

SPECIFICATIONS OF CITILED

1/10

Reference

1、Scope of Application

These specifications apply to chip type LED lamp, CITILED, model CL-375HR/YG-D-TS

2、Part code

CL — 375 HR/YG — D — TS

Series _____
 375 : Tow-color lighting
 side-lighting LED

Lighting color _____
 HR/YG
 HR : High brightness red
 YG : Yellow green

Diffusion _____
 D : Diffused

Shipping mode _____
 TS : Taping (standard)
 Non-coded : Bulk

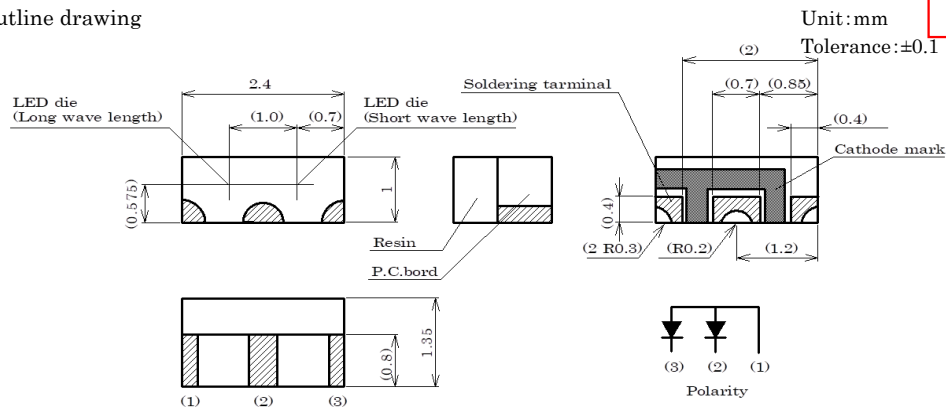
					Approved	Checked	Drawn	Symbol	CITILED
					T.Mizuno	Y.Kitta	M.Hamada	Name	CL-375HR/YG-D-TS
								Drawing No	—
Mark	Number of Mark	Date	Description	Appro.	Drawn	CITIZEN ELECTRONICS CO.,LTD.			

SPECIFICATIONS OF CITELED

2/10

3, Outline drawing

Reference



* Dimensions in parentheses are reference values.

4, Performance

(1) Absolute Maximum Rating

(Ta=25°C)

Parameter	Symbol	Rating Value	Unit
Total Value of Power Dissipation	P ^{*1}	90	mW
Power Dissipation	P _d	HR: 78 YG: 65	mW
Forward Current	I _F	HR: 30 YG: 25	mA
Forward Pulse Current	I _{FP}	100 ^{*2}	mA
Reverse Voltage	V _R	4	V
Operating Temperature	T _{OP}	-25 ~ +80	°C
Storage Temperature	T _{ST}	-30 ~ +85	°C

*1 P means the Total Value of Power Dissipation when both colors are ON.

*2 Duty < 1/10, Pulse width < 0.1 msec

(2) Electro-optical Characteristic

(Ta=25°C)

Parameter	Symbol	Condition	Color	MIN	TYP	MAX	Unit
Forward Voltage	V _F	I _F =20mA	HR	-	1.80	-	V
			YG	-	2.20	-	
Reverse Current	I _R	V _R =4V	HR	-	-	100	μA
			YG	-	-	100	
Luminous Intensity *	I _V	I _F =20mA	HR	-	23	-	mcd
			YG	-	18	-	
Peak Wave length	λ _p	I _F =20mA	HR	-	655	-	nm
Dominant Wave length	λ _d		YG	-	570	-	

Note 1) The measurement tolerance of forward voltage is ±3% at our tester.

Note 2) The measurement tolerance of luminous intensity is ±10% at our tester.

Note 3) The measurement tolerance of dominant wavelength is 2 nm at our tester.

Note 4) The measurement tolerance of peak wavelength is 2 nm at our tester.

Note 5) Please be aware that the above electro-optical characteristics are achieved when applying the current values shown in the table.

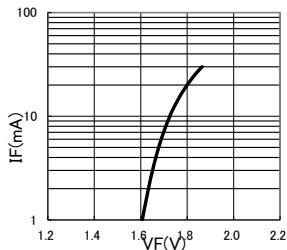
Please consult us when this product is used under any other conditions.

