

**PRELIMINARY**

## LED470-01

Rev. 11 / 2020

- Blue LED
- 470 nm, 23 mW
- Chip: InGaN, 350 x 350  $\mu\text{m}$ , 1 pc.
- 5 mm Clear Molding, Epoxy Resin
- Viewing Angle: 18°



### Description



**LED470-01** contains one InGaN LED chip die with a typical peak wavelength of **470 nm** and radiation power of **23 mW**. It comes in  $\varnothing 5$  mm clear molding package with soldered lead frame (lead free) and lens molded with epoxy resin.

### Maximum Ratings ( $T_{\text{CASE}}=25^{\circ}\text{C}$ )

Parameter	Symbol	Values		Unit
		Min.	Max.	
Power Dissipation	$P_D$		200	mW
Forward Current	$I_F$		50	mA
Pulse Forward Current *1	$I_{FP}$		100	mA
Reverse Voltage	$V_F$		5	V
Thermal Resistance	$R_{THJA}$		180	K/W
Junction Temperature	$T_J$		120	$^{\circ}\text{C}$
Operating Temperature	$T_{\text{CASE}}$	- 40	+ 100	$^{\circ}\text{C}$
Storage Temperature	$T_{\text{STG}}$	- 40	+ 100	$^{\circ}\text{C}$
Lead Solder Temperature *2	$T_{\text{SLD}}$		+ 265	$^{\circ}\text{C}$

