

# SECU1413C–TG20

- External Shape Type : 1.6 × 0.8 size Chip LED
- Color : Green
- Application : Automotive, Consumer Electronics, Office Automation, Indicator
- Feature : MSL–3, RoHS compliant,  
Compatible with heat–resistance of lead–free solder.

## ● Absolute maximum ratings

Description	Symbol	Ratings	Unit	Remark
Power dissipation	PD	100	mW	
Forward current	IF	40	mA	
Forward current reduction	$\Delta$ IF	–2	mA/°C	Above 85°C
Pulse forward current	IFP	100	mA	f=1kHz tw ≤ 100μs
Reverse voltage	VR	5	V	
Operating temperature	Topr	–40 ~ 100	°C	
Storage temperature	Tstg	–40 ~ 100	°C	
Junction temperature	Tjmax	115	°C	

## ● Photoelectric characteristic (Ta=25°C)

Description	Symbol	Conditions	Min	Typ	Max	Unit
Forward voltage	VF	IF = 20mA	1.7	2.1	2.5	V
Reverse current	IR	VR=5V			10	μA
Luminous intensity	IV	IF = 20mA	43	75	135	mcd
Peak wavelength	$\lambda$ P	IF = 20mA		566		nm
Dominant wavelength	$\lambda$ D	IF = 20mA	560.5	564	567.5	nm
Spectral bandwidth	$\Delta \lambda$	IF = 20mA		15		nm
Directional angle	2θ 1/2	IF = 20mA		–		deg.
Thermal resistance	θ j–a	–		340		°C/W

## ● Luminous intensity rank (Ta=25°C)

(Tolerances: ±10%)

