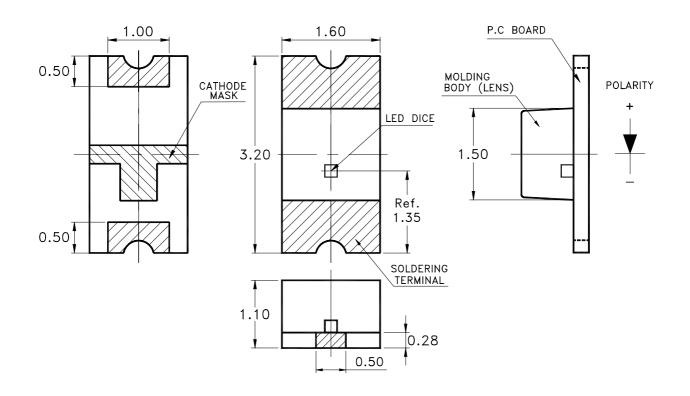


Property of Lite-On Only

Features

- * Reverse mount Chip LED.
- * Package in 8mm tape on 7" diameter reels.
- * Compatible with automatic placement equipment.
- * Compatible with infrared and vapor phase reflow solder process.
- * EIA STD package.
- * I.C. compatible.

Package Dimensions



Part no.	Lens	Source Color
LTST-C230TBKT	Water Clear	InGaN Blue

Notes:

- 1. All dimensions are in millimeters (inches).
- 2. Tolerance is ± 0.10 mm (.004") unless otherwise noted.



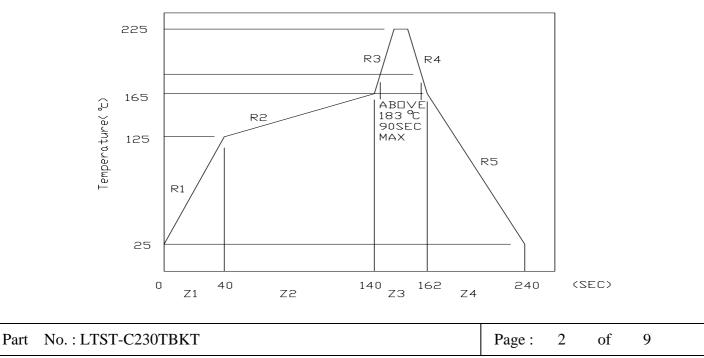
Property of Lite-On Only

Absolute Maximum Ratings At Ta=25℃

Parameter	LTST-C230TBKT	Unit	
Power Dissipation	120	mW	
Peak Forward Current (1/10 Duty Cycle, 0.1ms Pulse Width)	100 m/		
Continuous Forward Current	20	mA	
Derating Linear From 25℃	0.25	mA/°C	
Reverse Voltage	5	V	
Electrostatic Discharge Threshold(HBM) ^{Note A}	300		
Operating Temperature Range	-20°C to + 80°C		
Storage Temperature Range	-30°C to + 100°C		
Wave Soldering Condition	260°C For 5 Seconds		
Infrared Soldering Condition	260°C For 5 Seconds		
Vapor Phase Soldering Condition	215°C For 3 Minutes		

Note A :

HBM : Human Body Model. Seller gives no other assurances regarding the ability of to withstand ESD. Suggest IR Reflow Condition :





Property of Lite-On Only

Electrical Optical Characteristics At Ta=25°C

Parameter	Symbol	Part No. LTST-	Min.	Тур.	Max.	Unit	Test Condition
Luminous Intensity	IV	С230ТВКТ	28.0	-	112.0	mcd	IF = 20mA Note 1
Viewing Angle	2 0 1/2	C230TBKT		130		deg	Note 2 (Fig.6)
Peak Emission Wavelength	λ Peak	С230ТВКТ		468		nm	Measurement @Peak (Fig.1)
Dominant Wavelength	λd	C230TBKT	465	-	475	nm	IF = 20mA Note 3
Spectral Line Half-Width	Δλ	C230TBKT		25		nm	
Forward Voltage	VF	С230ТВКТ	2.8	-	3.8	V	IF = 20mA
Reverse Current	IR	С230ТВКТ			100	μA	VR = 5V

Notes: 1. Luminous intensity is measured with a light sensor and filter combination that approximates the

CIE eye-response curve.

