

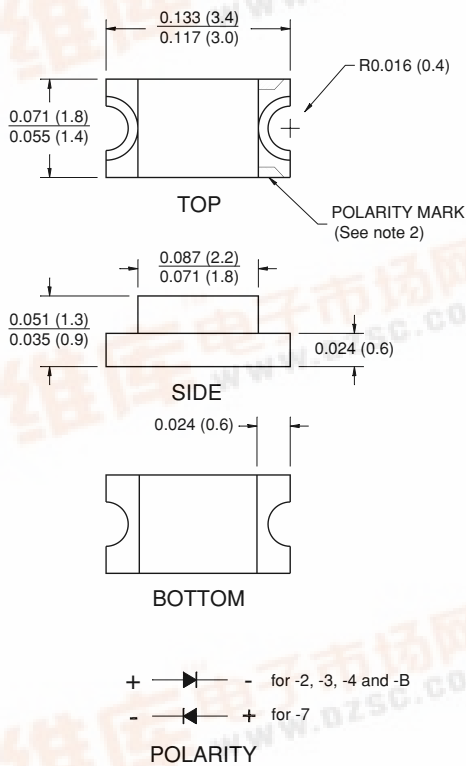
**FAIRCHILD**  
SEMICONDUCTOR®

# SURFACE MOUNT LED LAMP STANDARD BRIGHT 1206

QTLP650C-2 / QTLP650D-2 HER  
QTLP650C-4 / QTLP650D-4 Green  
QTLP650C-B Blue

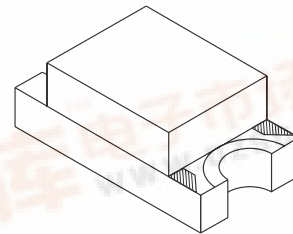
QTLP650C-3 / QTLP650D-3 Yellow  
QTLP650C-7 / QTLP650D-7 AlGaAs Red

## PACKAGE DIMENSIONS



### NOTE:

1. Dimensions for all drawings are in inches (mm).
2. Cathode for -2, -3, -4 and B. Anode for -7.



## APPLICATIONS

- Keypad backlighting
- Push-button backlighting
- LCD backlighting

## DESCRIPTION

These surface mount chip LEDs are designed to fit industry standard footprint. Low profile and wide viewing angle make these LEDs ideal choices for backlighting applications and panel illumination.

## FEATURES

- Small footprint - 3.2(L) X 1.6(W) X 1.1(H) mm
- Wide viewing angle of 140°(QTLP650C) or 160°(QTLP650D)
- Water clear (QTLP650C) or diffused (QTLP650D) 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

## STANDARD BRIGHT 1206

QTL650C-2 / QTL650D-2 HER

QTL650C-3 / QTL650D-3 Yellow

QTL650C-4 / QTL650D-4 Green

QTL650C-7 / QTL650D-7 AlGaAs Red

QTL650C-B Blue

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

Parameter	Symbol	QTL650C / QTL650D					Units
		-2	-3	-4	-7	-B*	
Continuous Forward Current	$I_F$	30	30	30	30	30	mA
Peak Forward Current ( $f = 1.0 \text{ KHz}$ , Duty Factor = 1/10)	$I_{FM}$	160	160	160	180	100	mA
Reverse Voltage ( $I_R = 10 \mu\text{A}$ )	$V_R$	5	5	5	5	5	V
Power Dissipation	$P_D$	84	84	84	72	135	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 ( $T_A = 25^\circ\text{C}$ )

Part Number	Symbol	QTL650C / QTL650D					Condition
		-2	-3	-4	-7	-B*	
Luminous Intensity (mcd)	$I_V$	4 / 3	4 / 3	6 / 5	10 / 8	10 / -	$I_F = 20\text{mA}$
Minimum							
Typical		10 / 8	10 / 8	10 / 8	20 / 15	20 / -	
Forward Voltage (V)	$V_F$	2.8	2.8	2.8	2.4	4.5	$I_F = 20\text{mA}$
Maximum							
Typical		2.0	2.0	2.1	1.9	3.8	
Wavelength (nm)	$\lambda_P$	635	585	565	660	430	$I_F = 20\text{mA}$
Peak							
Dominant	$\lambda_D$	630	590	570	645	465	
Spectral Line Half Width (nm)	$\Delta\lambda$	45	35	30	20	65	$I_F = 20\text{mA}$
Viewing Angle ( $^\circ$ )	$2\Theta_{1/2}$	140 / 160	140 / 160	140 / 160	140 / 160	140 / -	$I_F = 20\text{mA}$

