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SURFACE MOUNT TAPE AND REEL



Lead-Free Parts

**LSBK9033/TR2**

**DATA SHEET**

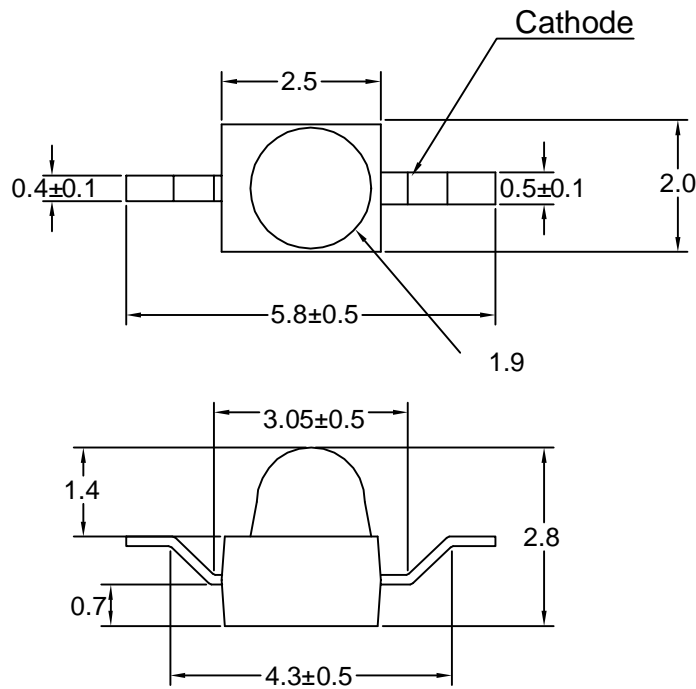
DOC. NO : QW0905-LSBK9033/TR2

REV. : A

DATE : 29 - Sep - 2005

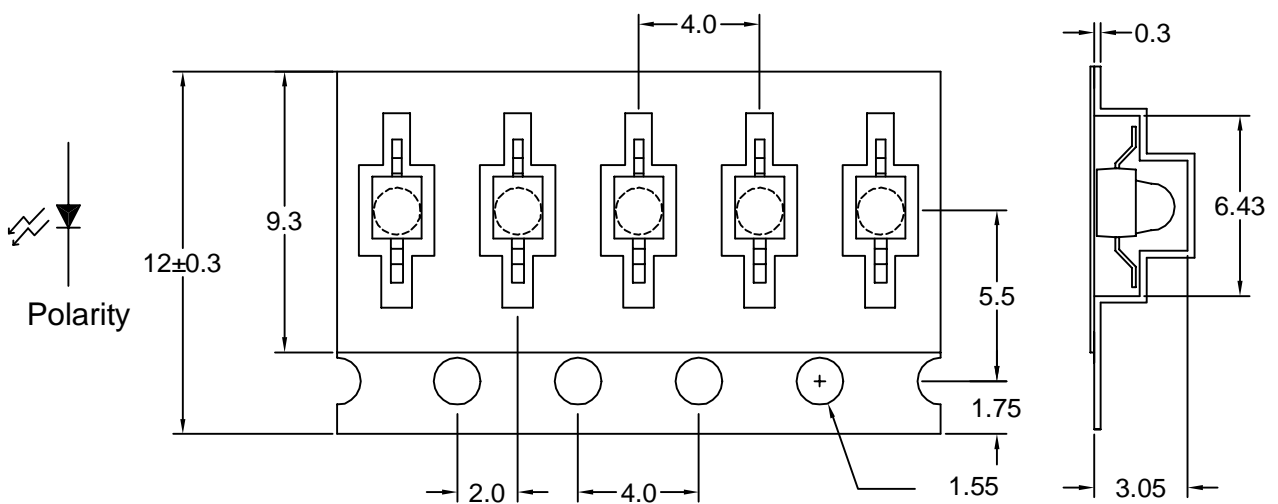


### Package Dimensions



Note : 1.All dimension are in millimeter tolerance is  $\pm 0.2$ mm unless otherwise noted.  
2.Specifications are subject to change without notice.

