

QTLP652C-R Red

QTLP652C-E Orange

QTLP652C-O Yellow-Orange

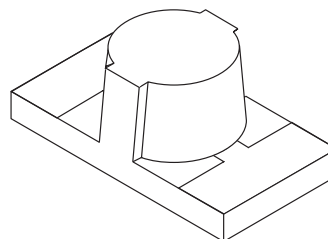
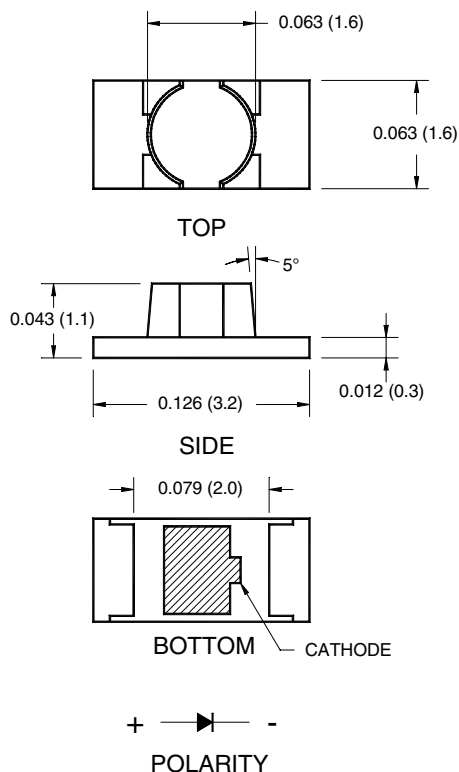
QTLP652C-Y Yellow

QTLP652C-AG Yellow-Green

QTLP652C-IG True Green

QTLP652C-IB Blue

## PACKAGE DIMENSIONS



NOTE:

Dimensions for all drawings are in inches (mm).

## APPLICATIONS

- Keypad backlighting
- Push-button backlighting
- LCD backlighting

## DESCRIPTION

These surface mount chip LEDs are designed to fit industry standard footprint. They are reverse mountable and designed to emit light through a small cut-out hole in the PC board.

## FEATURES

- Small footprint - 3.2(L) X 1.6(W) X 1.1(H) mm
- AllInGaP technology for -R, -E, -O, -Y and -AG
- InGaN/SiC technology for -IG and -IB
- Wide viewing angle of 30°
- Water clear optics
- Moisture-proof packaging
- Available in 0.315" (8mm) width tape on 7" (178mm) diameter reel; 2,000 units per reel

# SURFACE MOUNT LED LAMP SUPER BRIGHT 1206 (Reverse Mount)

**QTLP652C-R** Red

**QTLP652C-E** Orange

**QTLP652C-O** Yellow-Orange

**QTLP652C-Y** Yellow

**QTLP652C-AG** Yellow-Green

**QTLP652C-IG** True Green

**QTLP652C-IB** Blue

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

Parameter	Symbol	QTLP652C					Units
		-R	-E	-O	-Y	-AG	
Continuous Forward Current	I <sub>F</sub>	30	30	30	25	30	mA
Peak Forward Current (f = 1.0 KHz, Duty Factor = 1/10)	I <sub>FM</sub>	160	160	160	120	160	mA
Reverse Voltage	V <sub>R</sub>	5	5	5	5	5	V
Power Dissipation	P <sub>D</sub>	72	72	72	60	72	mW
Operating Temperature	T <sub>OPR</sub>	-40 to +85					°C
Storage Temperature	T <sub>STG</sub>	-40 to +90					°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	QTLP652C		Units
		-IB	-IG	
Continuous Forward Current	I <sub>F</sub>	30	30	mA
Peak Forward Current (f = 1.0 KHz, Duty Factor = 1/10)	I <sub>FM</sub>	100	100	mA
Reverse Voltage	V <sub>R</sub>	5	5	V
Power Dissipation	P <sub>D</sub>	120	120	mW
Operating Temperature	T <sub>OPR</sub>	-40 to +85		°C
Storage Temperature	T <sub>STG</sub>	-40 to +90		°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	QTLP652C					Condition
		-R	-E	-O	-Y	-AG	
Luminous Intensity (mcd)	I <sub>v</sub>	15	15	15	15	10	I <sub>F</sub> = 20mA
Minimum		40	40	40	40	15	
Typical							
Forward Voltage (V)	V <sub>F</sub>	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	
Typical							
Wavelength (nm)	λ <sub>P</sub>	630	620	610	590	575	I <sub>F</sub> = 20mA
Peak		624	615	605	589	573	
Dominant	λ <sub>D</sub>						
Spectral Line Half Width (nm)	Δλ	20	18	18	15	20	I <sub>F</sub> = 20mA
Viewing Angle (°)	2Θ <sub>1/2</sub>	130	130	130	130	130	I <sub>F</sub> = 20mA

