

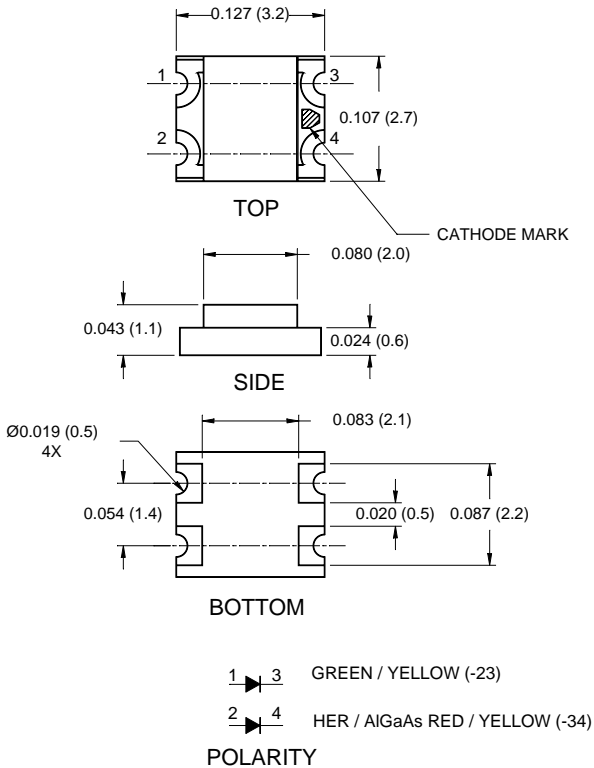
QTLP650C-23 HER/Yellow

QTLP650C-24 HER/Green

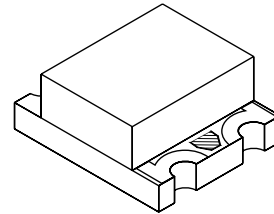
QTLP650C-34 Yellow/Green

QTLP650C-74 AlGaAs Red/Green

### PACKAGE DIMENSIONS



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



### APPLICATIONS

- Keypad backlighting
- Push-button backlighting
- LCD backlighting

### DESCRIPTION

These bi-color surface mount chip LEDs are designed to fit industry standard footprint. Small size, low profile and wide viewing angle make these LEDs ideal for backlighting applications and panel illumination.

### FEATURES

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

**QTLP650C-23** HER/Yellow

**QTLP650C-24** HER/Green

**QTLP650C-34** Yellow/Green

**QTLP650C-74** AlGaAs Red/Green

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

Parameter	Symbol	QTLP650C				Units
		-23	-24	-34	-74	
Continuous Forward Current	$I_F$	30 / 30	30 / 30	30 / 30	30 / 30	mA
Peak Forward Current ( $f = 1.0$ KHz, Duty Factor = 1/10)	$I_{FM}$	160 / 160	160 / 160	160 / 160	180 / 160	mA
Reverse Voltage	$V_R$	5	5	5	5	V
Power Dissipation	$P_D$	84 / 84	84 / 84	84 / 84	72 / 84	mW
Operating Temperature	$T_{OPR}$	-40 to +85				$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-40 to +90				$^\circ\text{C}$
Lead Soldering Time	$T_{SOL}$	260 for 5 sec				$^\circ\text{C}$

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

Parameter	Symbol	QTLP650C				Units
		-23	-24	-34	-74	
Luminous Intensity (mcd)	$I_V$	2.5 / 4.0	2.5 / 4.0	4.0 / 4.0	9.0 / 4.0	$I_F = 20\text{mA}$
Minimum		4.0 / 6.5	4.0 / 6.5	6.5 / 6.5	15 / 6.5	
Typical	$V_F$	2.8 / 2.8	2.8 / 2.8	2.8 / 2.8	2.4 / 2.8	$I_F = 20\text{mA}$
Forward Voltage (V)		2.0 / 2.0	2.0 / 2.0	2.0 / 2.0	1.9 / 2.0	
Maximum	$I_P$	635 / 585	635 / 565	585 / 565	660 / 565	$I_F = 20\text{mA}$
Typical		630 / 590	630 / 570	590 / 570	645 / 570	
Wavelength (nm)	$I_D$	45 / 35	45 / 30	35 / 30	20 / 30	$I_F = 20\text{mA}$
Peak	2U1/2	140	140	140	140	$I_F = 20\text{mA}$
Dominant		140	140	140	140	
Spectral Line Half Width (nm)						
Viewing Angle ( $^\circ$ )						