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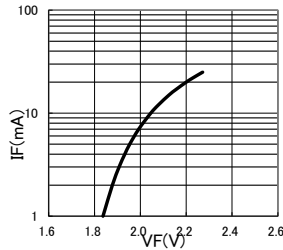
Reference

5. Characteristi (Typical characteristics)

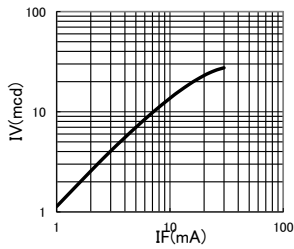
◆ I_F - V_F Characteristics (HR)



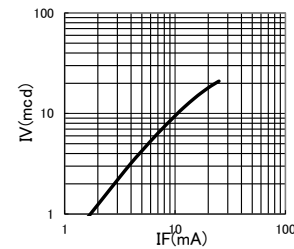
◆ I_F - V_F Characteristics (YG)



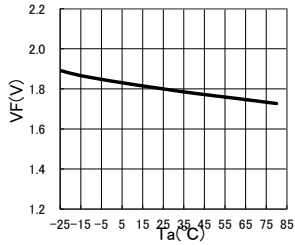
◆ I_F - I_V Characteristics (HR)



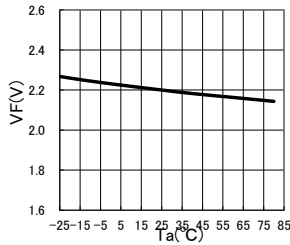
◆ I_F - I_V Characteristics (YG)



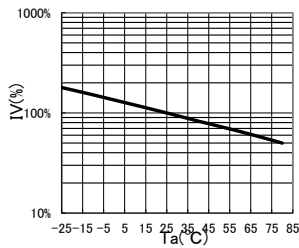
◆ V_F - T_a Characteristics (HR)
IF=20mA



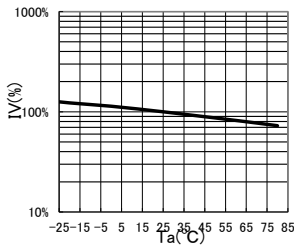
◆ V_F - T_a Characteristics (YG)
IF=20mA



◆ I_V - T_a Characteristics (HG)
IF=20mA



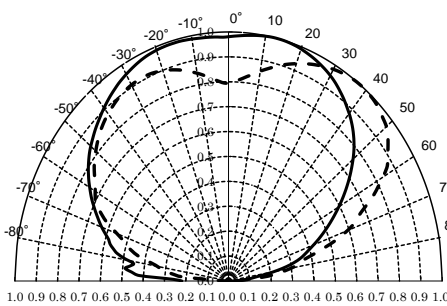
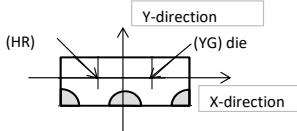
◆ I_V - T_a Characteristics (Green)
IF=20mA



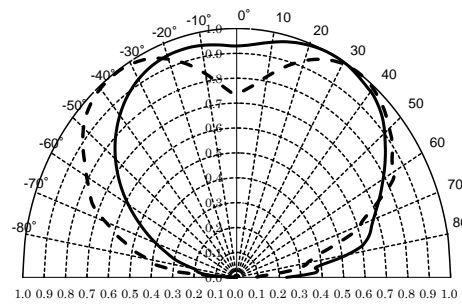
◆ I_F -Max T_a Characteristics



◆ Directive Characteristics (HR)



(YG)



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SPECIFICATIONS OF CITELED

4/10

Reference

6, Reliability

(1) Details of the tests (With one of the three die emitting)

Test Item	Test Condition
Life Test in Continuous Operation	To operate the test under absolute maximum current rating at $25 \pm 3 \text{ }^\circ\text{C}$ for $500 \begin{matrix} +24 \\ -12 \end{matrix}$ hours
Low Temperature Storage Test	$-30 \begin{matrix} +3 \\ -5 \end{matrix} \text{ }^\circ\text{C} \times 500 \begin{matrix} +24 \\ -12 \end{matrix}$ hours
High Temperature Storage Test	$85 \begin{matrix} +5 \\ -3 \end{matrix} \text{ }^\circ\text{C} \times 500 \begin{matrix} +24 \\ -12 \end{matrix}$ hours
Moisture-proof Test	$60 \pm 2 \text{ }^\circ\text{C}$, $90 \pm 5 \text{ \% RH} \times 500 \begin{matrix} +24 \\ -12 \end{matrix}$ hours
Thermal Shock Test	$-30 \text{ }^\circ\text{C} \times 30 \text{ minutes} \sim 85 \text{ }^\circ\text{C} \times 30 \text{ minutes}$, 5-cycle
Solder Heat Resistance Test	Recommended temperature profile (reflow soldering) $\times 2$, (2 nd test must be started after the samples are stabilized thermally.)