ELECTRICAL / OPTICAL CHARACTERISTICS (T <sub>A</sub> =25°C)				
Part Number	Symbol	QTLP652C		Condition
		-IB	-IG	
Luminous Intensity (mcd)	I <sub>v</sub>	15	35	I <sub>F</sub> = 20mA
Minimum		25	60	
Typical				
Forward Voltage (V)	V <sub>F</sub>	4.0	4.0	I <sub>F</sub> = 20mA
Maximum		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>			
Spectral Line Half Width (nm)	Δλ	25	35	I <sub>F</sub> = 20mA
Viewing Angle (°)	2Θ <sub>1/2</sub>	130	130	I <sub>F</sub> = 20mA

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QTLP652C-O Yellow-Orange

QTLP652C-Y Yellow

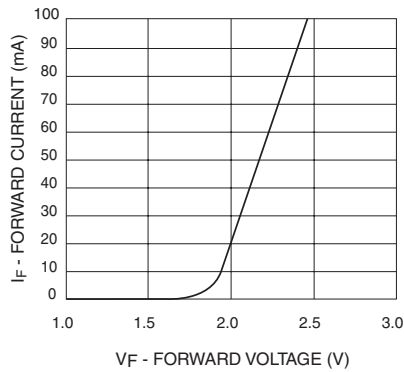
QTLP652C-AG Yellow-Green

QTLP652C-IG True Green

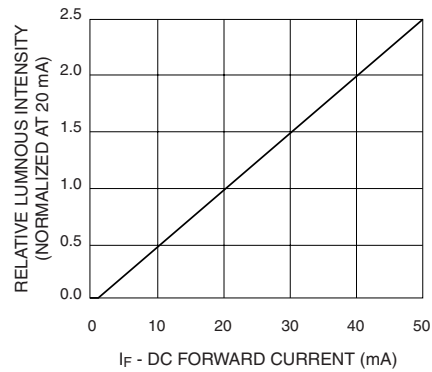
QTLP652C-IB Blue

**TYPICAL PERFORMANCE CURVES (QTLP652C-R, -E, -O, -Y and -AG)**

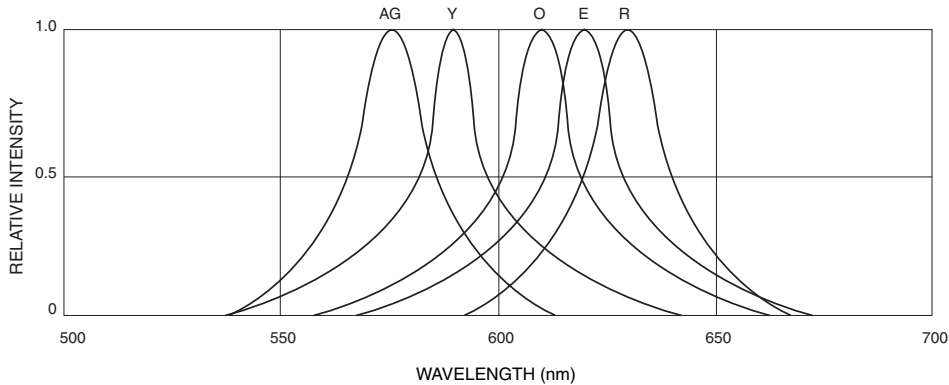
**Fig. 1 Forward Current vs. Forward Voltage**



