATURES	10
ELECTRO-OPTICAL CHARACTERISTICS	10
PACKAGE OUTLINE DIMENSION AND RECOMMENDED SOLDERING PATTERN FOR REFLOW	
SOLDERING	10
ABSOLUTE MAXIMUM RATINGS	10
CHARACTERISTICS OF HT-T169TW	12
RADIATION PATTERN	12
PACKAGING	13
TAPE DIMENSION	13
REEL DIMENSION	14
PACKING	14
DRY PACK	15
PRECAUTIONS	15
REFLOW SOLDERING	16
REWORKING	16
CLEANING	16
REVISE HISTORY	17

Official Product	HT Part No. HT-T169TWA-5785	Customer Part No.	Data Sheet No.
Tentative Product	*****	*****	
Specifications are subject to change without notice. Data and drawings herein are copyrighted.		2012/11/20	Version 2.0
			Page 2/17

DISCLAIMER

HARVATEK reserves the right to make changes without further notice to any products herein to improve reliability, function or design. HARVATEK does not assume any liability arising out of the application or use of any product or circuit described herein; neither does it convey any license under its patent rights, nor the rights of others.

LIFE SUPPORT POLICY

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-T169TWA-5785	Customer Part No.		Data Sheet No.
Tentative Product	*****	*****		
Specifications are subject to change without notice. Data and drawings herein are copyrighted.		2012/11/20	Version 2.0	Page 3/17

Product Specifications

	Specification	Material	Quantity
Iv	1125-1440 mcd @10mA/ Ta= 25 ^o ;Tolerance: $\pm 10\%$		
Chromaticity Coordinate	As page 9 @10mA/ Ta= 25 ^o C Tolerance: $\pm 0.1\%$		
Vf	2.7-3.5 (0.1 Bin) @10mA/ Ta= 25 ^o C ;Tolerance: $\pm 0.05V$		
Ir	< 100 μA @ V _R = 5 V		
Resin	White	Silicon Resin	
Carrier tape	EIA 481-1A specs	Conductive black tape	2000pcs per reel
Reel	EIA 481-1A specs	Conductive black	
Label	HT standard	Paper	
Packing bag	220x240mm	Aluminum laminated bag/ no-zipper	One reel per bag
Carton	HT standard	Paper	Non-specified

Others:

Each immediate box consists of 5 reels. The 5 reels may not necessarily have the same lot number or the same bin combinations of Iv, λ_0 and Vf. Each reel has a label identifying its specification; the immediate box consists of a product label as well.

ATTENTION: Electrostatic Discharge (ESD) protection

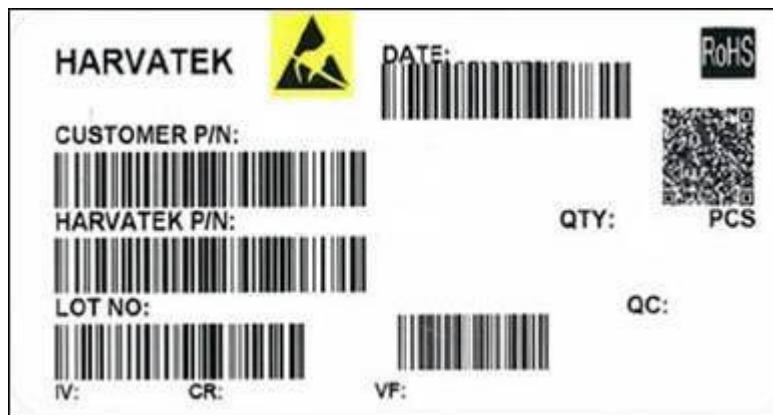


The symbol to the left denotes that ESD precaution is needed. ESD protection for GaP and AlGaAs based chips is necessary even though they are relatively safe in the presence of low static-electric discharge. Parts built with AlInGaP, GaN, or/and InGaN based chips are **STATIC SENSITIVE devices**. ESD precaution must be taken during design and assembly.

If manual work or processing is needed, please ensure the device is adequately protected from ESD during the process.

Official Product	HT Part No. HT-T169TWA-5785	Customer Part No.	Data Sheet No.
Tentative Product	*****	*****	
Specifications are subject to change without notice. Data and drawings herein are copyrighted.		2012/11/20	Version 2.0
			Page 4/17

Label Specifications



◆ Harvatek P/N:

H T - T 1 6 9 TWA - 5 7 8 5

Series Name	Emitting Color	Customer Code
HT-T169 (PLCC2 TLED) 3.5(L)x2.8(W)x1.9(H)mm	TWA White: @10mA	5785 Customer Product Code

◆ Lot No.:

1	2	3	4	5	6	7	8	9	10
E	1	A	1	A	2	2	L	1	2
Code 1 2		Code 3	Code 4	Code 5	Code 6	Code 7	Code 8	Code 9	Code 10
		Mfg. Year	Mfg. Month	Mfg. Date	Consecutive number		Special code		
Internal Tracing Code		2010-A	1:Jan.	1:A	01~ZZ		000~ZZZ		
		2011-B	2:Feb.	2:B					
		2012-C	3:C					
		2013-D	A:Oct.	26:Z					
		.	B:Nov.	27:7					
		.	C:Dec.	28:8					
				29:9					
				30:3					
				31:4					