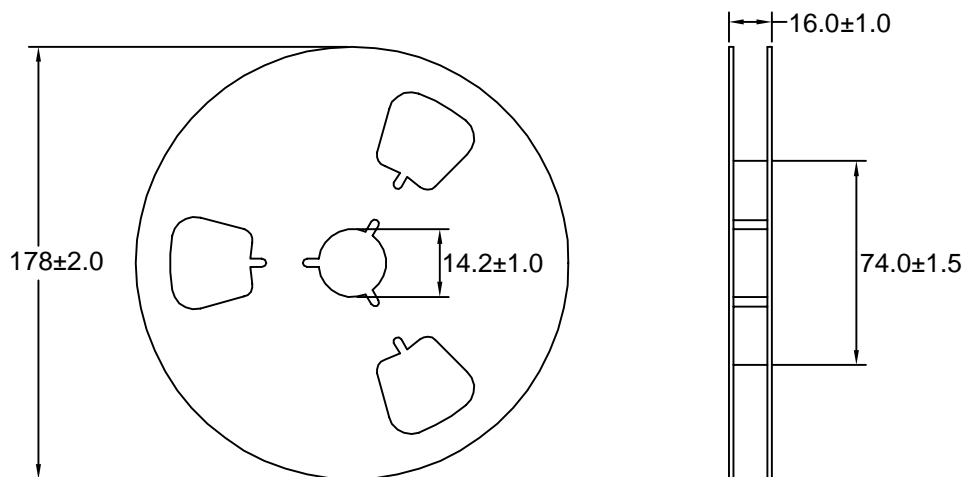
### Carrier Type Dimensions



Note : The tolerances unless mentioned is  $\pm 0.2$ mm, Angle  $\pm 0.5$ . Unit=mm.



### Reel Dimensions



Part No.	Description	Quantity/Reel
LSBK9033/TR2	12.0mm tape, 7" reel	1500 devices



## Absolute Maximum Ratings at Ta=25

Parameter	Symbol	Ratings	UNIT
		SBK	
Forward Current	IF	30	mA
Peak Forward Current Duty 1/10@10KHz	I <sub>FP</sub>	100	mA
Power Dissipation	PD	120	mW
Reverse Current @5V	I <sub>r</sub>	50	μA
Electrostatic Discharge	ESD	500	V
Operating Temperature	T <sub>opr</sub>	-20 ~ +80	
Storage Temperature	T <sub>stg</sub>	-30 ~ +100	
Soldering Temperature	T <sub>sol</sub>	Max 260 for 5 sec Max (2mm from body)	

## Typical Electrical &amp; Optical Characteristics (Ta=25 )

PART NO	MATERIAL	COLOR		Peak wave length Pnm	Dominant wave length Dnm	Spectral halfwidth nm	Forward voltage @20 mA(V)		Luminous intensity @20mA(mcd)		Viewing angle 2 1/2 (deg)
		Emitted	Lens				Typ.	Max.	Min.	Typ.	
LSBK9033/TR2	InGaN/SiC	Blue	Water Clear	468	470	26	3.5	4.2	120	220	20

Note : 1.The forward voltage data did not including  $\pm 0.1V$  testing tolerance.