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## TYPICAL PERFORMANCE CURVES

Fig. 1 Forward Current vs. Forward Voltage

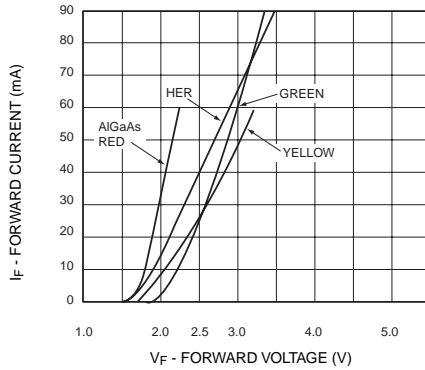


Fig. 2 Relative Luminous Intensity vs. DC Forward Current

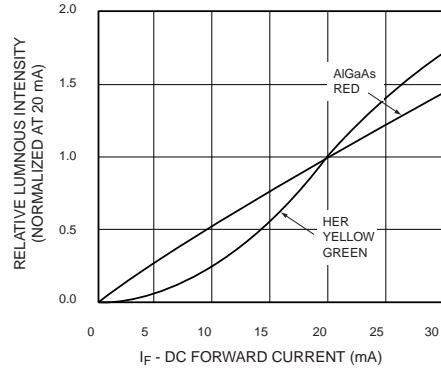


Fig. 3 Relative Intensity vs. Peak Wavelength

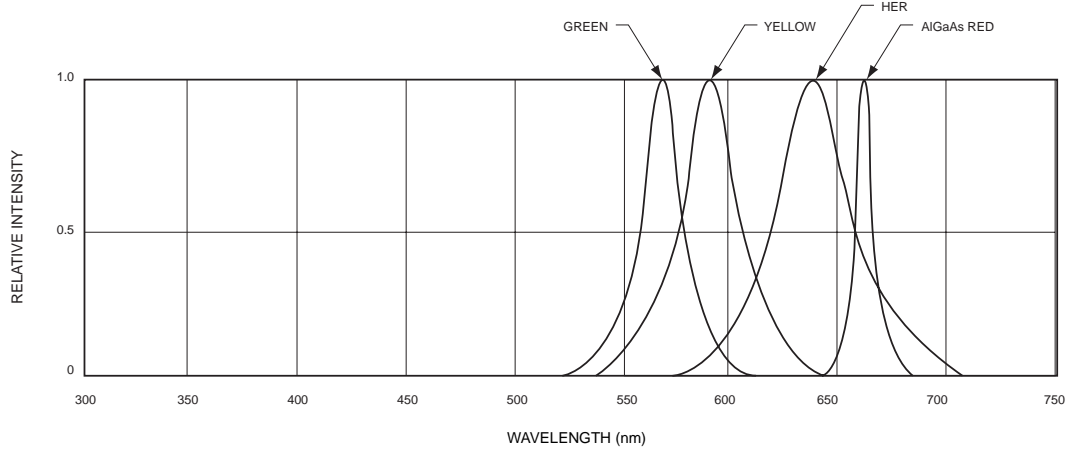