Official Product	HT Part No. HT-T169TW	Customer Part No.	Data Sheet No.
Tentative Product	*****	*****	
Specifications are subject to change without notice. Data and drawings herein are copyrighted.		2013/11/20	Version 2.0
			Page 5/17

◆ **Luminous Intensity (Iv) Bin:**

Color	Bin Code	Spec. Range
White	Z1	1125-1270 mcd
	Z2	1270-1440 mcd
	AA1	1440-1610 mcd
	AA2	1610-1800 mcd

◆ **Forward Voltage (Vf) Bin:**

Color	Bin Code	Spec. Range
White	G4	2.7-2.8
	H1	2.8-2.9
	H2	2.9-3.0
	H3	3.0-3.1
	H4	3.1-3.2
	J1	3.2-3.3
	J2	3.3-3.4
	J3	3.4-3.5

Official Product	HT Part No. HT-T169TWA-5785	Customer Part No.	Data Sheet No.
Tentative Product	HT Part No. HT-T169TWA-5785	Customer Part No.	Data Sheet No.
Specifications are subject to change without notice. Data and drawings herein are copyrighted.		2012/11/20	Version 2.0
			Page 6/17

◆ Color Bin:

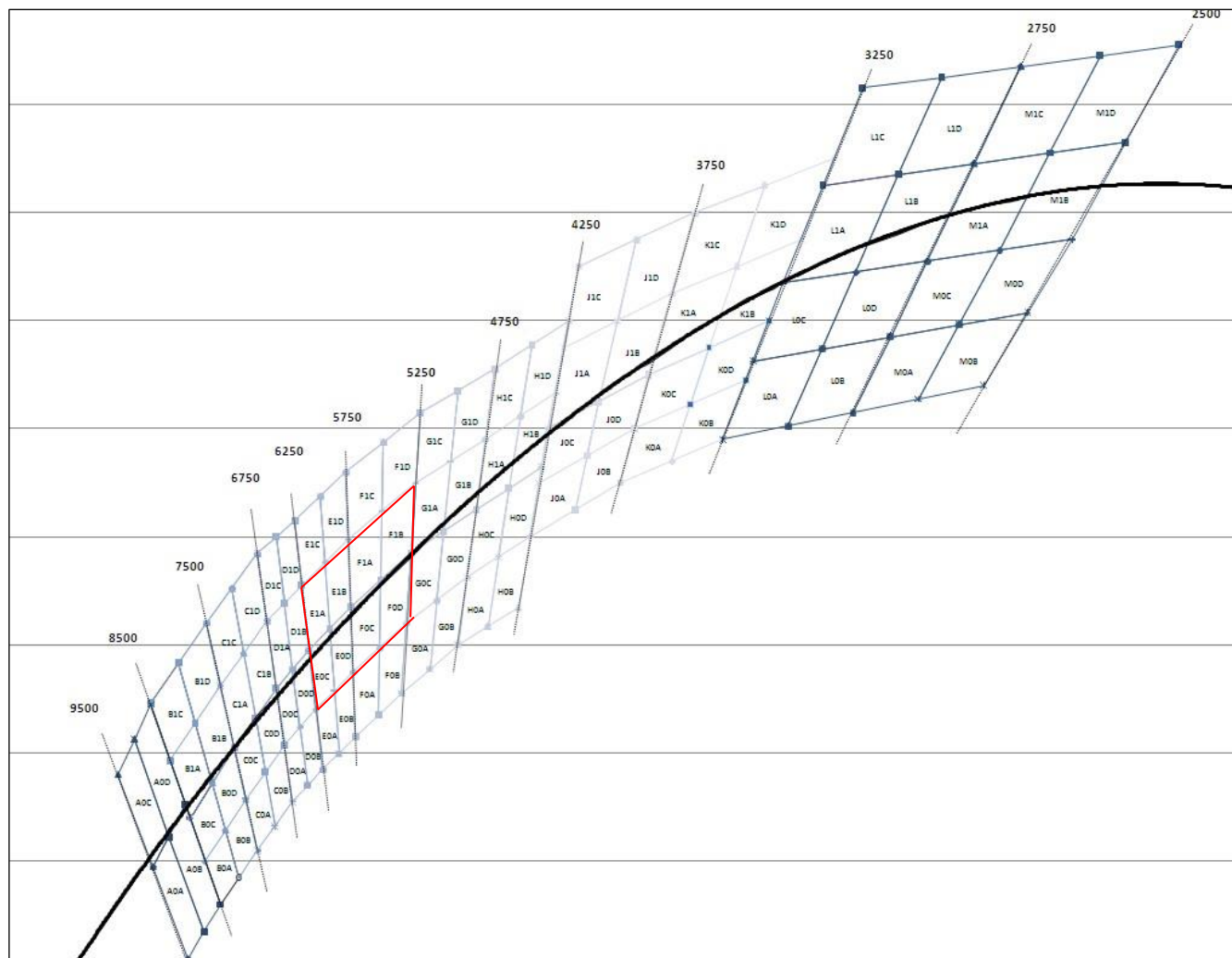
C0B 6750~7000K		C1B 6750~7000K		C0D 7000~7500K		C1D 7000~7500K	
x	y	x	y	x	y	x	y
0.30975	0.29650	0.30550	0.31650	0.31000	0.32200	0.30600	0.34700
0.30550	0.31650	0.30050	0.34050	0.30550	0.31650	0.30050	0.34050
0.31000	0.32200	0.30600	0.34700	0.30763	0.30650	0.30300	0.32850
0.31350	0.30100	0.31000	0.32200	0.31175	0.31150	0.30800	0.33450
0.30975	0.29650	0.30550	0.31650	0.31000	0.32200	0.30600	0.34700
D0A 6500~6750K		D1A 6500~6750K		D0B 6500~6750K		D1B 6500~6750K	
x	y	x	y	x	y	x	y
0.31350	0.30100	0.31000	0.32200	0.31670	0.30400	0.31350	0.32550
0.31000	0.32200	0.30600	0.34700	0.31350	0.32550	0.31000	0.35000
0.31350	0.32550	0.31000	0.35000	0.31700	0.32900	0.31400	0.35300
0.31670	0.30400	0.31350	0.32550	0.32000	0.30700	0.31700	0.32900
0.31350	0.30100	0.31000	0.32200	0.31670	0.30400	0.31350	0.32550
D0C 6250~6500K		D1C 6250~6500K		D0D 6250~6500K		D1D 6250~6500K	
x	y	x	y	x	y	x	y
0.3135	0.3255	0.3100	0.3500	0.3170	0.3290	0.3140	0.3530
0.3100	0.3220	0.3060	0.3470	0.3135	0.3255	0.3100	0.3500
0.3118	0.3115	0.3080	0.3345	0.3151	0.3148	0.3118	0.3378
0.3151	0.3148	0.3118	0.3378	0.3185	0.3180	0.3155	0.3410
0.3135	0.3255	0.3100	0.3500	0.3170	0.3290	0.3140	0.3530
E0A 6000K~6250K		E1A 6000K~6250K		E0B 6000K~6250K		E1B 6000K~6250K	
x	y	x	y	x	y	x	y
0.3200	0.3070	0.3170	0.3290	0.3235	0.3100	0.3215	0.3330
0.3170	0.3290	0.3140	0.3530	0.3215	0.3330	0.3195	0.3575
0.3215	0.3330	0.3195	0.3575	0.3260	0.3370	0.3250	0.3620
0.3235	0.3100	0.3215	0.3330	0.3270	0.3130	0.3260	0.3370
0.3135	0.3255	0.3100	0.3500	0.3170	0.3290	0.3140	0.3530
E0C 5750~6000K		E1C 5750~6000K		E0D 5750~6000K		E1D 5750~6000K	
x	y	x	y	x	y	x	y