\* Available only in QTL650C

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## TYPICAL PERFORMANCE CURVES

Fig. 1 Forward Current vs. Forward Voltage

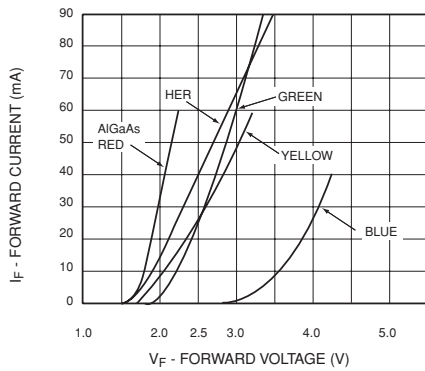


Fig. 2 Relative Luminous Intensity vs. DC Forward Current

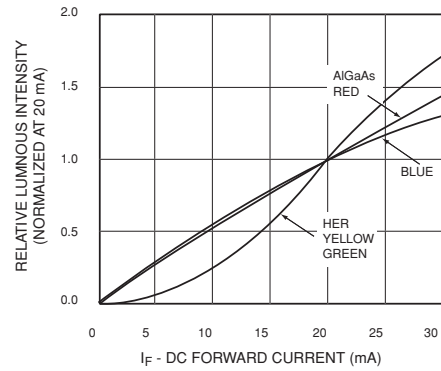


Fig. 3 Relative Intensity vs. Peak Wavelength

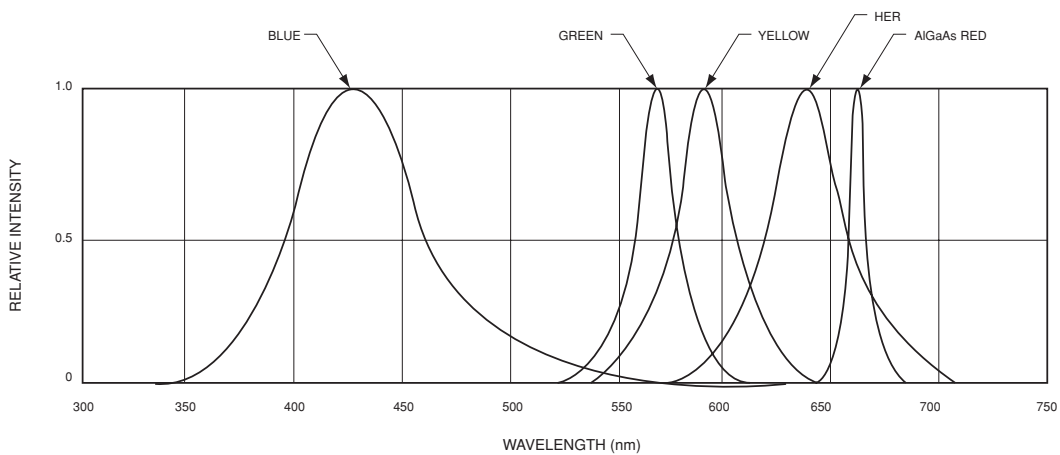


Fig.4 Radiation Diagram

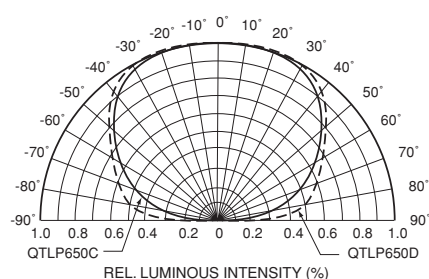
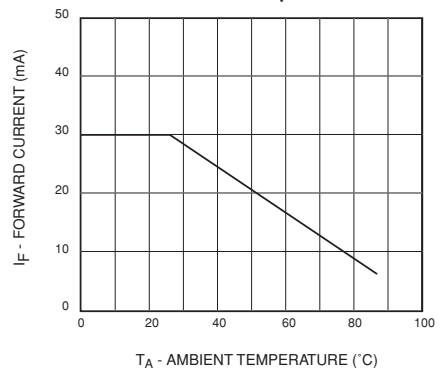