- 2. $\theta 1/2$ is the off-axis angle at which the luminous intensity is half the axial luminous intensity.
- 3. The dominant wavelength, λ d is derived from the CIE chromaticity diagram and represents the single wavelength which defines the color of the device.
- 4. Caution in ESD:

Static Electricity and surge damages the LED. It is recommend to use a wrist band or anti-electrostatic glove when handling the LED. All devices, equipment and machinery must be properly grounded.

Part	No.	: LTST-C230TBKT
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Property of Lite-On Only

Bin Code List

Forward Vol	tage Uni	Unit: V @20mA	
Bin Code	Min.	Max.	
D7	2.80	3.00	
D8	3.00	3.20	
D9	3.20	3.40	
D10	3.40	3.60	
D11	3.60	3.80	

Tolerance on each Forward Voltage bin is +/-0.1 volt

Luminous Intensity Ur		: mcd @20mA
Bin Code	Min.	Max.
N	28.0	45.0
Р	45.0	71.0
Q	71.0	112.0

Tolerance on each Intensity bin is +/-15%

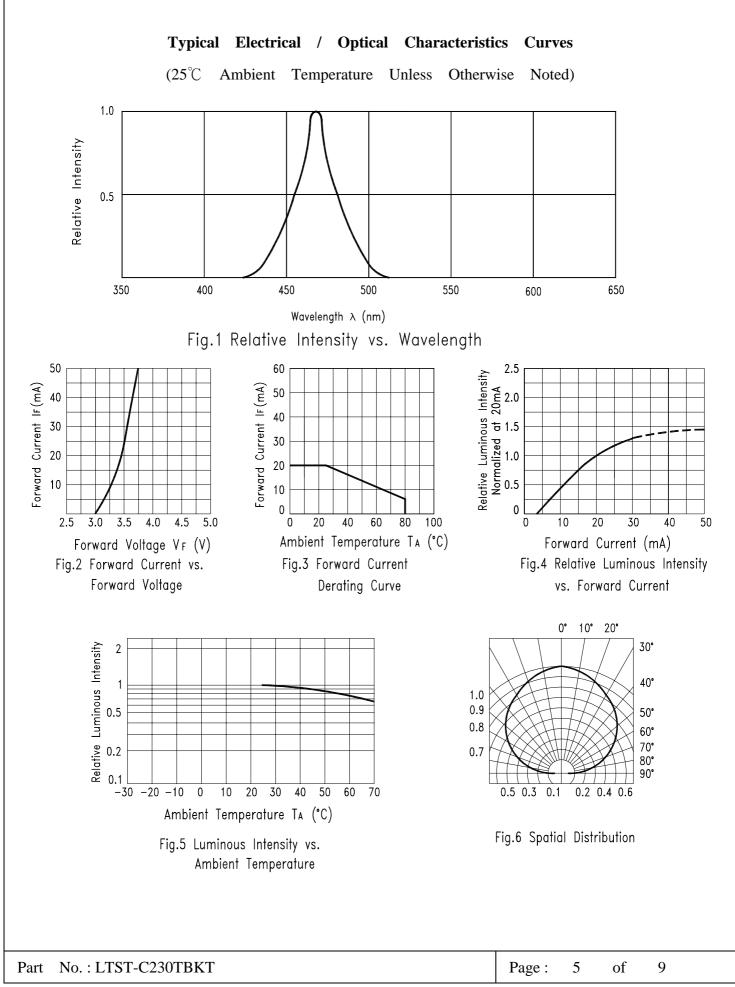
Dominant Wavelength		Unit : nm @20mA	
Bin Code	Min.	Max.	
AC	465.0	470.0	
AD	470.0	475.0	

Tolerance for each Dominate Wavelength bin is +/- 1nm

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LITE-ON TECHNOLOGY CORPORATION