Official Product	HT Part No. HT-T169TWA-5785	Customer Part No.		Data Sheet No.
Tentative Product	*****	*****		
Specifications are subject to change without notice. Data and drawings herein are copyrighted.		2012/11/20	Version 2.0	Page 7/17

							0.3620
0.3170	0.3290	0.3140	0.3530	0.3215	0.3330	0.3195	0.3575
0.3185	0.3180	0.3155	0.3410	0.3225	0.3215	0.3205	0.3453
0.3225	0.3215	0.3205	0.3453	0.3265	0.3250	0.3255	0.3495
0.3215	0.3330	0.3195	0.3575	0.3260	0.3370	0.3250	0.3620
F0A 5500~5750K		F1A 5500~5750K		F0B 5500~5750K		F1B 5500~5750K	
x	y	x	y	x	y	x	y
0.3270	0.3130	0.3260	0.3370	0.3320	0.3170	0.3325	0.3420
0.3260	0.3370	0.3250	0.3620	0.3325	0.3420	0.3330	0.3675
0.3325	0.3420	0.3330	0.3675	0.3390	0.3470	0.3410	0.3730
0.3320	0.3170	0.3325	0.3420	0.3370	0.3210	0.3390	0.3470
0.3270	0.3130	0.3260	0.3370	0.3320	0.3170	0.3325	0.3420
F0C 5250~5500K		F1C 5250~5500K		F0D 5250~5500K		F1D 5250~5500K	
x	y	x	y	x	y	x	y
0.3325	0.3420	0.3330	0.3675	0.3390	0.3470	0.3410	0.3730
0.3260	0.3370	0.3250	0.3620	0.3325	0.3420	0.3330	0.3675
0.3265	0.3250	0.3255	0.3495	0.3323	0.3295	0.3328	0.3548
0.3323	0.3295	0.3328	0.3548	0.3380	0.3340	0.3400	0.3600
0.3325	0.3420	0.3330	0.3675	0.3390	0.3470	0.3410	0.3730
G0A 5000K~5250K		G1A 5000K~5250K		G0C 4750~5000K		G1C 4750~5000K	
x	y	x	y	x	y	x	y
0.3370	0.3210	0.3390	0.3470	0.3460	0.3510	0.3490	0.3770
0.3390	0.3470	0.3410	0.3730	0.3390	0.3470	0.3410	0.3730
0.3460	0.3510	0.3490	0.3770	0.3380	0.3340	0.3400	0.3600
0.3430	0.3255	0.3460	0.3510	0.3445	0.3383	0.3475	0.3640
0.3370	0.3210	0.3390	0.3470	0.3460	0.3510	0.3490	0.3770