Fig.5 Maximum Forward Current vs. Ambient Temperature

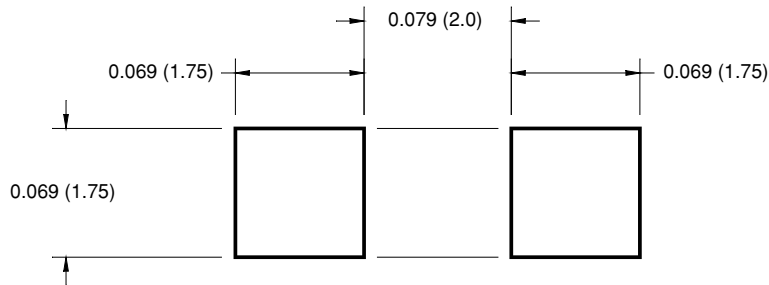


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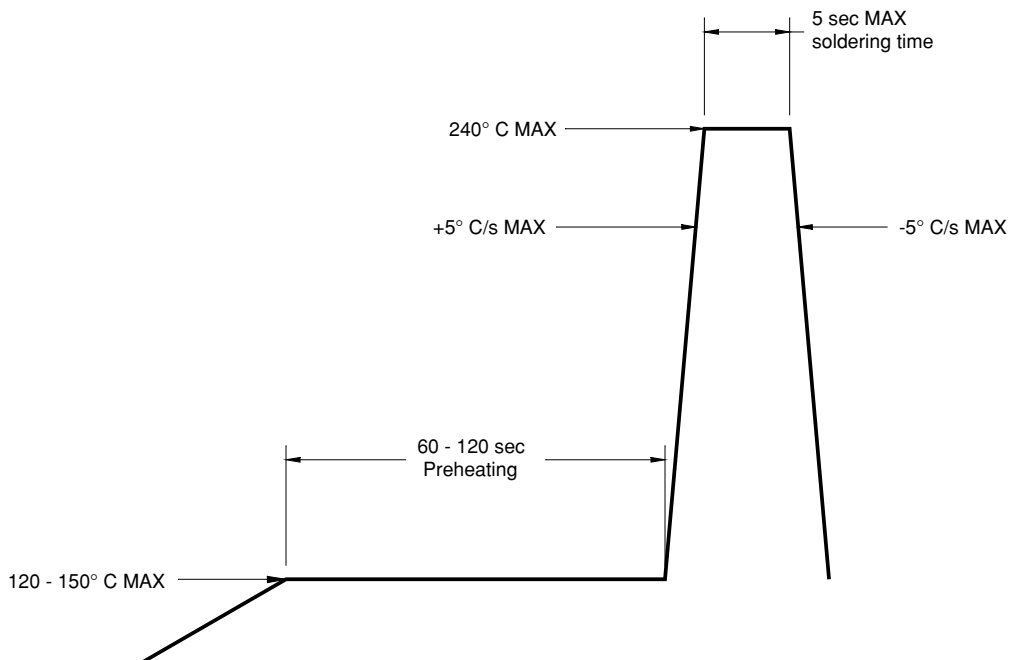
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## RECOMMENDED PRINTED CIRCUIT BOARD PATTERN