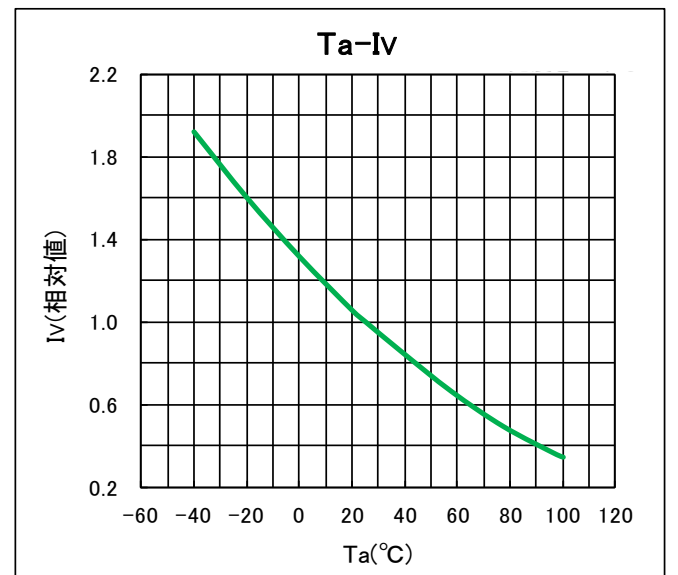
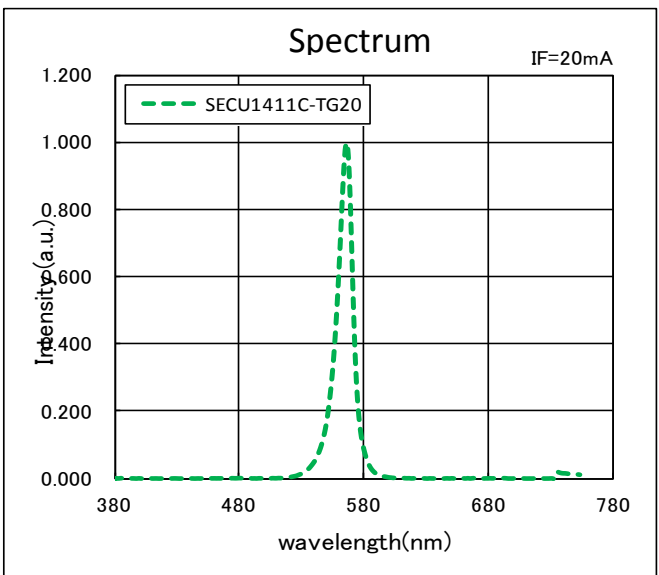
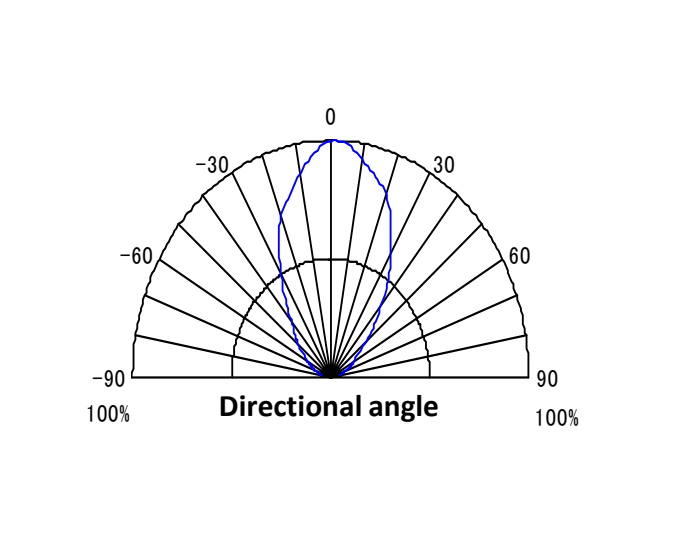
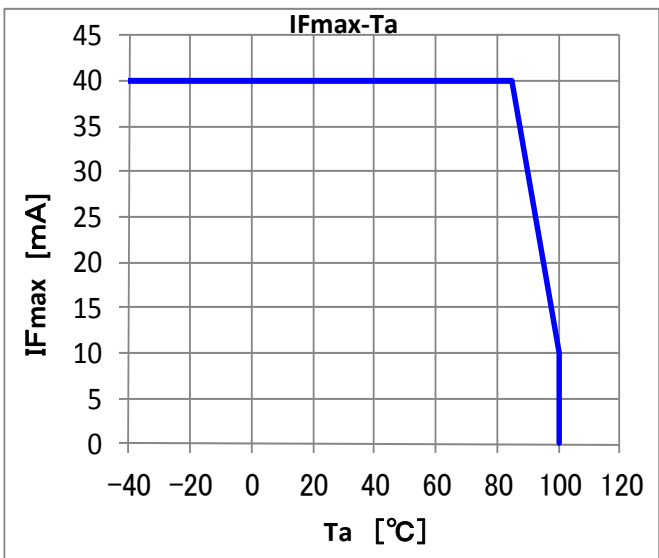
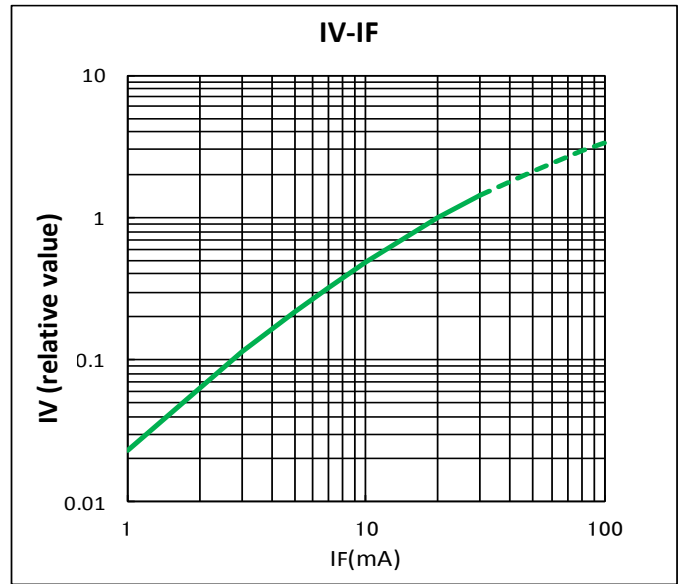
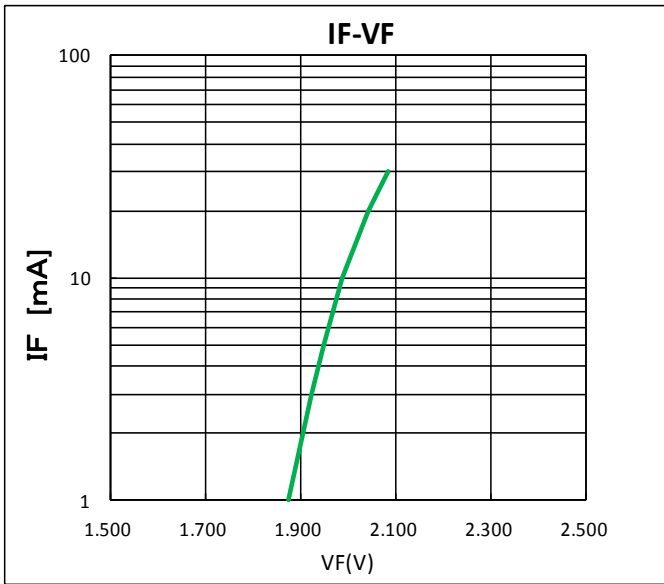
rank	Luminous intensity range (mcd)	
C	43 ~	75
D	75 ~	135