Official Product	HT Part No. HT-T169TW	Customer Part No.		Data Sheet No.
Tentative Product	*****	*****		
Specifications are subject to change without notice. Data and drawings herein are copyrighted.		2012/11/20	Version 2.0	Page 8/17

◆ Chromaticity Coordinate:



Official Product	HT Part No. HT-T169TWA-5785	Customer Part No.	Data Sheet No.
Tentative Product	*****	*****	
Specifications are subject to change without notice. Data and drawings herein are copyrighted.		2012/11/20	Version 2.0
			Page 9/17

Product Features

Electro-Optical Characteristics

(I_F @ 10mA, T_a 25 °C)

Code for parts	Lighting Color		V_F (V)		λ (nm)			I_V (mcd)
			typ	max	λ_D	λ_P	$\Delta\lambda$	Typical
HT-T169TW	White	InGaN	2.7	3.5	-	x=0.326 y=0.337	-	1400

Package Outline Dimension and Recommended Soldering Pattern for Reflow Soldering

Unit: mm Tolerance: +/-0.1

Outline Dim.	Soldering Pattern

Soldering terminals may shift in the x, y direction.

Absolute Maximum Ratings

Series	P_d (mW)	I_F (mA)	I_{FP} (mA)**	V_R (V)	I_R (uA)	T_{OP} (°C)	T_{ST} (°C)
T169TW	70	20	30	5	<100 @ $V_R = 5$	-30~+80	-40~+85

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

**Remarks: This product should be operated in forward bias. If a reverse voltage is continuously applied to the product, such operation can cause migration resulting in LED damage.

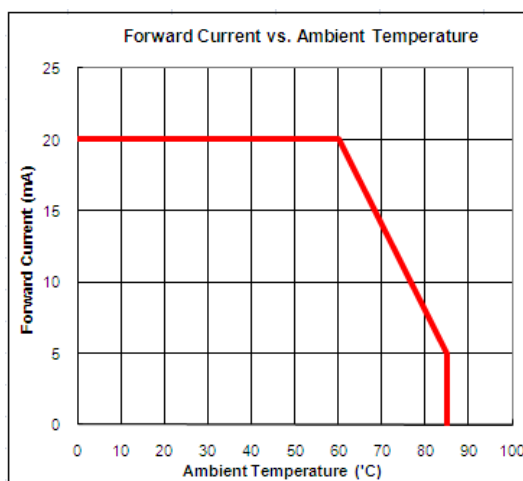
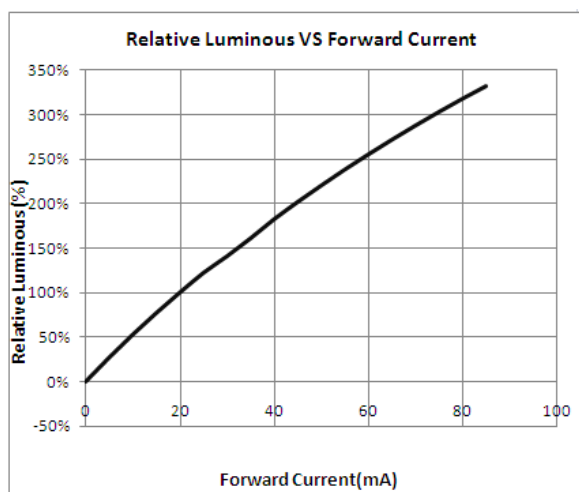
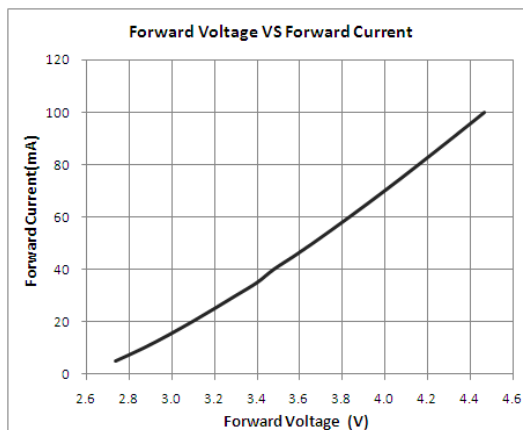
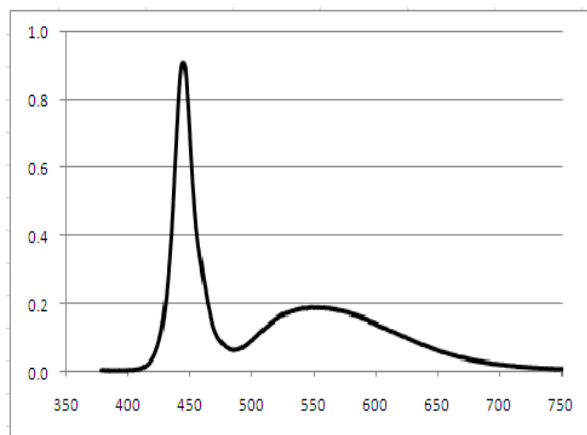
Official Product	HT Part No. HT-T169TWA-5785	Customer Part No.	Data Sheet No.
Tentative Product	*****	*****	
Specifications are subject to change without notice. Data and drawings herein are copyrighted.		2012/11/20	Version 2.0
			Page 10/17