Fig.4 Radiation Diagram

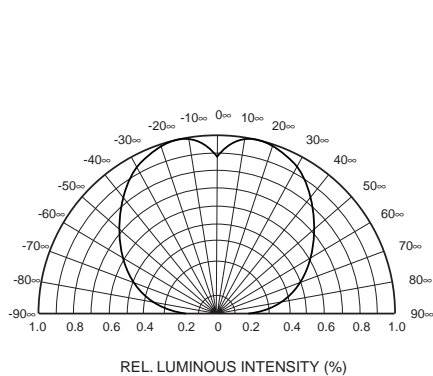
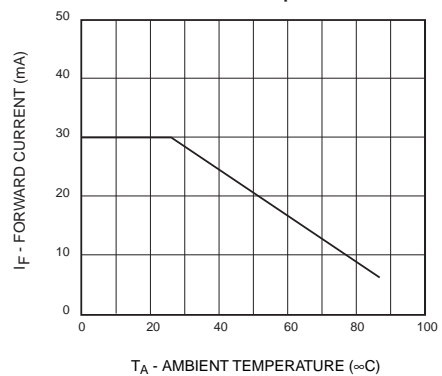


Fig.5 Maximum Forward Current vs. Ambient Temperature



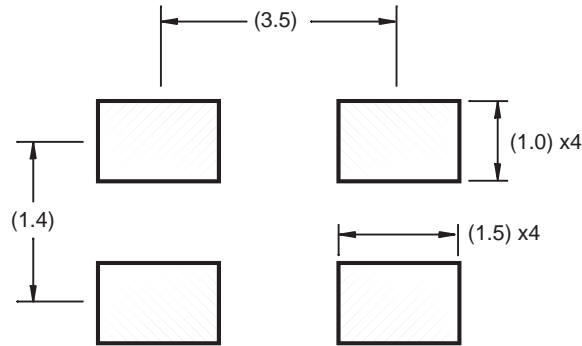
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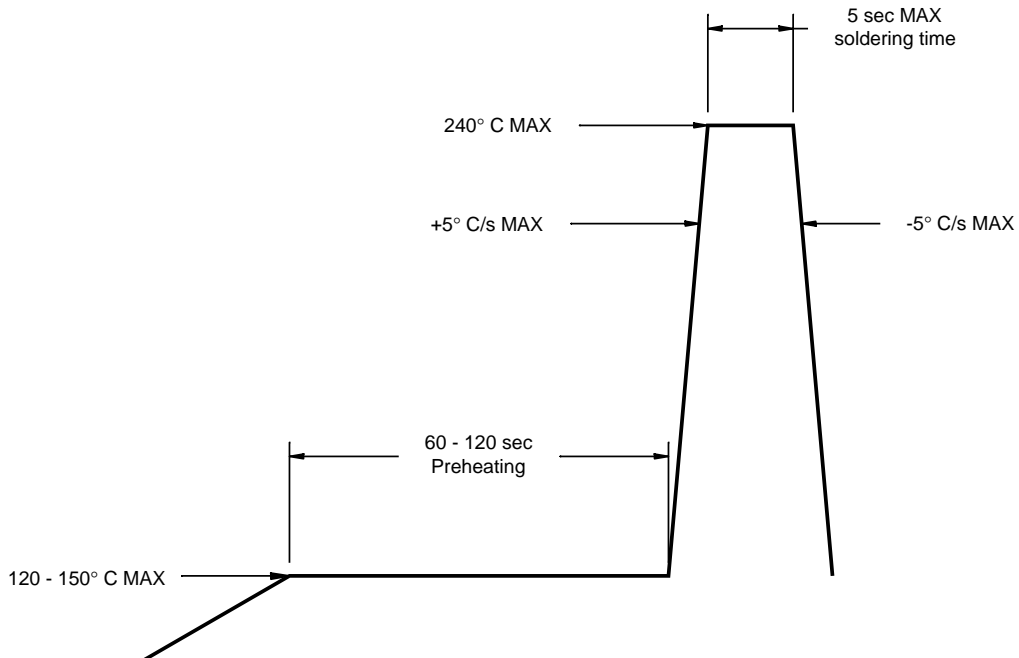
**QTLP650C-74** AlGaAs Red/Green