## ● Dominant wavelength rank (Ta=25°C)

(Tolerance: ±2nm)

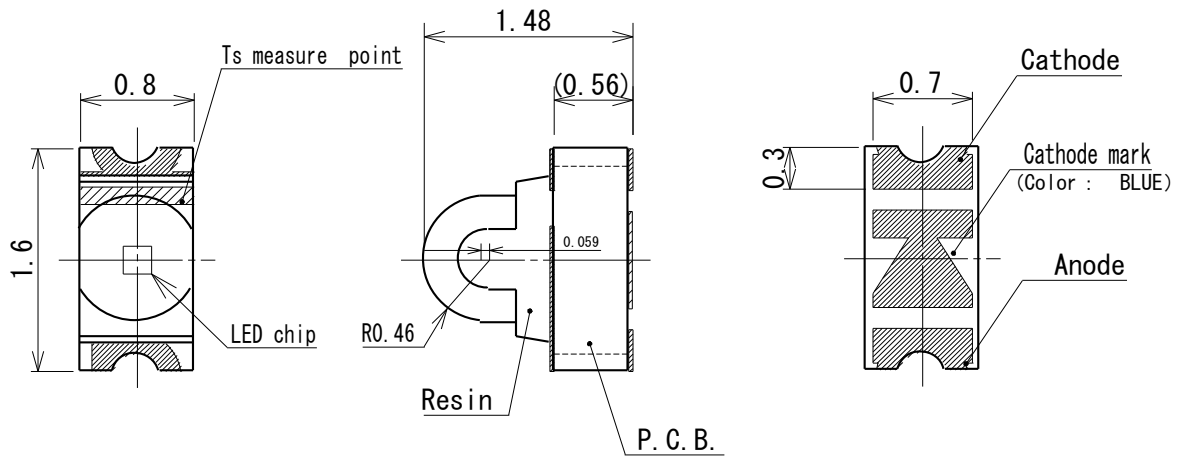
rank	Dominant Wavelength range (nm)		
G	561.5 ~		564
Y	564 ~		566.5

● Characteristic data

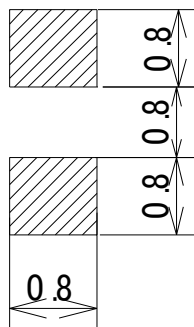


● Outline

Unit:mm



Recommendation soldering pattern size



Tolerance  $\pm 0.1$

Material & Finish of leads

Material	Copper
Finish	Au plating

Material of resin

Material	Silicone
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Tolerance  $\pm 0.1$

