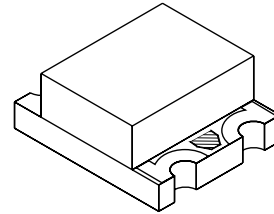
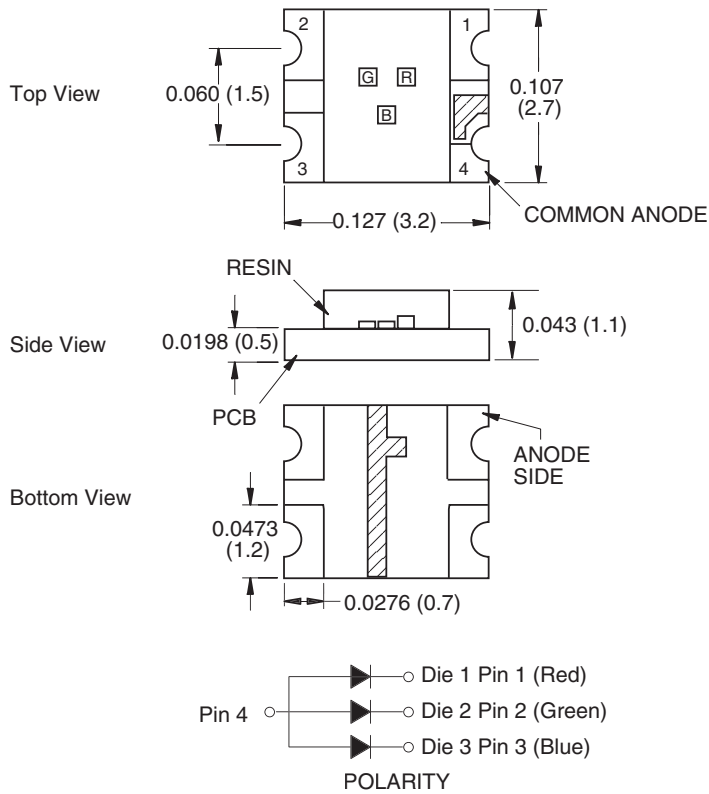


**PACKAGE DIMENSIONS**



**NOTE:**  
Dimensions for all drawings are in inches (mm).

**APPLICATIONS**

- Keypad backlighting
- Push-button backlighting
- LCD backlighting

**DESCRIPTION**

This full-color surface mount chip LED is designed to fit industry standard footprint. Small size, low profile and wide viewing angle make this LED ideal for backlighting applications and panel illumination.

**FEATURES**

- Miniature footprint - 3.2(L) X 2.7(W) X 1.1(H) mm
- AllnGaP and InGaN technology
- Wide viewing angle of 140°
- Diffused optics
- Moisture-proof packaging
- Available in 0.315" (8mm) width tape on 7" (178mm) diameter reel; 2,000 units per reel

**QTLP650D-RGB Red/Green/Blue**

**ABSOLUTE MAXIMUM RATINGS** ( $T_A = 25^\circ\text{C}$  Unless otherwise specified)

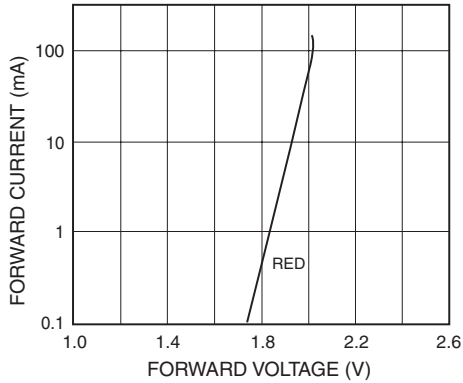
Parameter	Symbol	R	G	B	Units
Continuous Forward Current	$I_F$	30	20	20	mA
Peak Forward Current ( $f = 1.0 \text{ KHz}$ , Duty Factor = 1/10)	$I_{FM}$	100	80	80	mA
Reverse Voltage ( $I_R = 100 \mu\text{A}$ )	$V_R$	5			V
Power Dissipation	$P_D$	72	78	78	mW
Operating Temperature	$T_{OPR}$	-30 to +80			$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-40 to +85			$^\circ\text{C}$
Lead Soldering Time	$T_{SOL}$	260 for 5 sec			$^\circ\text{C}$