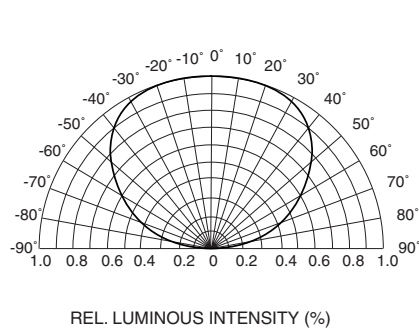
**Fig. 2 Relative Luminous Intensity vs. DC Forward Current**



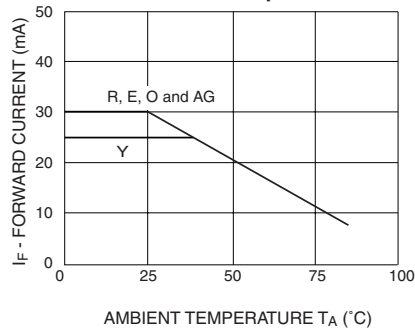
**Fig. 3 Relative Intensity vs. Peak Wavelength**



**Fig.4 Radiation Diagram**



**Fig.5 Maximum Forward Current vs. Ambient Temperature**



QTLP652C-R Red

QTLP652C-E Orange

QTLP652C-O Yellow-Orange

QTLP652C-Y Yellow

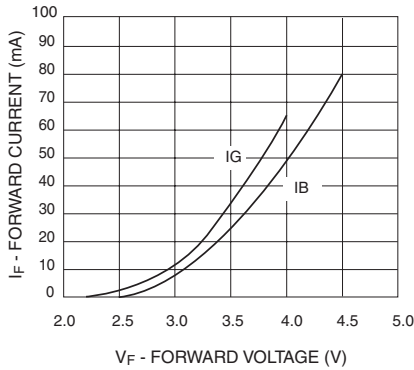
QTLP652C-AG Yellow-Green

QTLP652C-IG True Green

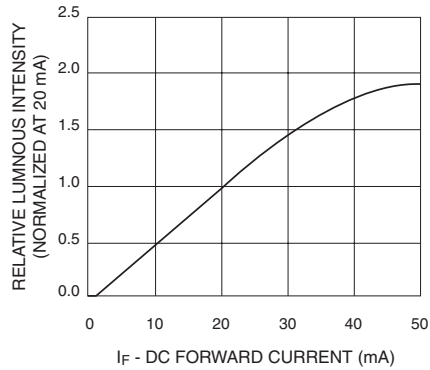
QTLP652C-IB Blue

**TYPICAL PERFORMANCE CURVES (QTLP652C-IG and IB)**

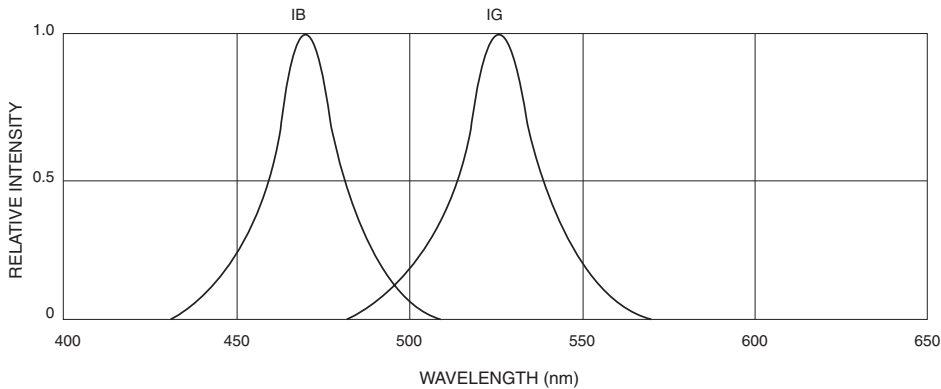
**Fig. 1 Forward Current vs. Forward Voltage**



