

## QTLP670C-T Red

## QTLP670C-E Orange

## QTLP670C-AG Yellow-Green

## QTLP670C-IW White

## QTL P670C-S Red

## QTLP670C-O Yellow-Orange

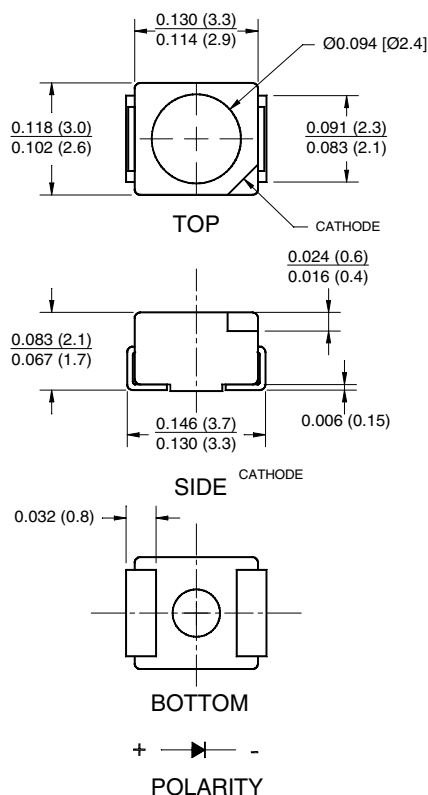
## QTLP670C-IG True Green

**QTLP670C-R Red**

## QTLP670C-Y Yellow

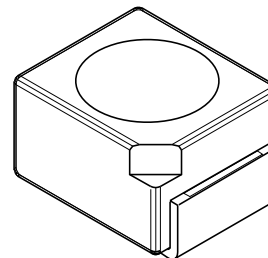
**QTL P670C-IB Blue**

## PACKAGE DIMENSIONS



NOTE:

Dimensions for all drawings are in inches (mm).



## APPLICATIONS

- Automotive interior lighting
- Status indication for consumer electronics and office equipment

## DESCRIPTION

These surface mount LEDs are designed with flat top and sides for the ease of pick-and-place by automatic placement equipment. They are compatible with convective IR and vapor phase reflow soldering. The package size and configuration conform to EIA-535 BAAC standard specification for case size 3528 tantalum capacitor. These LEDs are ideal for backlighting and optical coupling into light pipes.

## FEATURES

- AlInGaP technology for -T, -S, -R, -E, -O, -Y and -AG
- InGaN/SiC technology for -IG, -IB and -IW
- Wide viewing angle of 120°
- Water clear optics
- Available in 0.315" (8mm) width tape on 7" (178mm) diameter reel; 2,000 units per reel

# SURFACE MOUNT LED LAMP

## SUPER BRIGHT PLCC-2

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**QTLP670C-S** Red

**QTLP670C-O** Yellow-Orange

**QTLP670C-IG** True Green

**QTLP670C-R** Red

**QTLP670C-Y** Yellow

**QTLP670C-IB** Blue

### ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = 25°C Unless otherwise specified)

Parameter	Symbol	QTLP670C							Units
		-T	-S	-R	-E	-O	-Y	-AG	
Continuous Forward Current	I <sub>F</sub>	30	30	30	30	30	25	30	mA
Peak Forward Current (f = 1.0 KHz, Duty Factor = 1/10)	I <sub>FM</sub>	160	160	160	160	160	120	160	mA
Reverse Voltage (I <sub>R</sub> = 10 µA)	V <sub>R</sub>	5	5	5	5	5	5	5	V
Power Dissipation	P <sub>D</sub>	72	72	72	72	72	60	72	mW
Junction Temperature	T <sub>J</sub>	100	100	100	100	100	100	100	°C
Thermal Resistance (Junction-Air)	R <sub>th JA</sub>	500	500	500	500	500	500	500	K/W
Operating Temperature	T <sub>OPR</sub>	-40 to +95							°C
Storage Temperature	T <sub>STG</sub>	-40 to +100							°C
Lead Soldering Time	T <sub>SOL</sub>	260 for 5 sec							°C

### ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = 25°C Unless otherwise specified)

Parameter	Symbol	QTLP670C			Units
		-IB	-IG	-IW	
Continuous Forward Current	I <sub>F</sub>	30	30	20	mA
Peak Forward Current (f = 1.0 KHz, Duty Factor = 1/10)	I <sub>FM</sub>	100	100	70	mA
Reverse Voltage (I <sub>R</sub> = 10 µA)	V <sub>R</sub>	5	5	5	V
Power Dissipation	P <sub>D</sub>	120	120	80	mW
Junction Temperature	T <sub>J</sub>	125	125	125	°C
Thermal Resistance Junction-Air	R <sub>th JA</sub>	400	400	400	K/W
Operating Temperature	T <sub>OPR</sub>	-40 to +95			°C
Storage Temperature	T <sub>STG</sub>	-40 to +100			°C
Lead Soldering Time	T <sub>SOL</sub>	260 for 5 sec			°C

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### ELECTRICAL / OPTICAL CHARACTERISTICS (T<sub>A</sub> = 25°C)

Part Number	Symbol	QTLP670C							Condition
		-T	-S	-R	-E	-O	-Y	-AG	
Luminous Intensity (mcd)	I <sub>V</sub>	20	25	25	25	25	25	15	I <sub>F</sub> = 20mA
Minimum		45	65	65	65	65	65	30	
Typical									
Forward Voltage (V)	V <sub>F</sub>	2.4	2.4	2.4	2.4	2.4	2.4	2.4	I <sub>F</sub> = 20mA
Maximum		2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Typical									
Wavelength (nm)	λ <sub>P</sub>	650	640	630	620	610	590	575	I <sub>F</sub> = 20mA
Peak		640	632	624	615	605	589	573	
Dominant	λ <sub>D</sub>								
Spectral Line Half Width (nm)	Δλ	20	20	20	18	18	15	20	I <sub>F</sub> = 20mA
Viewing Angle (°)	2Θ <sub>1/2</sub>	120	120	120	120	120	120	120	I <sub>F</sub> = 20mA

### ELECTRICAL / OPTICAL CHARACTERISTICS (T<sub>A</sub> = 25°C)

Part Number	Symbol	QTLP670C			Condition
		-IB	-IG	-IW	
Luminous Intensity (mcd)	I <sub>V</sub>	30	75	100	I <sub>F</sub> = 20mA
Minimum		60	115	250	
Typical					
Forward Voltage (V)	V <sub>F</sub>	4.0	4.0	4.0	I <sub>F</sub> = 20mA
Maximum		3.5	3.5	3.5	
Typical					
Wavelength (nm)	λ <sub>P</sub>	465	520	—	I <sub>F</sub> = 20mA
Peak		470	525	—	
Dominant	λ <sub>D</sub>				
Chromaticity Coordinate	x,y	—	—	x = 0.30, y = 0.31	I <sub>F</sub> = 20mA
Spectral Line Half Width (nm)	Δλ	25	35	—	I <sub>F</sub> = 20mA
Viewing Angle (°)	2Θ <sub>1/2</sub>	120	120	120	I <sub>F</sub> = 20mA