**ELECTRICAL / OPTICAL CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$ )

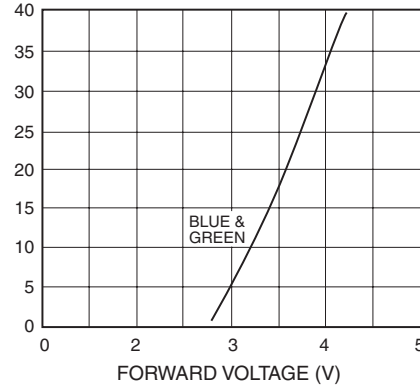
Parameter	Symbol	QTLP650D			Condition
		R	G	B	
Luminous Intensity (mcd)	min:	25	63	25	$I_F = 20\text{mA}$
	typ:	60	130	40	
Forward Voltage (V)	typ:	1.9	3.3	3.3	$I_F = 20\text{mA}$
	max:	2.4	3.9	3.9	
Wavelength (nm)	Peak:	630	520	468	$I_F = 20\text{mA}$
	Dominance:	624	525	470	
Typical Viewing Angle ( $^\circ$ )	2U1/2	140			$I_F = 20\text{mA}$

**TYPICAL PERFORMANCE CURVES**

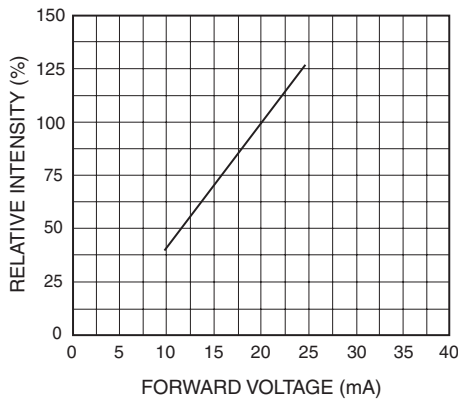
**Fig. 1A Forward Current vs. Forward Voltage**



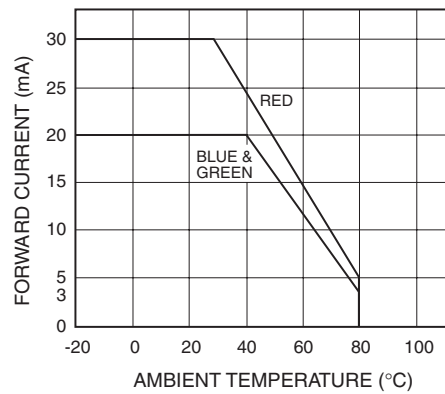
**Fig. 1B Forward Current vs. Forward Voltage**



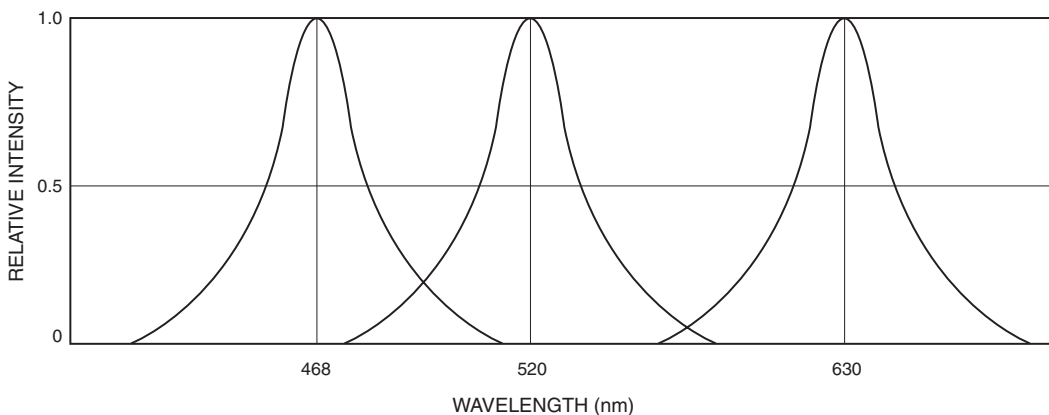
**Fig. 2 Relative Intensity vs. Forward Current**