\*1 duty=1%, pulse width = 10  $\mu\text{s}$ 

\*2 must be completed within 5 seconds

### Electro-Optical Characteristics ( $T_{\text{CASE}}=25^{\circ}\text{C}$ )

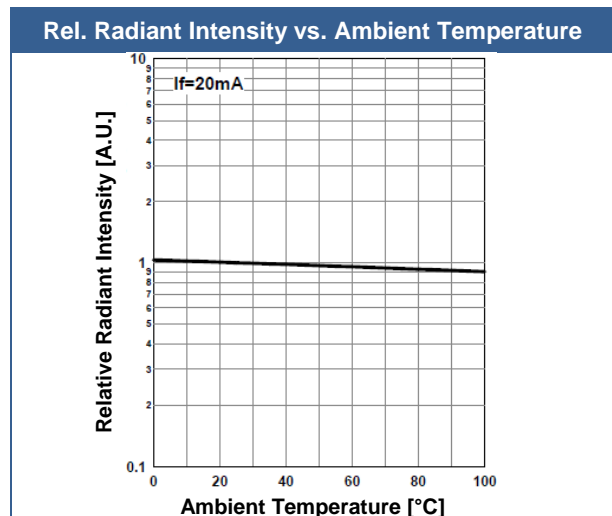
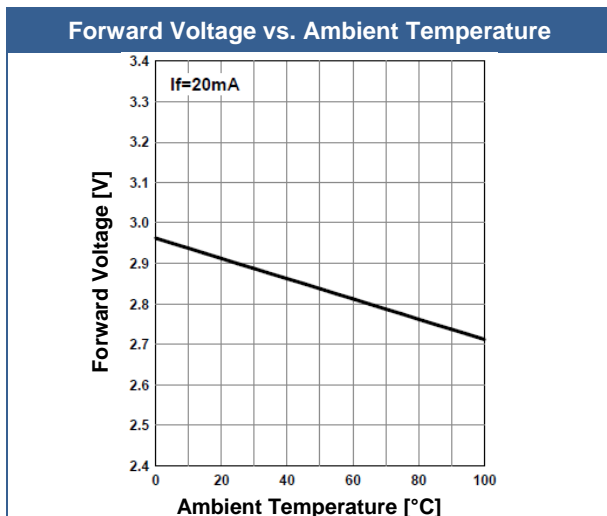
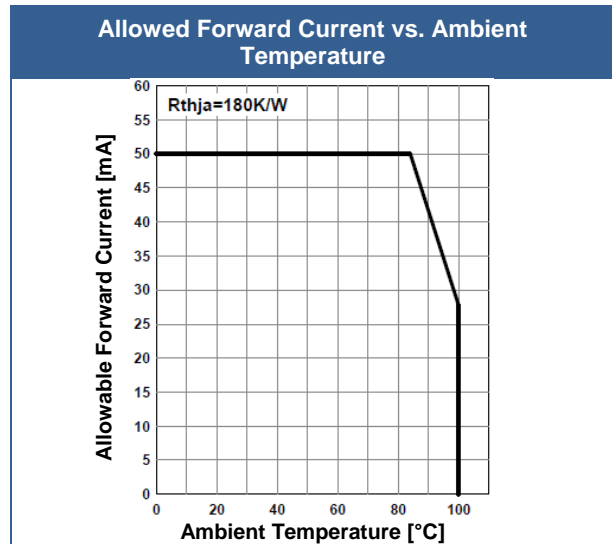
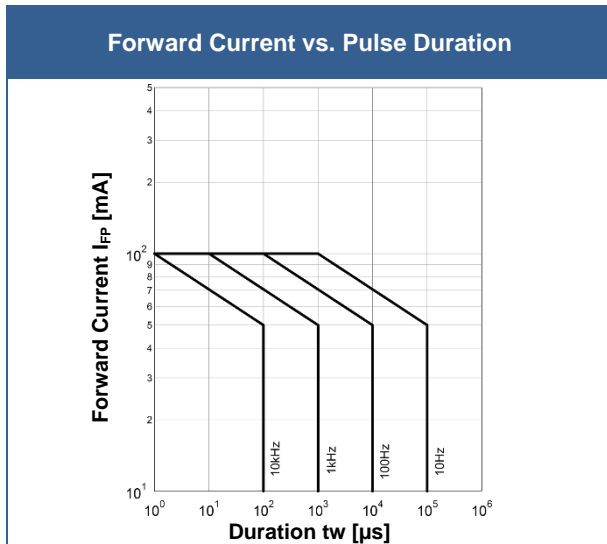
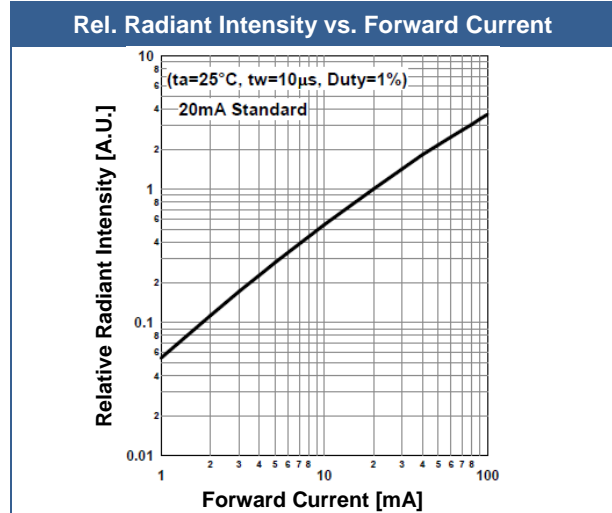
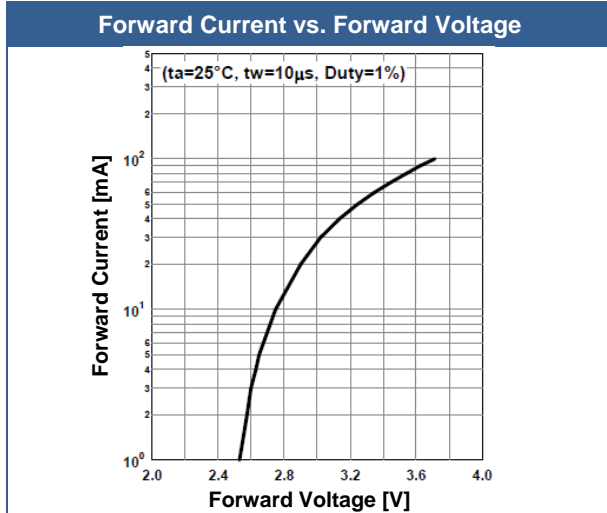
Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Peak Wavelength	$\lambda_P$	$I_F=20\text{mA}$	460		480	nm
Dominant Wavelength	$\lambda_D$	$I_F=20\text{mA}$		474		nm
Half Width	$\Delta\lambda$	$I_F=20\text{mA}$		24		nm
Forward Voltage	$V_F$	$I_F=20\text{mA}$		2.9	4.0	V
	$V_{FP}$	$I_{FP}=100\text{mA}$		3.7		
Radiated Power *1	$P_O$	$I_F=20\text{mA}$		23		mW
		$I_{FP}=100\text{mA}$		83		
Radiant Intensity *2	$I_E$	$I_F=20\text{mA}$		180		mW/sr
		$I_{FP}=100\text{mA}$		650		
Luminous Flux	$\Phi_V$	$I_F=20\text{mA}$		2000		mlm
Viewing Angle	$2\theta_{1/2}$	$I_F=20\text{mA}$		18		deg.
Rise Time	$t_r$	$I_F=20\text{mA}$		15		ns
Fall Time	$t_f$	$I_F=20\text{mA}$		20		ns