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QTLP670C-R Red

QTLP670C-E Orange

QTLP670C-O Yellow-Orange

QTLP670C-Y Yellow

QTLP670C-AG Yellow-Green

QTLP670C-IG True Green

QTLP670C-IB Blue

QTLP670C-IW White

### TYPICAL PERFORMANCE CURVES (QTLP670C-T, -S, -R, -E, -O, -Y and -AG)

Fig. 1 Forward Current vs. Forward Voltage

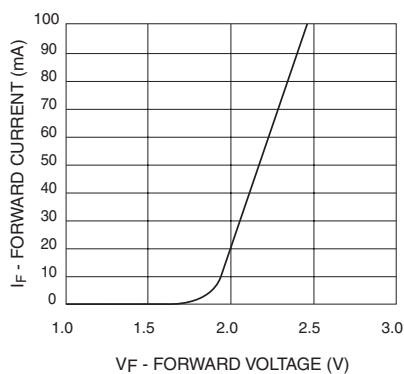


Fig. 2 Relative Luminous Intensity vs. DC Forward Current

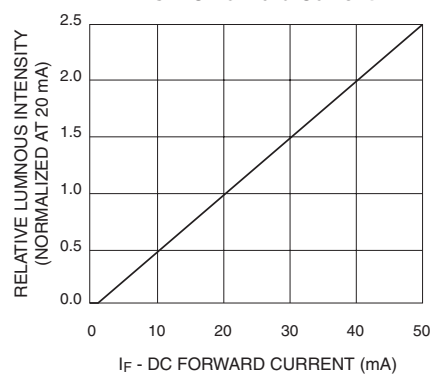


Fig. 3 Relative Intensity vs. Peak Wavelength

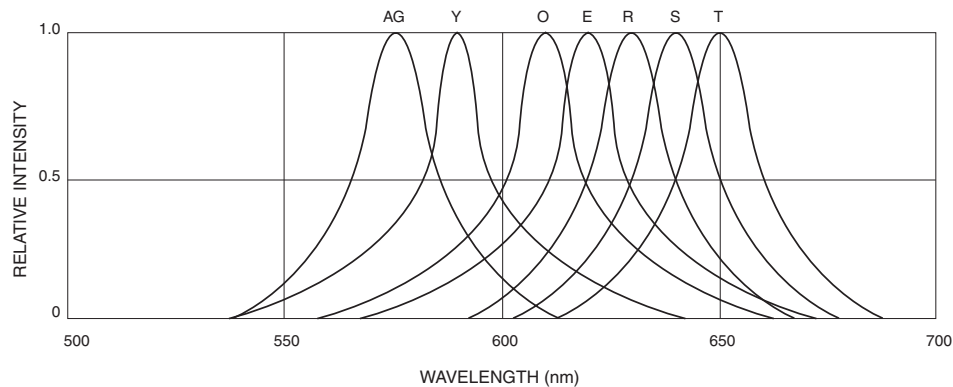


Fig.4 Radiation Diagram

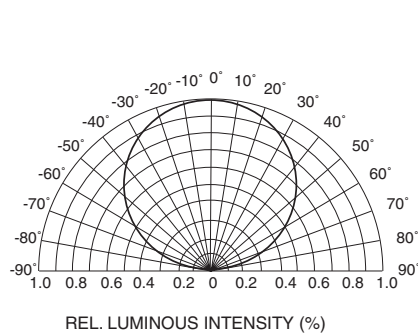
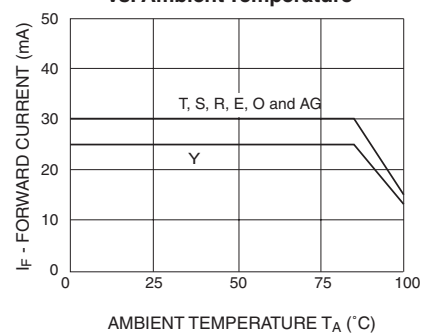


Fig.5 Maximum Forward Current vs. Ambient Temperature



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### TYPICAL PERFORMANCE CURVES (QTLP670C-IG, -IB and -IW)