Precaution for Use

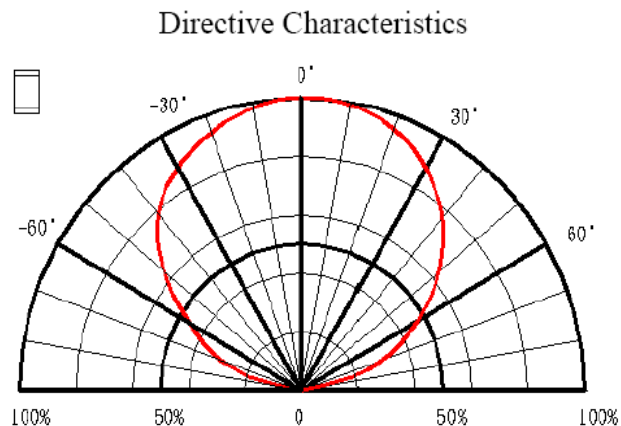
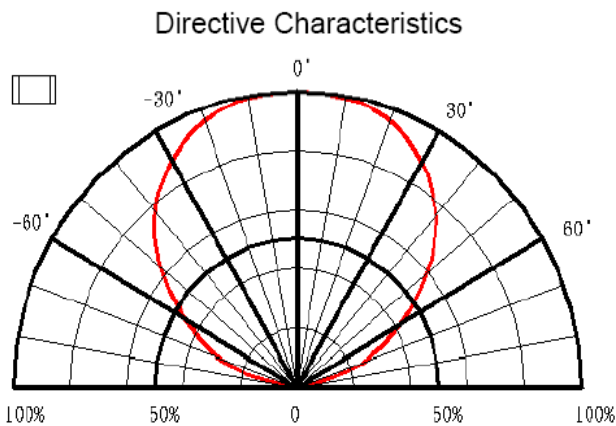
- 1). The chips should not be used directly in any type of fluid such as water, oil, organic solvent, etc.
- (2). When the LEDs are illuminating, the maximum ambient temperature should be first considered before operation.
- (3). LEDs must be stored in a clean environment. A sealed container with a nitrogen atmosphere is necessary if the storage period is over 3 months after shipping.
- (4). The LEDs must be used within seven days after unpacked. Unused products must be repacked in an anti-electrostatic package, folded to close any opening and then stored in a dry and cool space.
- (5). The appearance and specifications of the products may be modified for improvement without further notice.
- (6). The LEDs are sensitive to the static electricity and surge. It is strongly recommended to use a grounded wrist band and anti-electrostatic glove when handling the LEDs.
If a voltage over the absolute maximum rating is applied to LEDs, it will damage LEDs.
Damaged LEDs will show some abnormal characteristics such as remarkable increase of leak current, lower turn-on voltage and getting unlit at low current.

Official Product	HT Part No. HT-T169TWA-5785	Customer Part No.		Data Sheet No.
Tentative Product	*****	*****		
Specifications are subject to change without notice. Data and drawings herein are copyrighted.		2012/11/20	Version 2.0	Page 11/17