(2) Judgment Criteria of Failure for Reliability Test

Measuring Item	Symbol	Measuring Condition	Judgement Criteria for Failure
Forward Voltage	V_F	$I_F=20\text{mA}$	$> U \times 1.2$
Reverse Current	I_R	$V_R=4\text{V}$	$> U \times 2$
Luminous Intensity	I_V	$I_F=20\text{mA}$	$< S \times 0.5$

* U means the upper limit of the specified characteristics.

S means the initial value.

Note: Measurement shall be taken between 2 hours and 24 hours, having returned the test pieces to the normal ambient conditions after the completion of each test.

(3) Dealing with static electricity

This product is susceptible to accumulation of static electricity and surge voltage, which may decrease reliability or result in injury to bare hands.

(4) Generation of heat

Please consider generation of heat when using this product.

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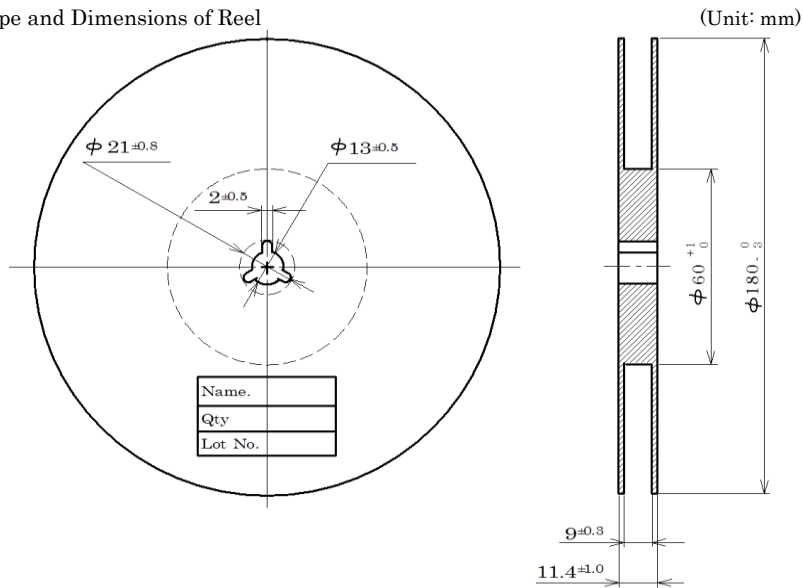
SPECIFICATIONS OF CITELED

5/10

Reference

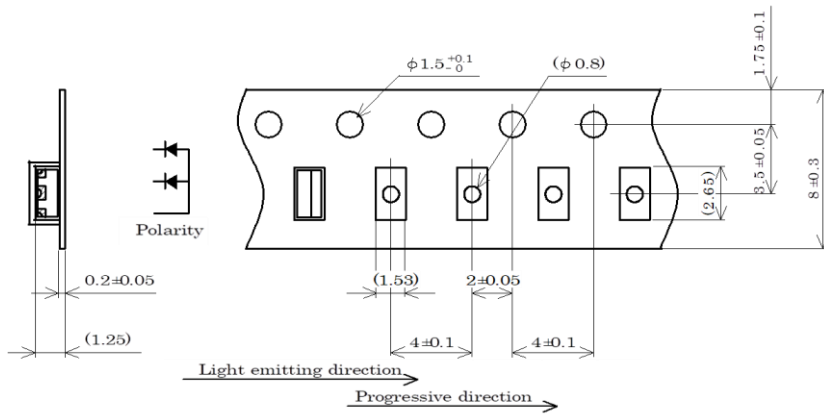
7. Taping Specifications (in accordance with JIS standard)

(1) Shape and Dimensions of Reel



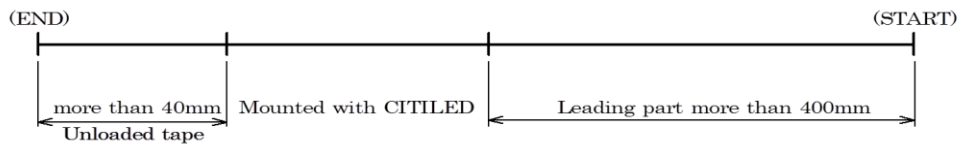
(2) Dimensions of Tape

(Unit: mm)



* Dimensions in parentheses are reference values.