2. The luminous intensity data did not including  $\pm 15\%$  testing tolerance.



### Typical Electro-Optical Characteristics Curve

SBK CHIP

Fig.1 Forward current vs. Forward Voltage

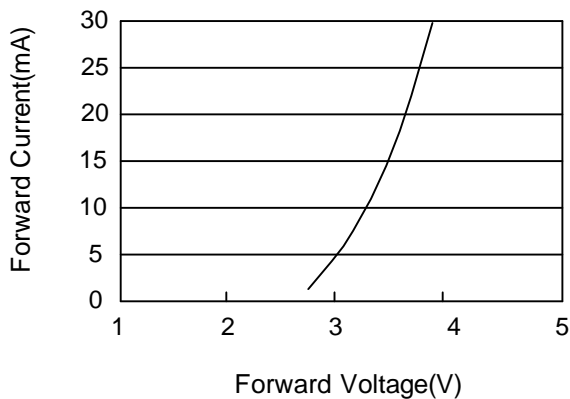


Fig.2 Relative Intensity vs. Forward Current

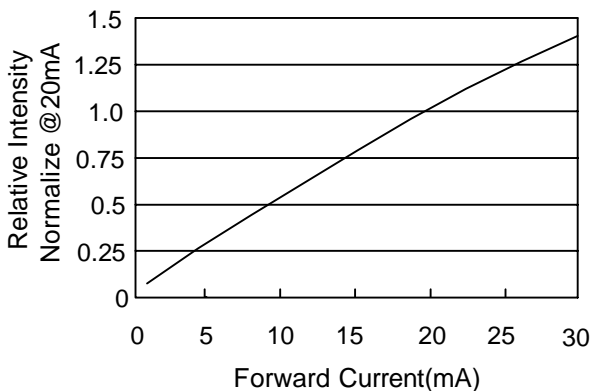


Fig.3 Forward Current vs. Temperature

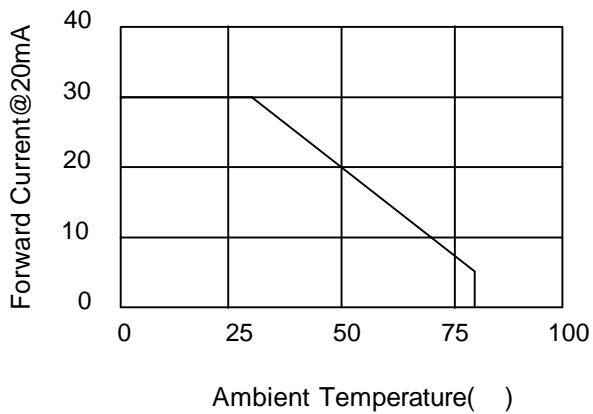
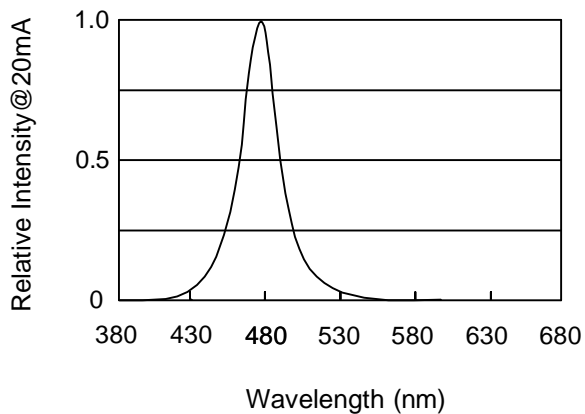


Fig.4 Relative Intensity vs. Wavelength



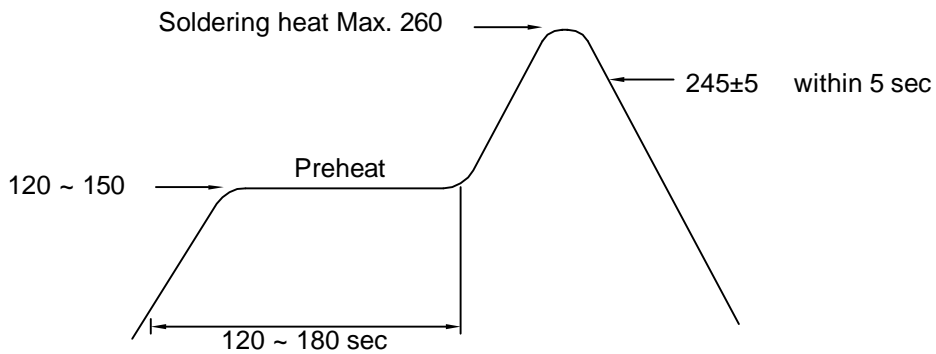


### Recommended Soldering Conditions

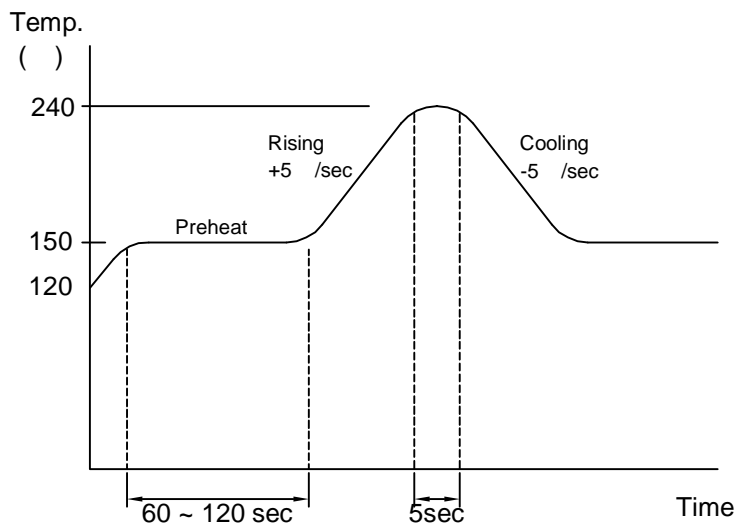
#### 1. Hand Solder

Basic spec is 280 3 sec one time only.