## ● Soldering conditions

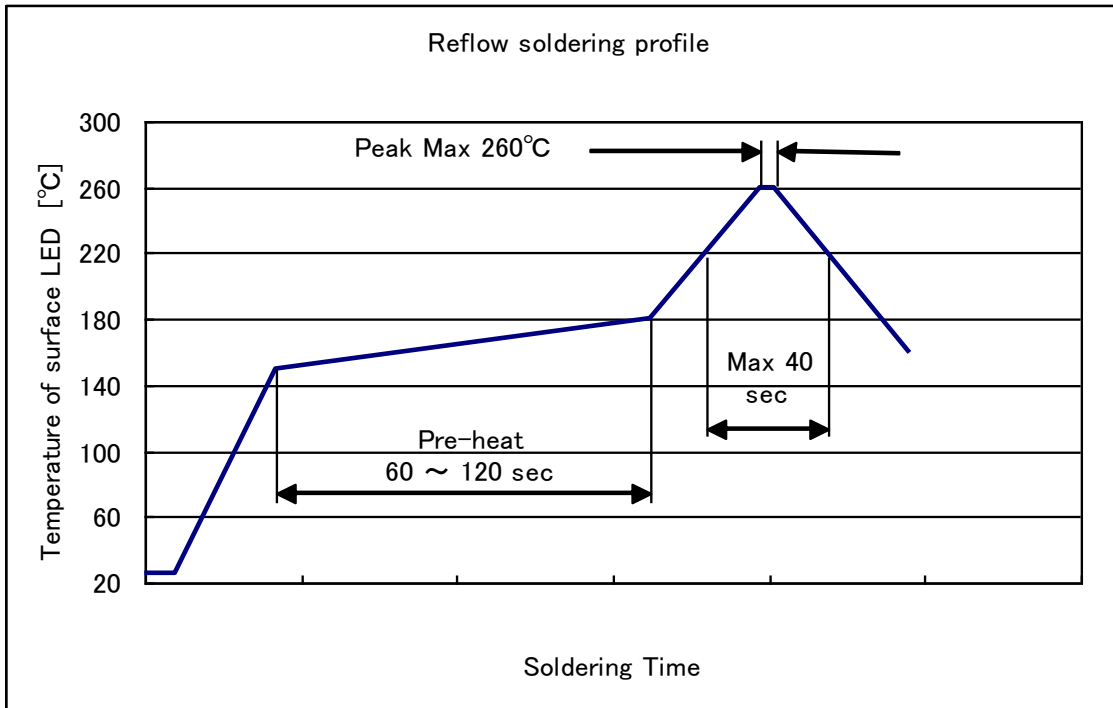
Following soldering conditions are recommended.

### ① Reflow conditions (at the surface of LED resin)

Pre-heat : 150 ~ 180 °C、60 ~ 120 sec

Soldering temperature: Soldering time more than 220°C is less than 40 sec.

Peak temperature is should be is less than 260°C.



### ② Manual soldering

Temperature of soldering iron tip should be  $350 \pm 10^{\circ}\text{C}$  for 3 seconds, which shall apply to only one soldered point and once for the each soldered point.

## ● Attention after opened

The LED is in SMD package. When the LED is mounted by means of soldering and the resin is unusually damp, soldering may cause interfacial defoliation.

This occurs when a drastic temperature change causes moisture in the resin to evaporate and to swell. Therefore, attention to the below must be paid.

### ① Atmosphere when using the LEDs after package is opened

After opened and mounted, soldering should be carried out quickly.

Following atmosphere is recommended when using (and mounting) the LEDs.

Temperature : 5~30°C    Humidity : less than 70%

### ② Baking

In case 168 hours have passed after package is opened, LEDs must be dried as follows.

Dry baking process must be one time.

60±5 °C for more than 24 hours (taping reel)

### ③ Storage after package is opened

Following storage conditions are recommended after package is opened.

In case indicator color (blue) of desiccant (ex. silica gel) has disappeared,

LEDs must be dried under the same conditions as ② above.

## ● Other

① After soldering any mechanical force or excessive vibration should not be applied to LEDs during cooling process until the LEDs cool down to normal temperature.

② Quick cooling must be avoided.

③ The LEDs should not be mounted on warped direction of PCB.

④ This product series emits high light power. Do not look directly into the light emitting area. Direct exposure to the light over an extended time period may harm eyes.

⑤ Extra attention should be paid to the sealing resin of the product, which is silicone resin.