Property of Lite-On Only



BNS-OD-C131/A4

LITEON



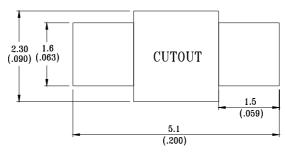
Property of Lite-On Only

Cleaning

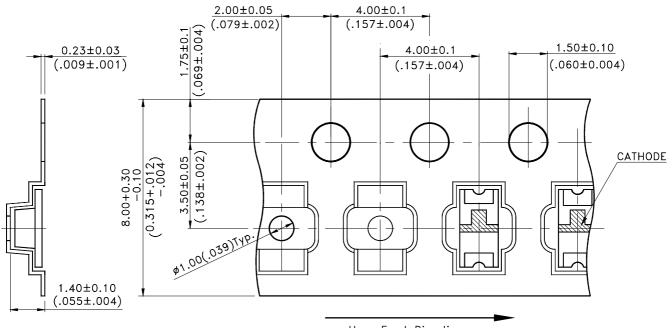
Do not use unspecified chemical liquid to clean LED they could harm the package.

If clean is necessary, immerse the LED in ethyl alcohol or in isopropyl alcohol at normal temperature for less one minute.

Suggest Soldering Pad Dimensions



Package Dimensions Of Tape And Reel



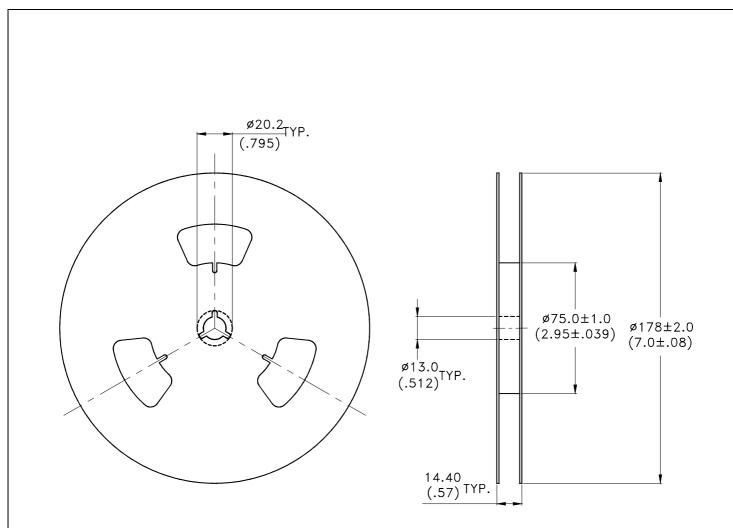
User Feed Direction

Notes:

1. All dimensions are in millimeters (inches).



Property of Lite-On Only



Notes:

- 1. Empty component pockets sealed with top cover tape.
- 2. 7 inch reel-3000 pieces per reel.
- 3. Minimum packing quantity is 500 pcs for remainders.
- 4. The maximum number of consecutive missing lamps is two.
- 5. In accordance with ANSI/EIA 481-1-A-1994 specifications.



Property of Lite-On Only

CAUTIONS

1. Application

The LEDs described here are intended to be used for ordinary electronic equipment (such as office equipment, communication equipment and household applications).Consult Liteon's Sales in advance for information on applications in which exceptional reliability is required, particularly when the failure or malfunction of the LEDs may directly jeopardize life or health (such as in aviation, transportation, traffic control equipment, medical and life support systems and safety devices).

2. Storage

The storage ambient for the LEDs should not exceed 30°C temperature or 70% relative humidity. It is recommended that LEDs out of their original packaging are IR-reflowed within one week. For extended storage out of their original packaging, it is recommended that the LEDs be stored in a sealed container with appropriate desiccant, or in a dessicator with nitrogen ambient. LEDs stored out of their original packaging for more than a week should be baked at about 60 deg C

for at least 24 hours before solder assembly.

3. Cleaning

Use alcohol-based cleaning solvents such as isopropyl alcohol to clean the LED if necessary.

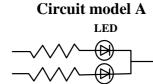
4. Soldering

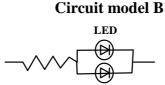
Recommended soldering conditions :

Reflow so	Reflow soldering Wave Soldering		Soldering iron		
Pre-heat Pre-heat time Peak temperature Soldering time	120 sec. Max. 240°C Max.	Pre-heat Pre-heat time Solder wave Soldering time		Soldering time	300°C Max. 3 sec. Max. (one time only)

5. Drive Method

An LED is a current-operated device. In order to ensure intensity uniformity on multiple LEDs connected in parallel in an application, it is recommended that a current limiting resistor be incorporated in the drive circuit, in series with each LED as shown in Circuit A below.