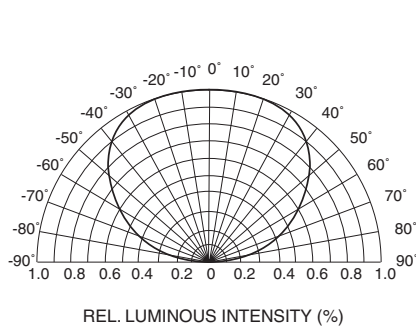
**Fig. 2 Relative Luminous Intensity vs. DC Forward Current**



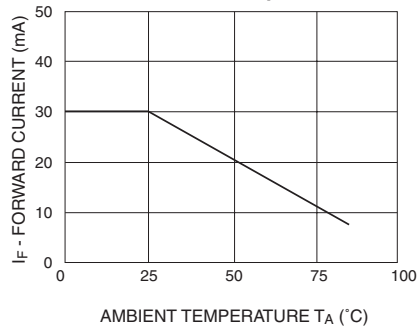
**Fig. 3 Relative Intensity vs. Peak Wavelength**



**Fig.4 Radiation Diagram**



**Fig.5 Maximum Forward Current vs. Ambient Temperature**



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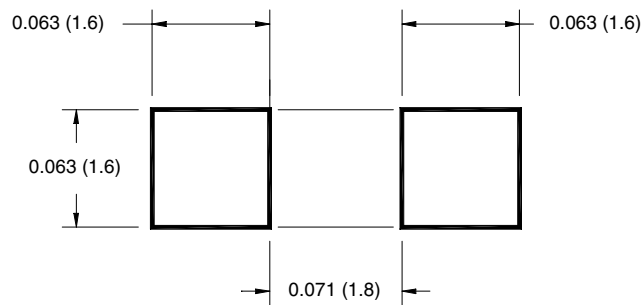
QTLP652C-Y Yellow