### RECOMMENDED PRINTED CIRCUIT BOARD PATTERN



Note: All units are in mm

### RECOMMENDED IR REFLOW SOLDERING PROFILE



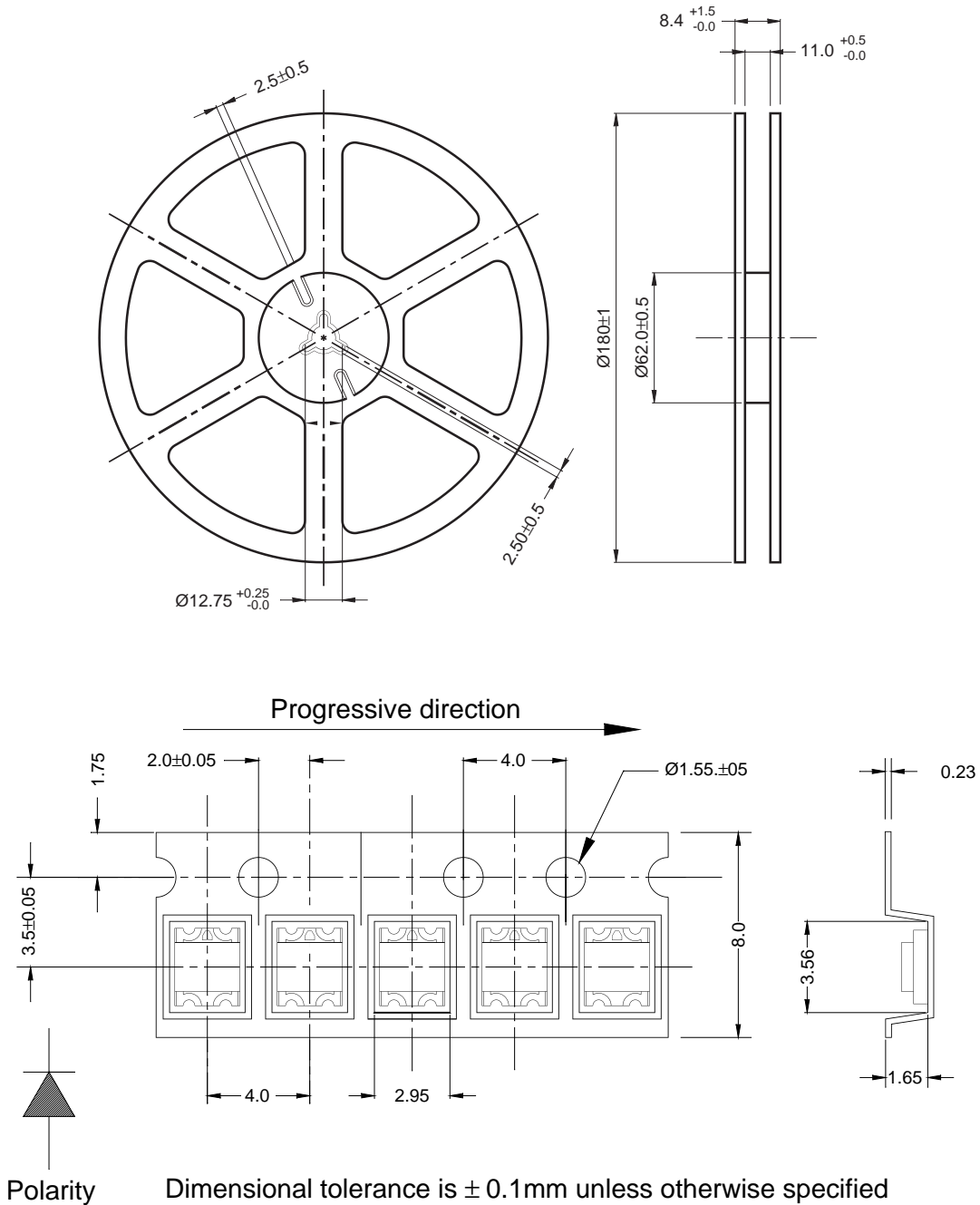
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**TAPE AND REEL DIMENSIONS**



Polarity

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

Angle:  $\pm 0.5$

Unit: mm

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