**Fig. 3 Forward Current vs. Ambient Temperature**

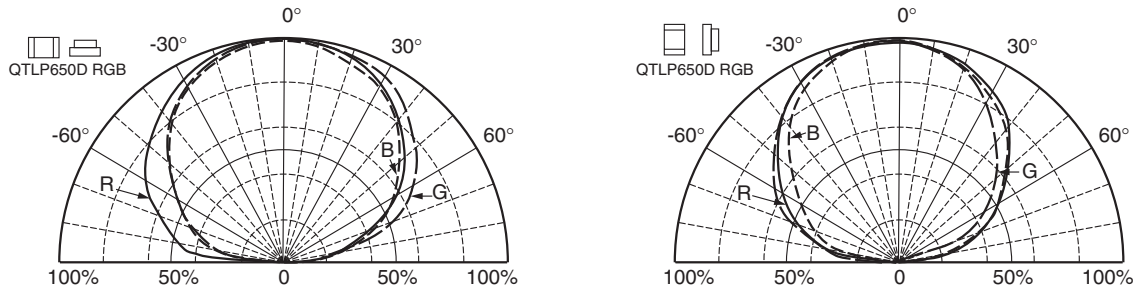


**Fig. 4 Relative Intensity vs. Peak Wavelength**



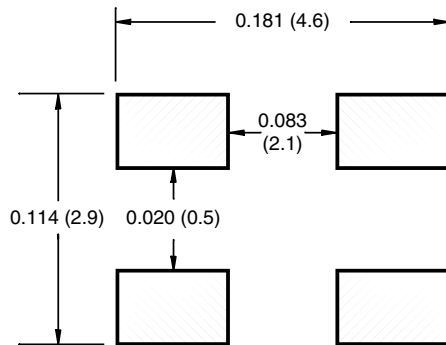
**TYPICAL PERFORMANCE CURVES**

**Fig.5 Radiation Diagrams**

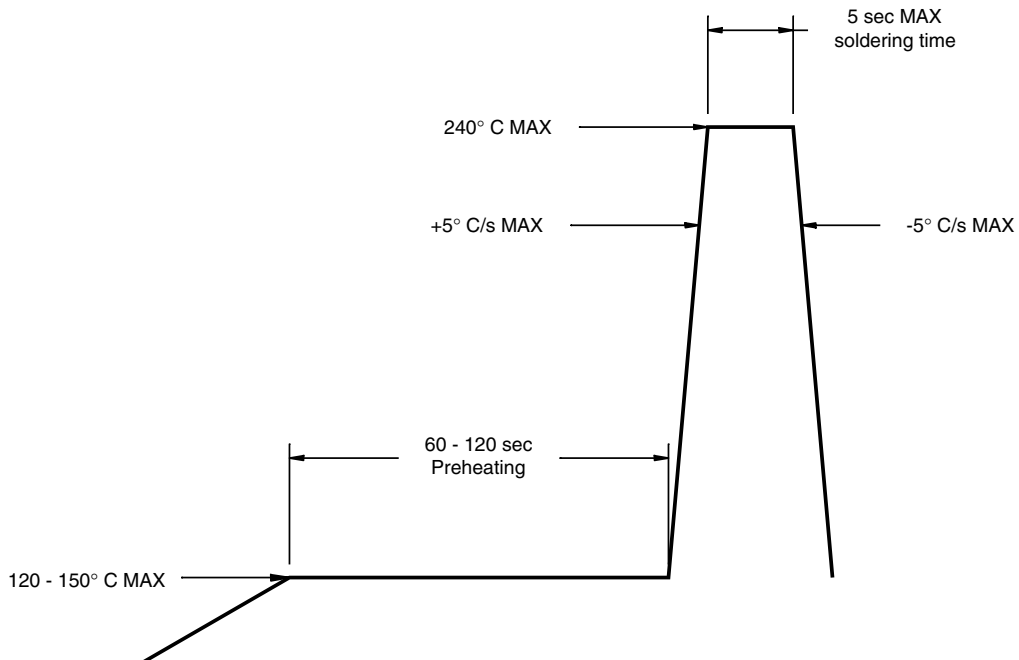


**QTLP650D-RGB Red/Green/Blue**

### RECOMMENDED PRINTED CIRCUIT BOARD PATTERN

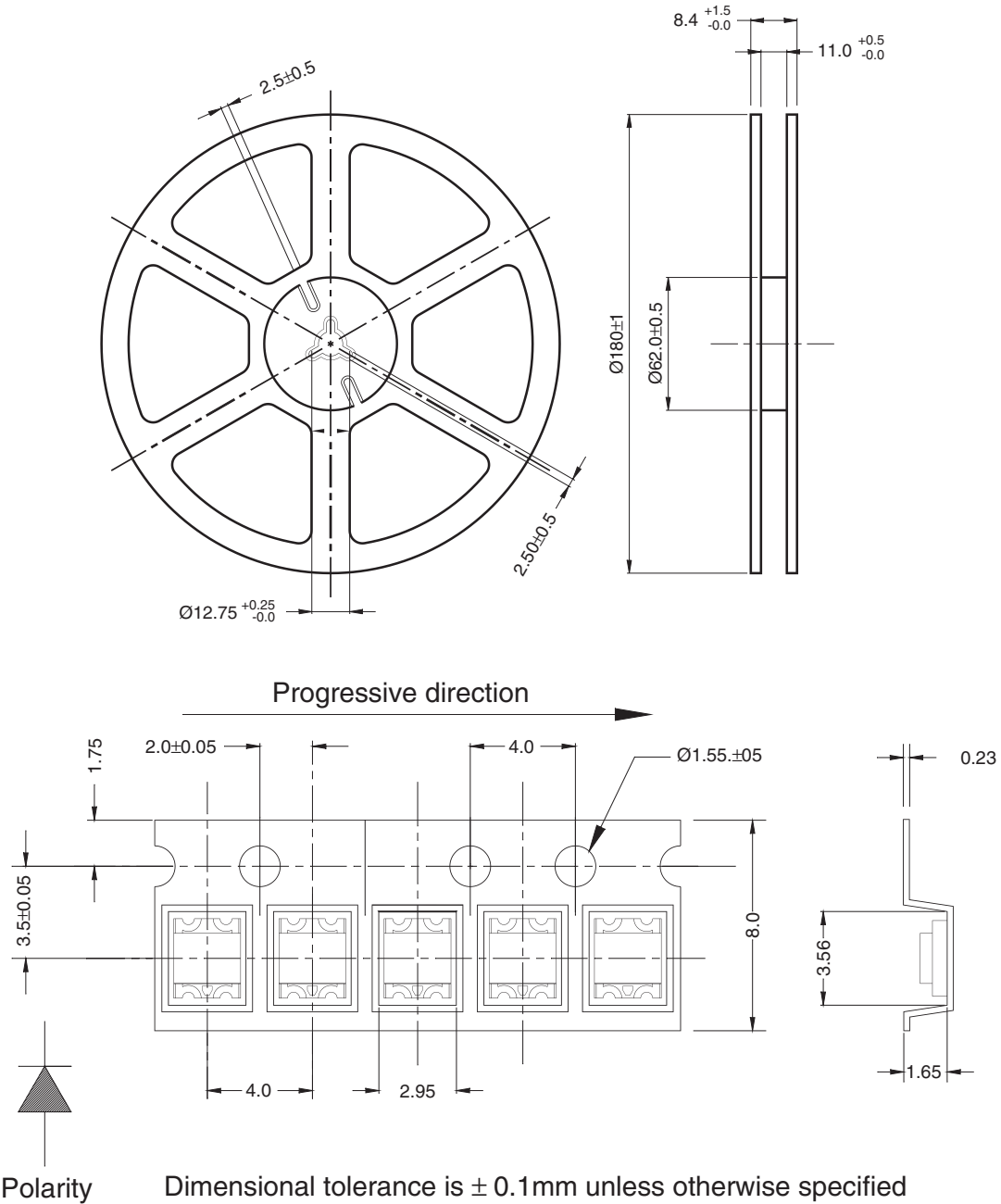


### RECOMMENDED IR REFLOW SOLDERING PROFILE



**QTLP650D-RGB Red/Green/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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### QTLP650D-RGB Red/Green/Blue

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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.