QTLP652C-AG Yellow-Green

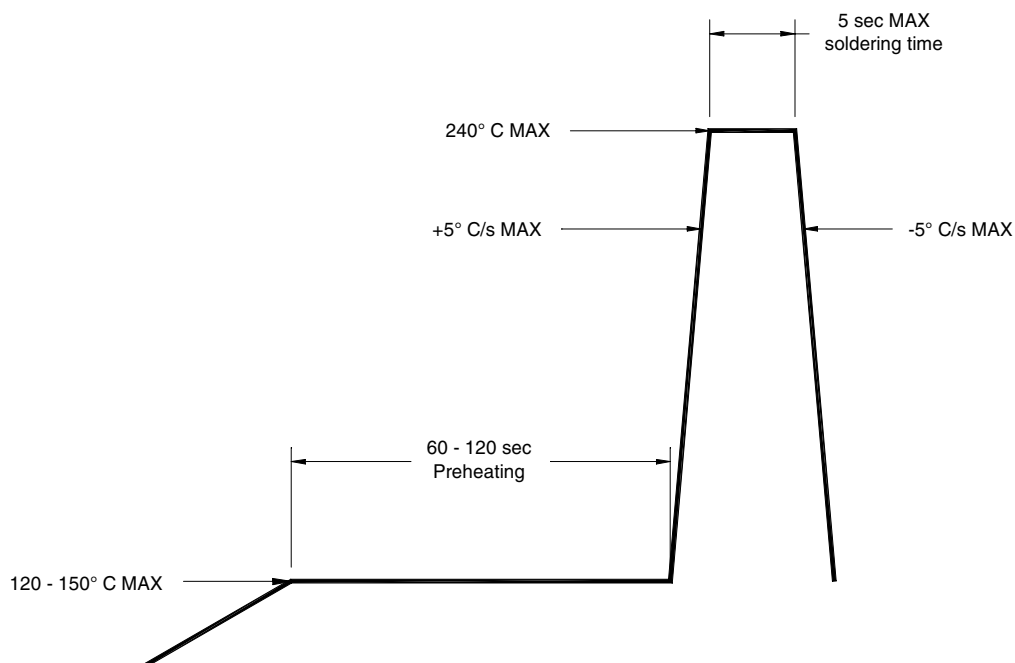
QTLP652C-IG True Green

QTLP652C-IB Blue

## RECOMMENDED PRINTED CIRCUIT BOARD PATTERN



## RECOMMENDED IR REFLOW SOLDERING PROFILE



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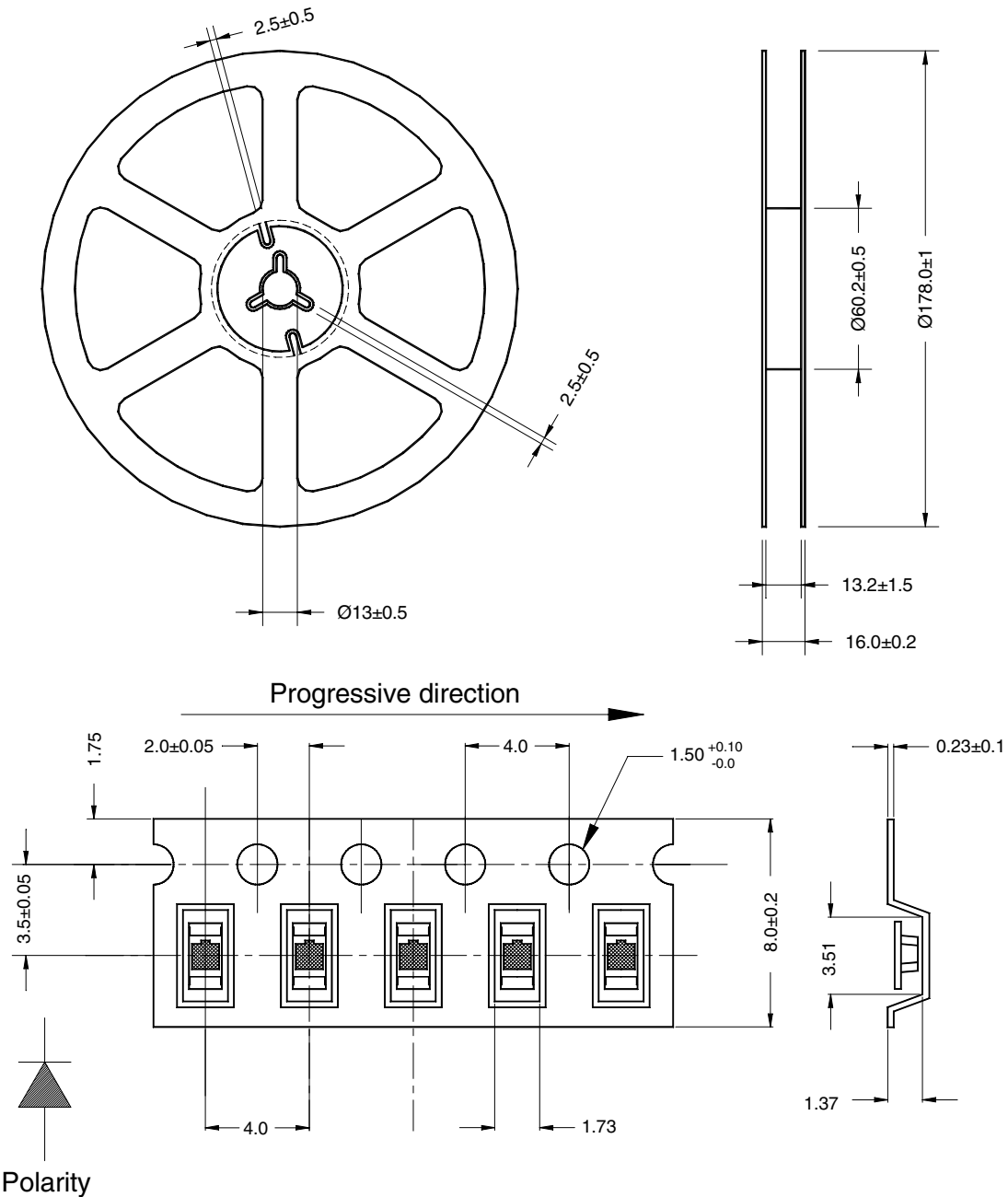
QTLP652C-Y Yellow

QTLP652C-AG Yellow-Green

QTLP652C-IG True Green

QTLP652C-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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2. A critical component in any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.