Characteristics of HT-T169TW



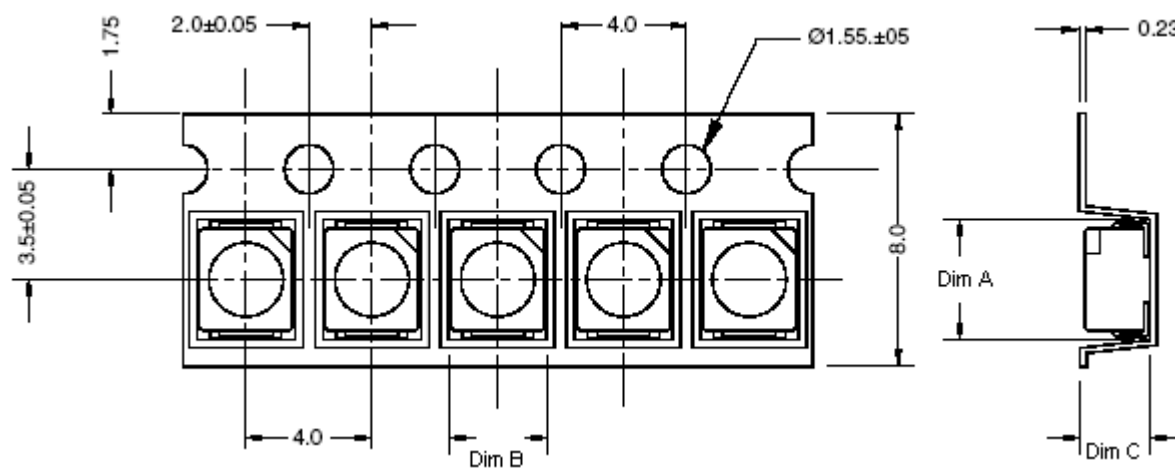
Radiation Pattern



Official Product	HT Part No. HT-T169TWA-5785	Customer Part No.	Data Sheet No.
Tentative Product	*****	*****	
Specifications are subject to change without notice. Data and drawings herein are copyrighted.		2012/11/20	Version 2.0
			Page 12/17

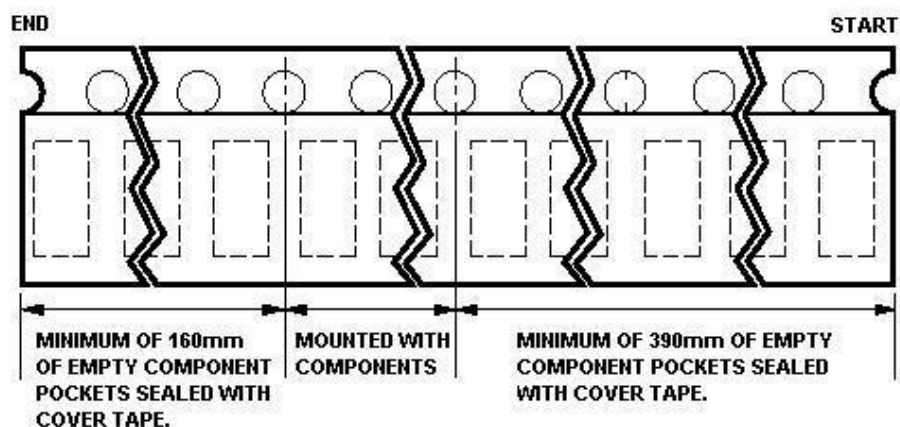
Packaging

Tape Dimension



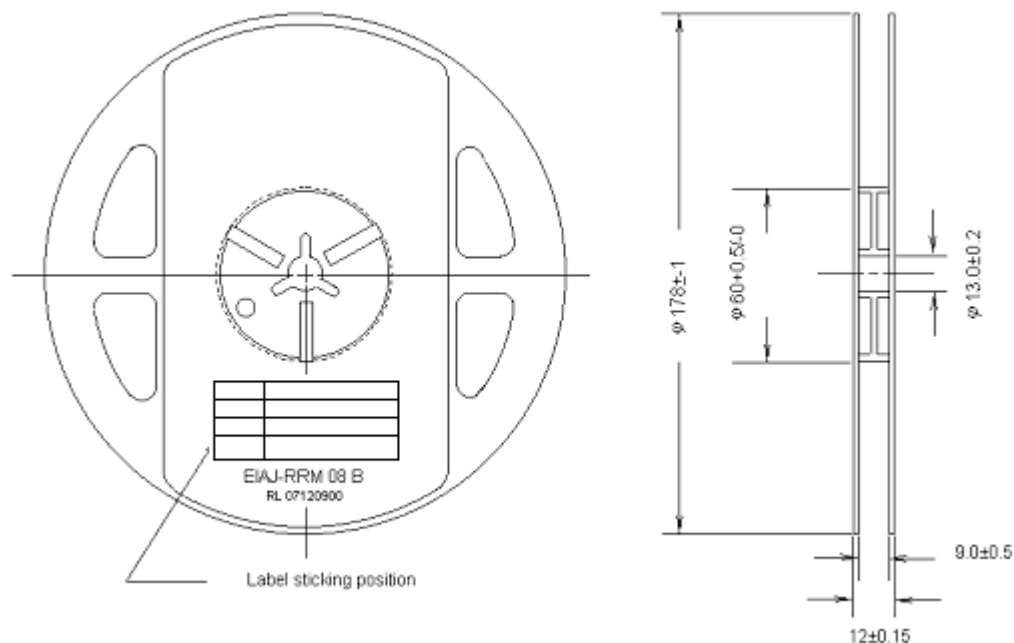
Part No.	Dim. A	Dim. B	Dim. C	Q'ty/Reel
HT-T169	3.73 ± 0.10	2.95 ± 0.10	2.12 ± 0.10	2K