(A) Recommended circuit.

(B) The brightness of each LED might appear different due to the differences in the I-V charateristics of those LEDs.

6. ESD (Electrostatic Discharge)

Static Electricity or power surge will damage the LED. Suggestions to prevent ESD damage:

- Use of a conductive wrist band or anti-electrostatic glove when handling these LEDs.
- All devices, equipment, and machinery must be properly grounded.
- Work tables, storage racks, etc. should be properly grounded.
- Use ion blower to neutralize the static charge which might have built up on surface of the LED's plastic lens as a result of friction between LEDs during storage and handling.

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Property of Lite-On Only

ESD-damaged LEDs will exhibit abnormal characteristics such as high reverse leakage current, low forward voltage, or "no lightup" at low currents.

To verify for ESD damage, check for "lightup" and Vf of the suspect LEDs at low currents.

The Vf of "good" LEDs should be >2.0V@0.1mA for InGaN product and >1.4V@0.1mA for AlInGaP product.

Chip ESD level	Machine Mode	Human Body Mode
InGaN / Sapphire	100 V	300 V
AlInGaP	200 V	500 V
InGaN / SiC	600 V	1000 V

7. Reliability Test

Classification	Test Item	Test Condition	Referance Standard
	Operation Life	Ta= Under Room Temperature As Per Data Sheet Maximum Rating *Test Time= 1000HRS (-24HRS,+72HRS)*@20mA.	MIL-STD-750D:1026 (1995) MIL-STD-883D:1005 (1991) JIS C 7021:B-1 (1982)
Endurance Test	High Temperature High Humidity Storage	IR-Reflow In-Board, 2 Times Ta= 65±5°C, RH= 90~95% *Test Time= 240HRS±2HRS	MIL-STD-202F:103B(1980) JIS C 7021:B-11(1982)
	High Temperature Storage	Ta= 105±5℃ *Test Time= 1000HRS (-24HRS,+72HRS)	MIL-STD-883D:1008 (1991) JIS C 7021:B-10 (1982)
	Low Temperature Storage	Ta= -55±5°C *Test Time=1000HRS (-24HRS,+72H RS)	JIS C 7021:B-12 (1982)
	Temperature Cycling	105° C ~ 25° C ~ -55° C ~ 25° C 30mins 5mins 30mins 5mins 10 Cycles	MIL-STD-202F:107D (1980) MIL-STD-750D:1051(1995) MIL-STD-883D:1010 (1991) JIS C 7021:A-4(1982)
	Thermal Shock	IR-Reflow In-Board, 2 Times $85 \pm 5^{\circ}$ C $\sim -40^{\circ}$ C $\pm 5^{\circ}$ C10mins10mins10 Cycles	MIL-STD-202F:107D(1980) MIL-STD-750D:1051(1995) MIL-STD-883D:1011 (1991)
D	Solder Resistance	T.sol= $260 \pm 5^{\circ}$ C Dwell Time= 10 ± 1 secs	MIL-STD-202F:210A(1980) MIL-STD-750D:2031(1995) JIS C 7021:A-1(1982)
Environmental Test	IR-Reflow	Ramp-up rate(183° C to Peak) +3°C second max Temp. maintain at $125(\pm 25)^{\circ}$ C 120 seconds max Temp. maintain above 183° C 60-150 seconds Peak temperature range 235° C +5/-0°C Time within 5°C of actual Peak Temperature (tp) 10-30 seconds Ramp-down rate +6°C/second max	MIL-STD-750D:2031.2(1995) J-STD-020(1999)
	Solderability	T.sol= $235 \pm 5^{\circ}$ C Immersion time 2 ± 0.5 sec Immersion rate 25 ± 2.5 mm/sec Immersion rate 25 ± 2.5 mm/sec Coverage $\geq 95\%$ of the dipped surface	MIL-STD-202F:208D(1980) MIL-STD-750D:2026(1995) MIL-STD-883D:2003(1991) IEC 68 Part 2-20 JIS C 7021:A-2(1982)

8. Others

The appearance and specifications of the product may be modified for improvement without prior notice.

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