(3) Configuration of Tape



(4) Quantity 3,000 pcs/reel

(Please note that the shipping quantity of this product may be less than 3000 pieces per reel (minimum quantity: 1000 pieces) depending on the shipping quantity, shipping delivery date and other conditions. However, in this case, we will notify you in advance.)

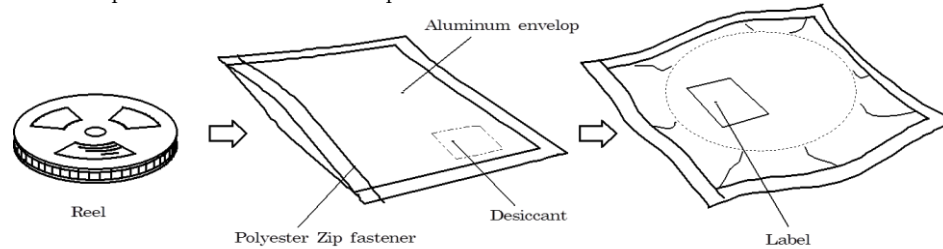
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Reference

8, Packing Specifications

(1) Moisture-proof Packing

To prevent moisture absorption during transportation and storage, reels are packed in aluminum envelopes.



(2) Storage

To prevent moisture absorption, it is strongly recommended that reels (in bulk or taped) should be stored in the dry box (or the desiccator) with a desiccant as the appropriate storage place. If not, the following is recommended.

Temperature : 5~30°C
 Humidity : 60%RH max.

The devices should be mounted as soon as possible after unpacking. If you store the unpacked reels, please store them in the dry box or seal them into the envelop again.

(3) Baking

After the storage period (6 months in moisture proof packaging, or 7 days after unpacking moisture proof packaging), please bake the goods before use under the conditions described below.

Baking conditions : 60 °C × 12 hours or more (reeled one)
 : 100 °C × 45 minutes or more (loose one)
 Baking times : Up to one time

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Reference

9, Precautions

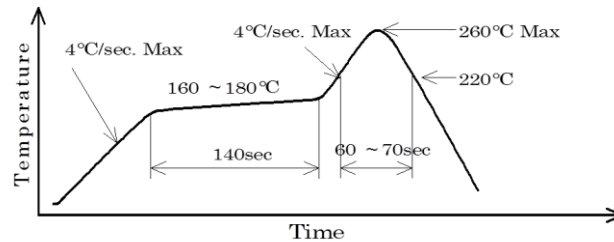
9-1, Soldering

(1) Manual soldering

- 1) Solder of 96.5Sn 3Ag 0.5Cu is recommended.
- 2) Bake the goods before manual soldering,
because otherwise it may cause resin to crack on account of moisture absorption.
- 3) Use a soldering iron of 25W or smaller. Adjust the temperature of the soldering iron below 350°C.
- 4) Force or stress must not be applied to the resin portion while soldering.
- 5) Finish soldering within 3 seconds.
- 6) Handle the devices only after temperature is cooled down.

(2) Lead free soldering

- 1) Following soldering paste is recommended
Melting temperature : 216 ~ 220°C
Composition : 96.5Sn 3Ag 0.5Cu
- 2) The temperature profile at the top surface of the parts is recommended as shown below.
- 3) It is requested that products should be handled after their temperature has dropped down to the normal room temperature.



Reflow soldering of the above profile is allowed two times.

(3) Caution

- 1) Reflow soldering is allowed up to two times, and manual soldering up to one time.
- 2) When conducting reflow twice,
please shorten the interval between the first and second reflow to prevent moisture absorption.
Also, please cool (naturally) the product to the room temperature after the first reflow to start the second reflow.
- 3) Make sure to avoid rapid cooling so that the temperature gradient from the peak temperature is gentle.
- 4) Air reflow may cause an optical deterioration because of heat in the reflow and impact of atmosphere.
Nitrogen reflow is recommended.
- 5) It is not recommended to repair the product after soldering.
- 6) When soldering, please do not apply stress to LED while it is heated.

9-2, Handling precautions

- (1) Please avoid any stress added to the resin portion while it is heated.
- (2) Please avoid any friction by sharp metal nail etc. to the resin portion.
- (3) Please avoid handling the product with bare hands.
- (4) Please avoid applying any pressure to the product.
- (5) Please avoid stacking PCBs after mounting.
- (6) Please take countermeasures against static electricity to the same degree as those used for CMOS LSI.