\*1 measured by S3584-08

\*2 measured by CIE127-2007 Condition B

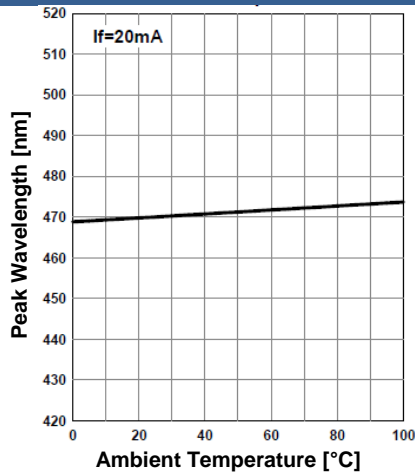


## Typical Performance Curves

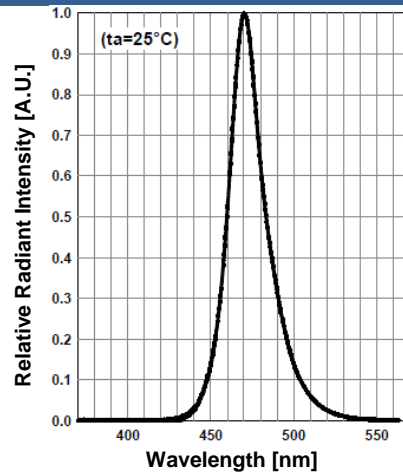




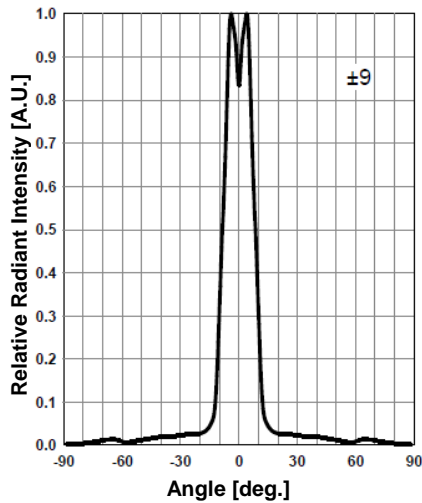
Peak Wavelength vs. Ambient Temperature



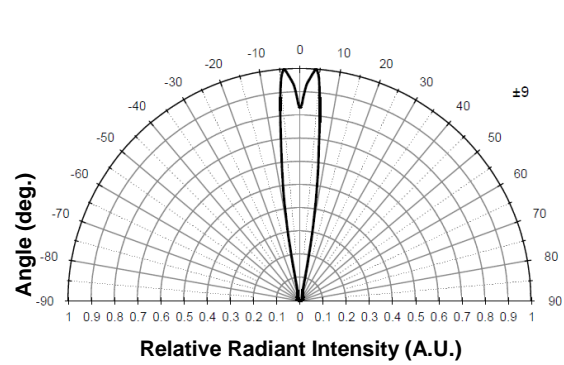
Relative Spectral Emission



Radiation Characteristics



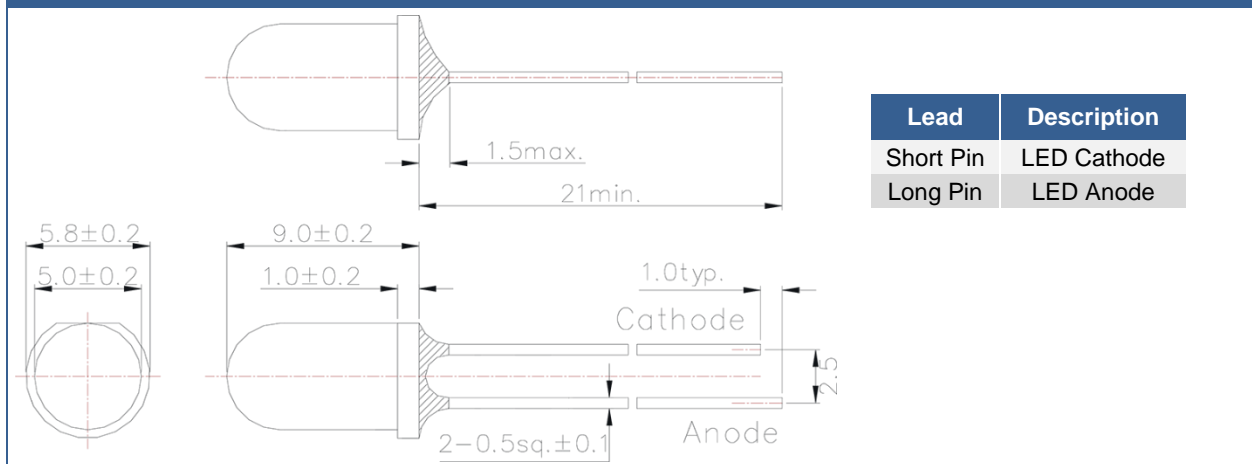
Radiation Characteristics



## Outline Dimensions

LED470-01

5 mm



All Dimensions in mm

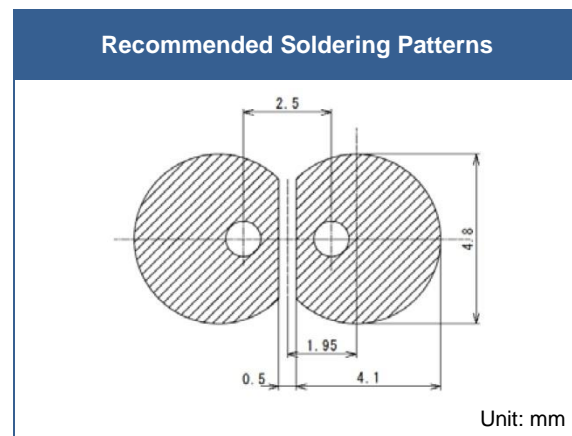
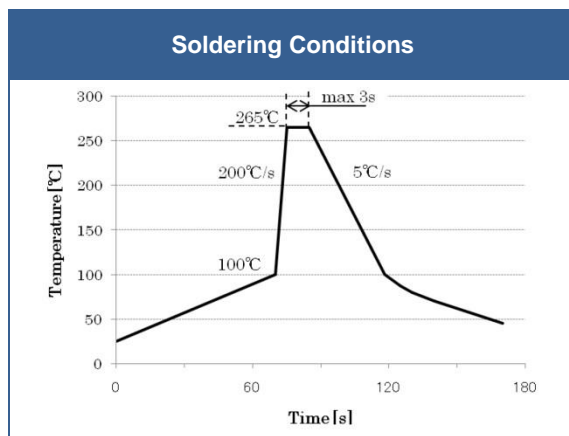


## Precautions

### Soldering:

- Do avoid overheating of the LED
- Do avoid electrostatic discharge (ESD)
- Do avoid mechanical stress, shock, and vibration
- Do only use non-corrosive flux
- Do not apply current to the LED until it has cooled down to room temperature after soldering

### Recommended soldering conditions:



Above table specifies the maximum allowed duration and temperature during soldering. It is strongly advised to perform soldering at the shortest time and lowest temperature possible.

### Cleaning:

**Cleaning with isopropyl alcohol, propanol, or ethyl alcohol is recommended**

DO NOT USE acetone, chloroform, trichloroethylene, or MKS

DO NOT USE ultrasonic cleaners

### Static Electricity:

**LEDs are sensitive to electrostatic discharge (ESD).** Precautions against ESD must be taken when handling or operating these LEDs. Surge voltage or electrostatic discharge can result in complete failure of the device.

### Radiation:

During operation these LEDs do emit light, which could be hazardous to skin and eyes, and may cause cancer. Do avoid exposure to the emitted light. Protective glasses if needed. It is further advised to attach a warning label on products/systems.

### Operation:

**Do only operate LEDs with a current source.**

Running these LEDs from a voltage source will result in complete failure of the device.

Current of a LED is an exponential function of the voltage across it. Usage of current regulated drive circuits is mandatory.