▪ The emitting area of the LEDs contains fine gold wires. Touching this area without care may add excess stress on the internal gold wires and may result in

▪ The silver plating of the leadframe may discolor if the product comes into contact with material containing sulfides or if it is exposed to an atmosphere containing sulfide gas.

● Reliability test

	Test Items	EIAJ ED-4701	Test Conditions
Life Tests	Steady state operating life	-	Ta=RT、Ifmax t=1000h
Environ-mental Tests	High temperature storage	201	Ta=Tstgmax t=1000h
	Low temperature storage	202	Ta=Tstgmin t=1000h
	Moisture Resistance	103	Ta=60±5°C、RH=90±5% t=1000h
	Temperature cycle	105	Tstgmin(30min)~Tstgmax(30min) 100cycles
	Soldering heat	301	T=260±5°C、t=10s、1time
	Solderability	402	T=245±5°C、t=5±1s、1time、Using flux for Pb free solder

Measurement Item and Criterion Judge Failure

No	Measurement Item	Mark	Criterion Judge Failure
1	Forward Voltage	VF	$OK \leq V.F.S. \times \pm 20\%$
2	Reverse Current	IR	$OK \leq U.S.L. \times 2.0$
3	Luminous Intensity	IV	$OK \geq I.V.S. \times 0.5$

\*Solderability ... The Lead shall be covered by solder at least 95%.

Measurement conditions is based on specifications.

Tstgmax and Tstgmin is absolute maximum ratings.

Ifmax and IFPmax is absolute maximum ratings.

U.S.L. is upper limit of standard.

V.F.S. is Initial data of VF.

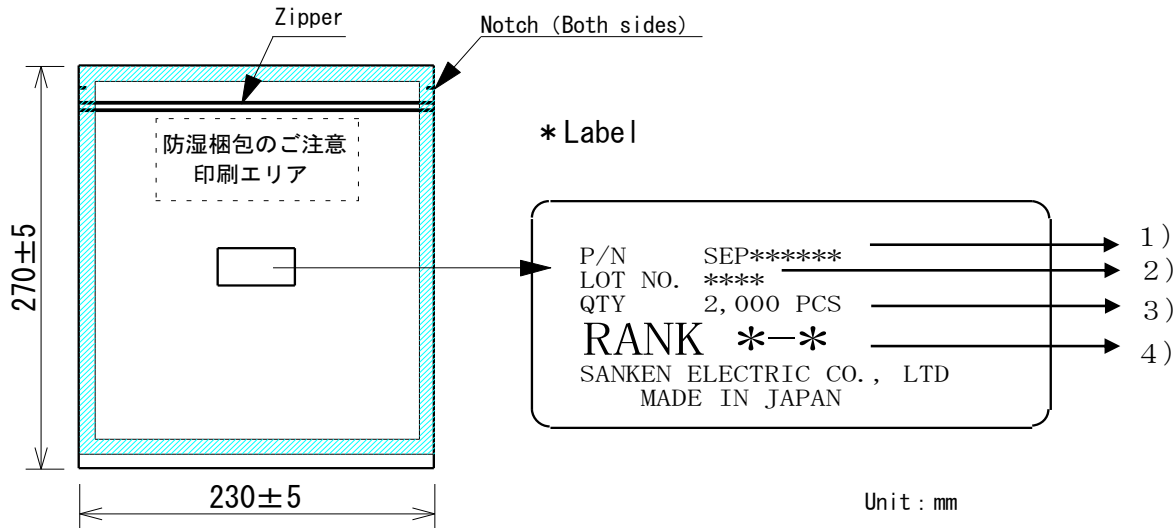
I.V.S. is Initial data of Luminous Intensity.

● Packing

Packing Material : Aluminum laminated moisture-proof packing

Quantity : 2000 pcs (Minimum order quantity)

Label : See below.