Fig. 1 Forward Current vs. Forward Voltage

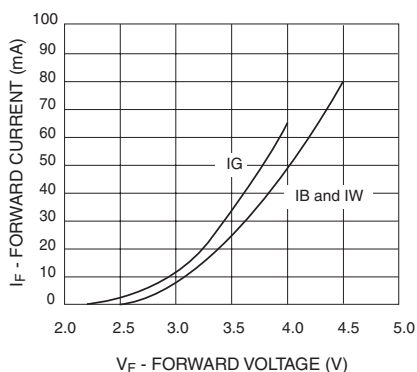


Fig. 2 Relative Luminous Intensity vs. DC Forward Current

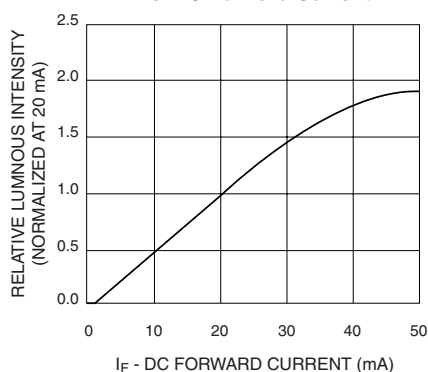


Fig. 3 Relative Intensity vs. Peak Wavelength

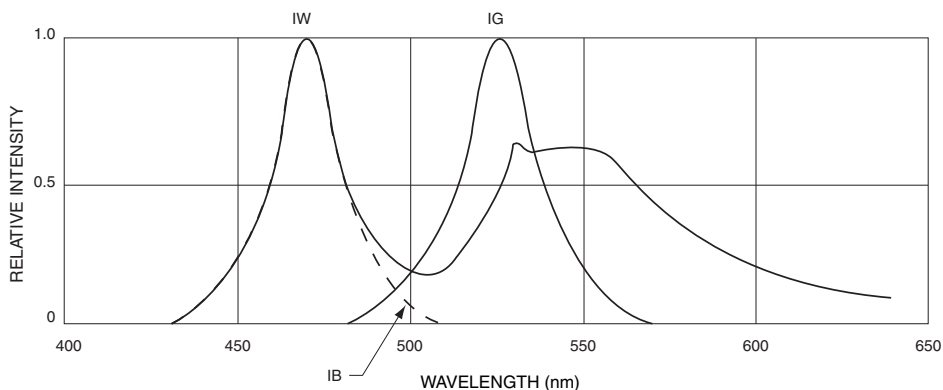


Fig.4 Radiation Diagram

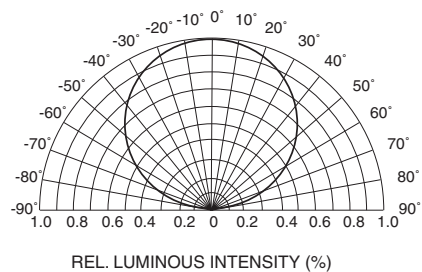
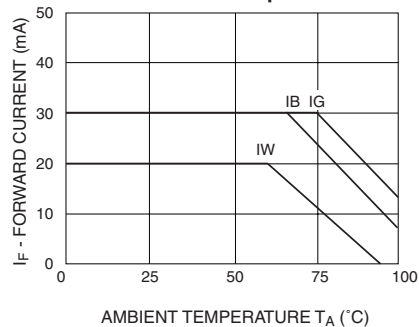


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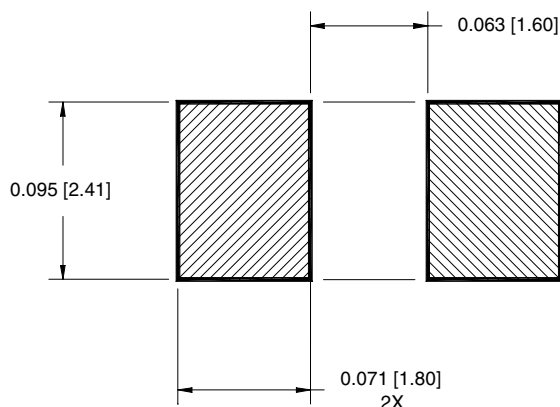
QTLP670C-IG True Green