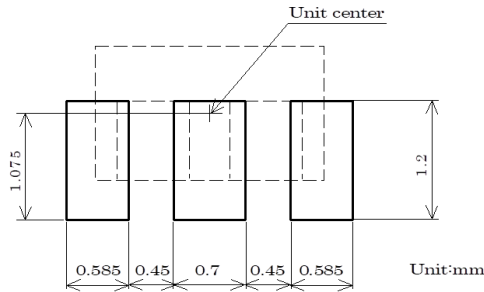
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Reference

10、Designing precautions

- (1) The current limiting resistor should be placed in the circuit so that is driven within its rating.
Also avoid reverse voltage (over-current) applied instantaneously when ON or OFF.
- (2) When pulse driving current is applied, average current consumption should be within the rating.
Also avoid reverse voltage applied when put off.
- (3) Recommended soldering pattern

<For reflow soldering>

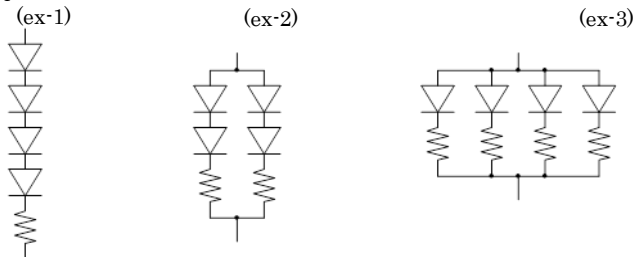


The above dimensions are not the one which guarantee the performance of mountability.

The use of the above pattern is recommended to use after deep study at your site.

- * Recommended land pattern has only a land size on which LED can be mounted without problem.
If mounting accuracy is required for a high-density mounting,
please choose a land pattern that suits it.

- (4) When assembling the circuit board into the finished products,
care must be taken to avoid the component parts from touching other parts.
- (5) When using multiple LEDs, it is required to connect a current limiting resistor on
each path which the current flows to the LEDs.



11、How to use

- (1) Please use forward current for the product.
Make sure that no forward or backward voltage is applied when it is not lighting.
Please avoid applying backward voltage continuously because
it may cause migration and damage dice.
- (2) Please avoid applying excess voltage such as lighting surge to LED.
- (3) The service life may become shorter in areas where hydrogen sulfide is generated
(such as near a hot spring or a volcano)
or there is a lot of salt (such as near the coast).
- (4) Please consider generation of heat when using this product.

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SPECIFICATIONS OF CITELED

9/10

Reference

12, Cleaning

- (1) Please do not wipe LED.
- (2) A cleaning agent may damage the package and resin to cause malfunctioning.
Before use, make sure it will not affect the goods.
- (3) Ultrasonic cleansing is not recommended.

13, Other precautions

- (1) Warranty period is half a year from the day we delivered the product.
- (2) If any defect is found during the warranty period, do not disassemble or dismantle the product but contact our sales window to follow its instruction.
- (3) Do not reverse-engineer the product including disassemble or analyze without our approval.
- (4) The product is intended to be used for general electronic equipment such as general lighting, home appliances, and information-communication equipment.
It is not designed or manufactured to be used for special application
(eg. automobiles, trains, ships, airplanes, spaceships, submarine repeaters, atomic energy control systems, combustion equipment, life-support systems, safety devices).
We will not guarantee any application suitability for goods like those described above that require special quality and reliability.
In cases where the product is used in special applications and it causes an extensive property damage, threatens human life or damages the human body, we will not be held liable.
- (5) The product is not in conformity to ISO/TS16949 or intended to be used for in-vehicle application.
- (6) This specification will become void if it is not returned or if no purchase order is made within one year from the issued date.
- (7) We will not be liable for any disadvantage, damage or cause of legal action, or any other damage or loss that arise from the use or nonuse of technical information or data of this specification.
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- (11) Please do not use or supply our products for any weapons of mass destruction (WMD) or for any other military purposes.
- (12) The contents of this document is not guaranteed because the specification and appearance of the product may change without notice for improvement.
Please exchange formal specifications with us when adopting the product for mass production.

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Leading the world's device technology

Products

- Lighting LED
- Chip LED
- Tactile switch



Application

- Mobile device
- Lighting device
- In-vehicle device
- Healthcare device
- Industrial device

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<http://ce.citizen.co.jp>

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Products information

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