1) Part Number : SECU1413C-TG20

2) Lot No. : \* \* \* \*

↑ ↑ ↑

① ② ③

① Last digit of year,

② Month

(January~September→Arabic Numeral

October →O、November→N、December→D)

③ Day

3) quantity : 2000pcs

4) Rank : \* - \*

↑ ↑

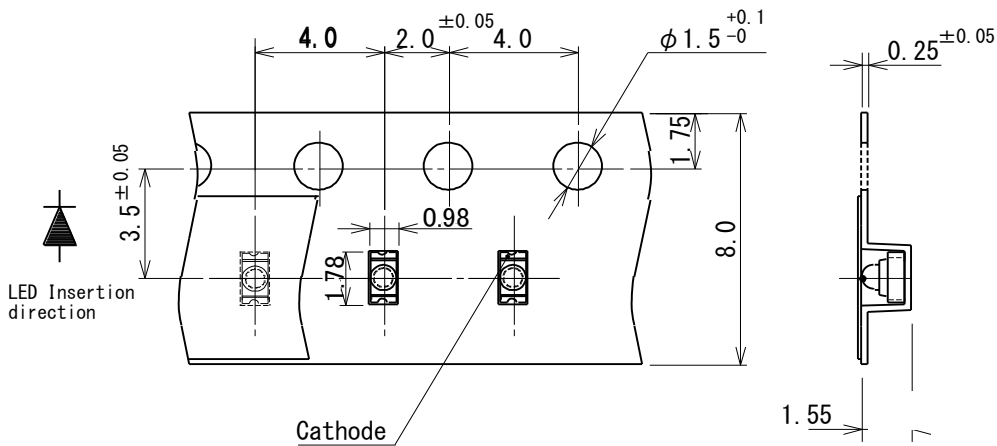
① ②

① Luminous intensity rank

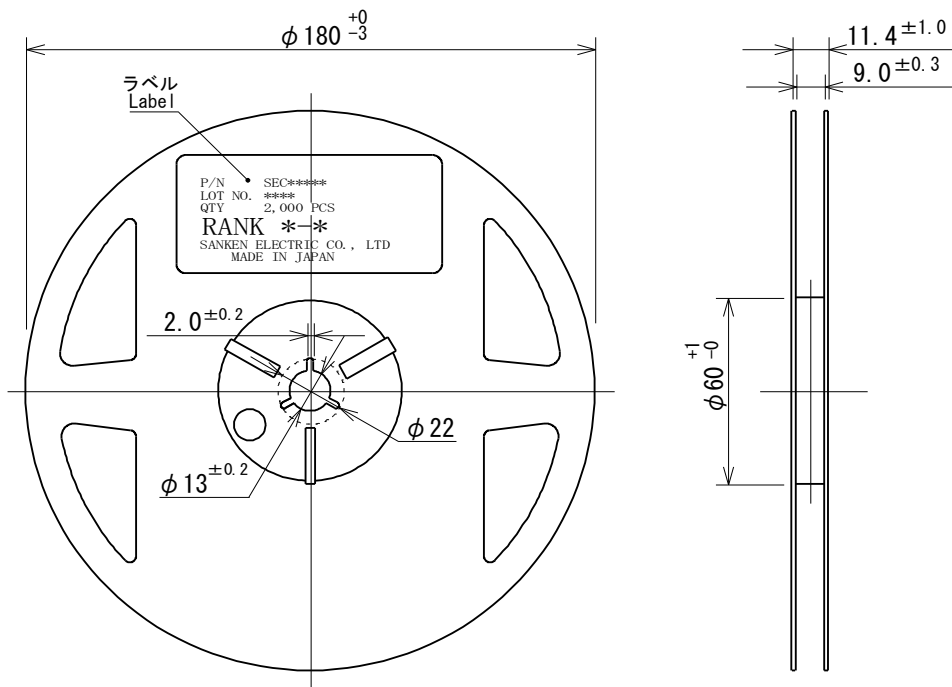
② Chromaticity rank

● Taping reel dimensions

Unit:mm



Taping reel dimensions



Tolerance ±0.2

①Quantity

The quantity per reel shall be 2000 pcs.

②Accumulative pitch tolerance

Accumulative tolerance per 10 pitches shall be ±0.2mm.

③Adhesion strength of cover tape

Adhesion strength shall be 0.1-0.7N when the cover tape and the carrier tape are torn off at the angle of 10 degrees.

④Packaging

P/N, manufacturing date code number and quantity shall be indicated on a moist-proof package.



## ● Tips

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