QTLP670C-R Red

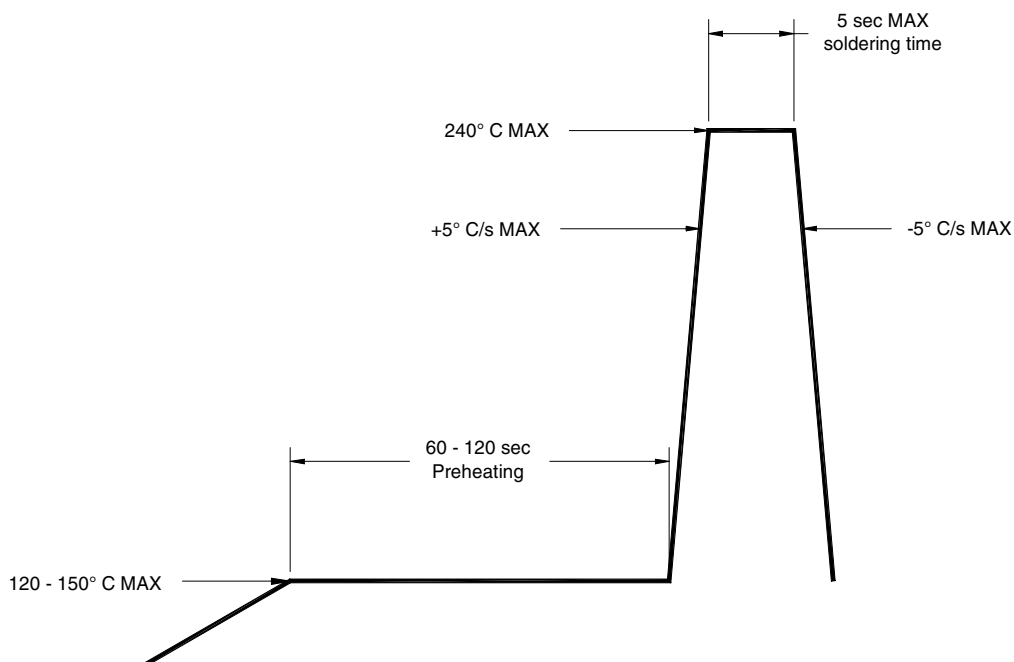
QTLP670C-Y Yellow

QTLP670C-IB Blue

### RECOMMENDED PRINTED CIRCUIT BOARD PATTERN



### RECOMMENDED IR REFLOW SOLDERING PROFILE



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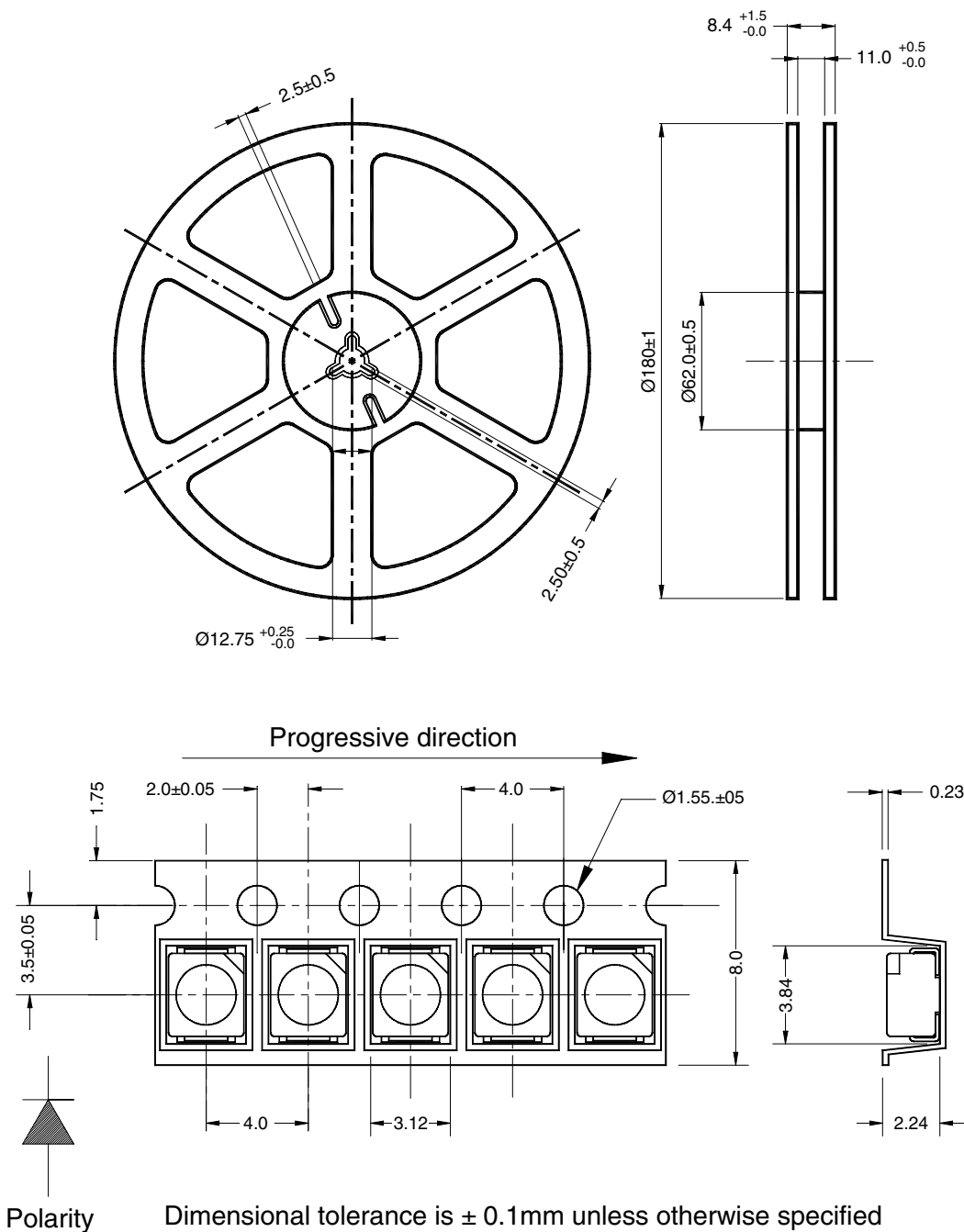
QTLP670C-IG True Green

QTLP670C-R Red

QTLP670C-Y Yellow

QTLP670C-IB Blue

### TAPE AND REEL DIMENSIONS



Dimensional tolerance is  $\pm 0.1$  mm unless otherwise specified

Angle:  $\pm 0.5$

Unit: mm

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