Unit: mm

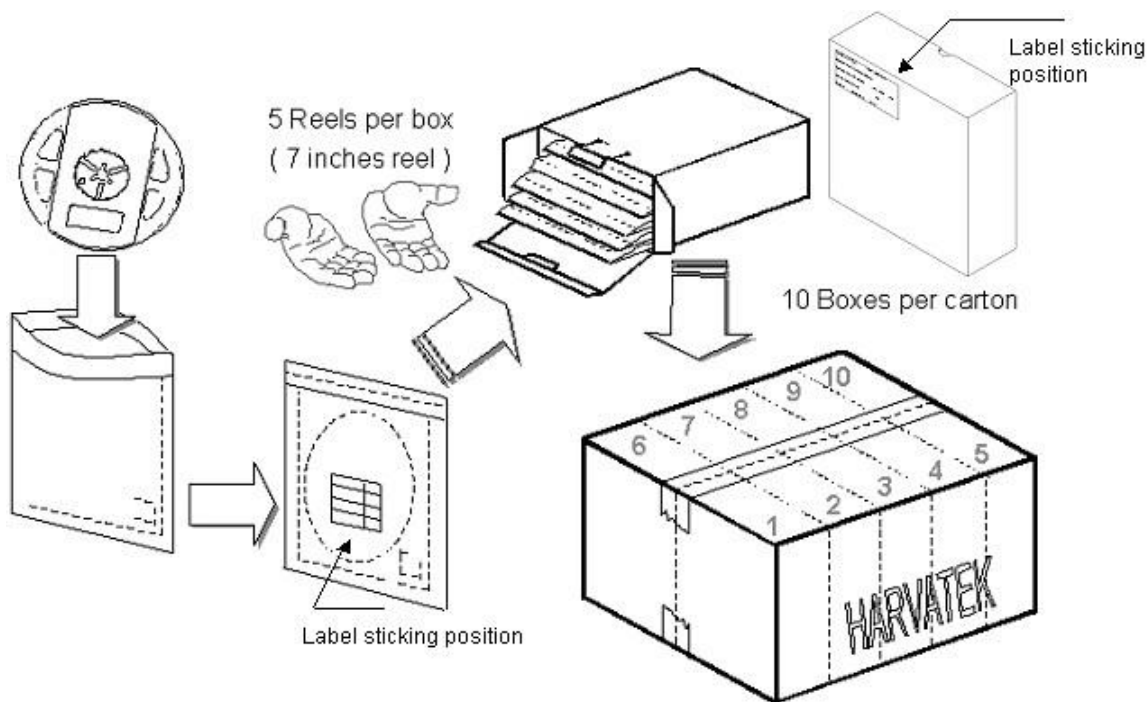


Official Product	HT Part No. HT-T169TWA-5785	Customer Part No.	Data Sheet No.
Tentative Product	*****	*****	
Specifications are subject to change without notice. Data and drawings herein are copyrighted.		2012/11/20	Version 2.0
			Page 13/17

Reel Dimension



Packing



5 boxes per carton is available depending on shipment quantity.

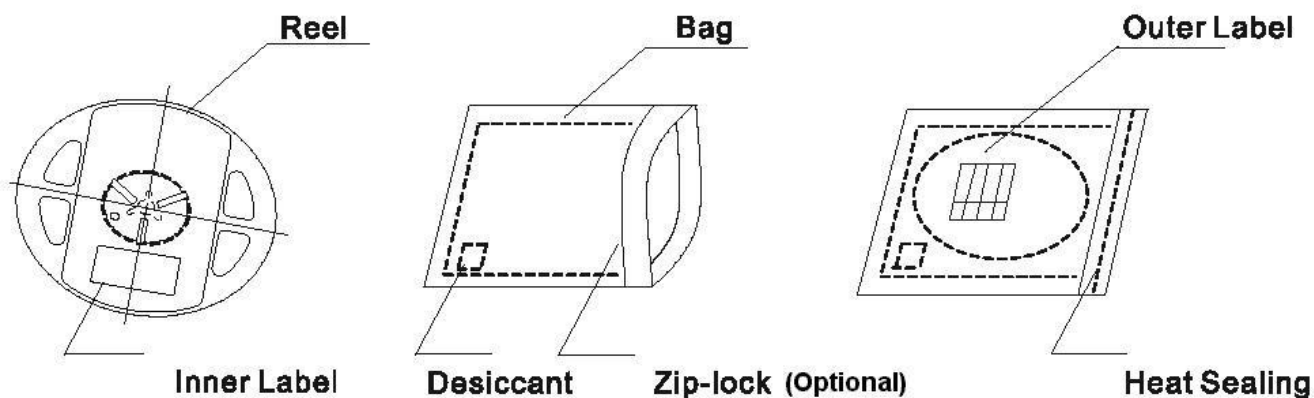
Official Product	HT Part No. HT-T169TWA-5785	Customer Part No.	Data Sheet No.
Tentative Product	*****	*****	
Specifications are subject to change without notice. Data and drawings herein are copyrighted.		2012/11/20	Version 2.0
			Page 14/17

Dry Pack

All SMD optical devices are **MOISTURE SENSITIVE**. Avoid exposure to moisture at all times during transportation or storage. Every reel is packaged in a moisture protected anti-static bag. Each bag is properly sealed prior to shipment.