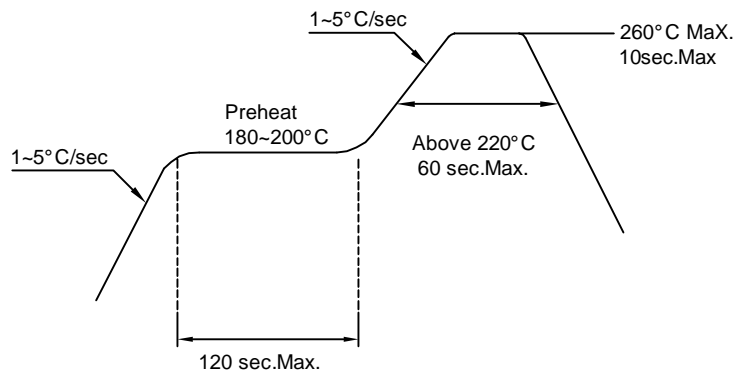
#### 2. Wave Solder



#### 3-1. LEAD Reflow Solder



#### 3-2 PB-Free Reflow Solder



Reflow Soldering should not be done more than two times.



Precautions For Use:

Storage time:

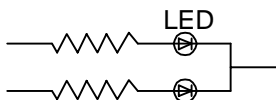
- 1.The operation of Temperatures and RH are : 5 ~35 ,RH60%.
- 2.Once the package is opened, the products should be used within a week.  
Otherwise, they should be kept in a damp proof box with descanting agent.  
Considering the tape life, we suggest our customers to use our products within a year(from production date).
- 3.If opened more than one week in an atmosphere 5 ~ 35 ,RH60%, they should be treated at 60 ±5 fo r 15hrs.

Drive Method:

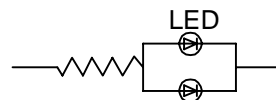
LED is a current operated device, and therefore, requirer some kind of current limiting incorporated into the driver circuit. This current limiting typically takes the form of a current limiting resistor placed in series with the LED.

Consider worst case voltage variations than could occur across the current limiting resistor. The forwr d current should not be allowed to change by more than 40 % of its desired value.

Circuit model A



Circuit model B



(A) Recommended circuit.

(B) The difference of brightness between LED could be found due to the VF-IF characteristics of LED.

Cleaning:

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

ESD(Electrostatic Discharge):

Static Electricity or power surge will damage the LED. Use of a conductive wrist band or anti-electrosatic glove is recommended when handing these LED. All devices, equipment and machinery must be properly grounded.



Reliability Test:

Classification	Test Item	Test Condition	Reference Standard
Endurance Test	Operating Life Test	1.Ta=Under Room Temperature As Per Data Sheet Maximum Rating. 2.If=20mA 3.t=1000 hrs (-24hrs, +72hrs)	MIL-STD-750D: 1026 MIL-STD-883D: 1005 JIS C 7021: B-1
	High Temperature Storage Test	1.Ta=105 ±5 2.t=1000 hrs (-24hrs, +72hrs)	MIL-STD-883D:1008 JIS C 7021: B-10
	Low Temperature Storage Test	1.Ta=-40 ±5 2.t=1000 hrs (-24hrs, +72hrs)	JIS C 7021: B-12
	High Temperature High Humidity Storage Test	1.Ta=65 ±5 2.RH=90 %~95% 3.t=1000hrs ±2hrs	MIL-STD-202F:103B JIS C 7021: B-11
Environmental Test	Thermal Shock Test	1.Ta=105 ±5 & -40 ±5 (10min) (10min) 2.total 10 cycles	MIL-STD-202F: 107D MIL-STD-750D: 1051 MIL-STD-883D: 1011
	Solderability Test	1.T.Sol=235 ±5 2.Immersion time 2 ±0.5sec 3.Coverage 95% of the dipped surface	MIL-STD-202F: 208D MIL-STD-750D: 2026 MIL-STD-883D: 2003 IEC 68 Part 2-20 JIS C 7021: A-2
	Temperature Cycling	1.105 ~ 25 ~ -55 ~ 25 30mins 5mins 30mins 5mins 2.10 Cyeles	MIL-STD-202F: 107D MIL-STD-750D: 1051 MIL-STD-883D: 1010 JIS C 7021: A-4
	IR Reflow	1.T=260° C Max. 10sec.Max. 2. 6 Min	MIL-STD-750D:2031.2 J-STD-020