Upon request, a humidity indicator will be included in the moisture protected anti-static bag prior to shipment.

The packaging sequence is as follows:



PRECAUTIONS

1. Avoid exposure to moisture at all times during transportation or storage.
2. Anti-Static precaution must be taken when handling GaN, InGaN, and AlInGaP products.
3. It is suggested to connect the unit with a current limiting resistor of the proper size. Avoid applying a reverse voltage beyond the specified limit.
4. Avoid operation beyond the limits as specified by the absolute maximum ratings.
5. Avoid direct contact with the surface through which the LED emits light.
6. If possible, assemble the unit in a clean room or dust-free environment.

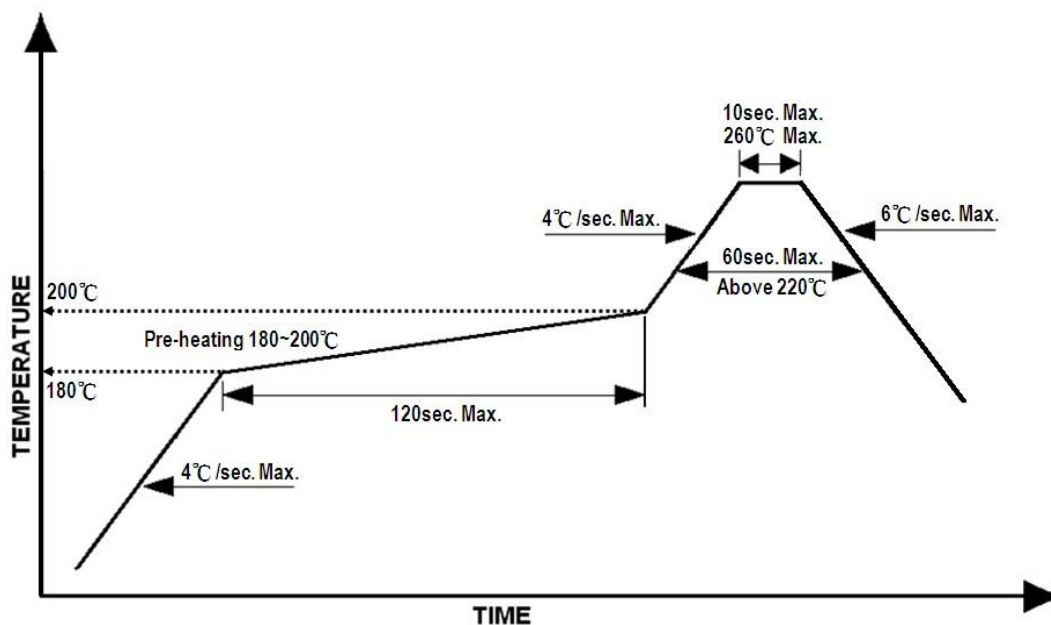
Official Product	HT Part No. HT-T169TWA-5785	Customer Part No.	Data Sheet No.
Tentative Product	*****	*****	
Specifications are subject to change without notice. Data and drawings herein are copyrighted.		2012/11/20	Version 2.0
			Page 15/17

Reflow Soldering

Recommend soldering paste specifications:

1. Operating temp.: Above 220 °C ,60 sec.
2. Peak temp.:260 °CMax.,10sec Max.
3. Never attempt next process until the component is cooled down to room temperature after reflow.
4. The recommended reflow soldering profile (measured on the surface of the LED terminal) is as following:

Lead-free Solder Profile



Reworking

- Rework should be completed within 5 seconds under 260 °C.
- The iron tip must not come in contact with the copper foil.
- Twin-head type is preferred.

Cleaning

Following are cleaning procedures after soldering:

- An alcohol-based solvent such as isopropyl alcohol (IPA) is recommended.
- Temperature x Time should be 50°C x 30sec. or <30°C x 3min
- Ultrasonic cleaning: < 15W/ bath; bath volume ≤ 1liter
- Curing: 100 °C max, <3min

Official Product	HT Part No. HT-T169TWA-5785	Customer Part No.	Data Sheet No.
Tentative Product	*****	*****	
Specifications are subject to change without notice. Data and drawings herein are copyrighted.		2012/11/20	Version 2.0
			Page 16/17

Cautions of Pick and Place

- Avoid stress on the resin at elevated temperature.
- Avoid rubbing or scraping the resin by any object.
- Electric-static may cause damage to the component. Please ensure that the equipment is properly grounded. Use of an ionizer fan is recommended.

Revise History

Rev.	Descriptions	Date	Page
1.0	-	2009-12-08	-
2.0	Refine binning	2012-11-20	6-9

Official Product	HT Part No. HT-T169TWA-5785	Customer Part No.	Data Sheet No.
Tentative Product	*****	*****	
Specifications are subject to change without notice. Data and drawings herein are copyrighted.		2012/11/20	Version 2.0
			Page 17/17

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[Harvatek:](#)

[HT-T169TWA-5785](#)