## RECOMMENDED IR REFLOW SOLDERING PROFILE



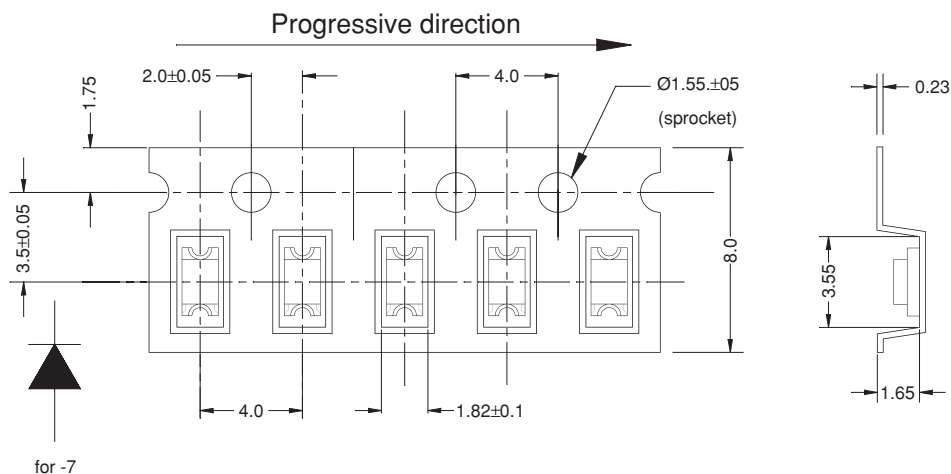
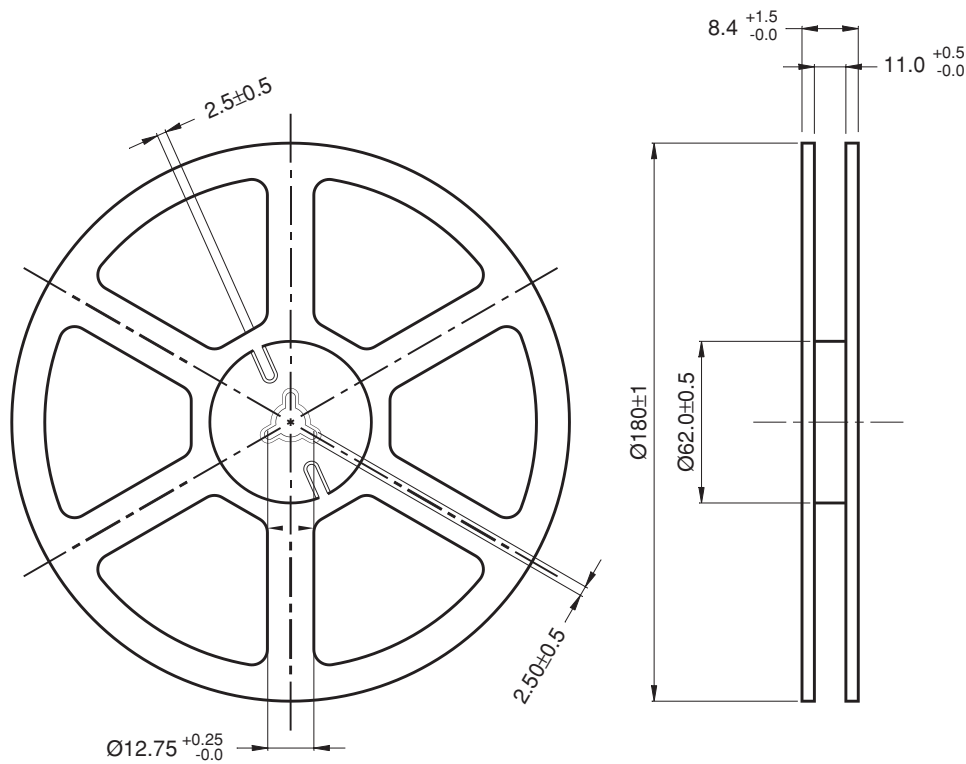
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### TAPE AND REEL DIMENSIONS



for -7  
Polarity

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

Angle:  $\pm 0.5$

Unit: mm

Polarity marks on opposite sprocket side.

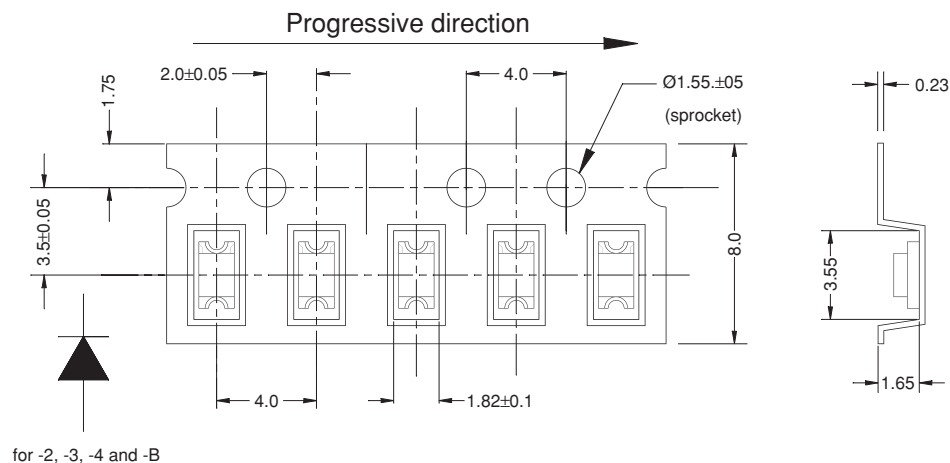
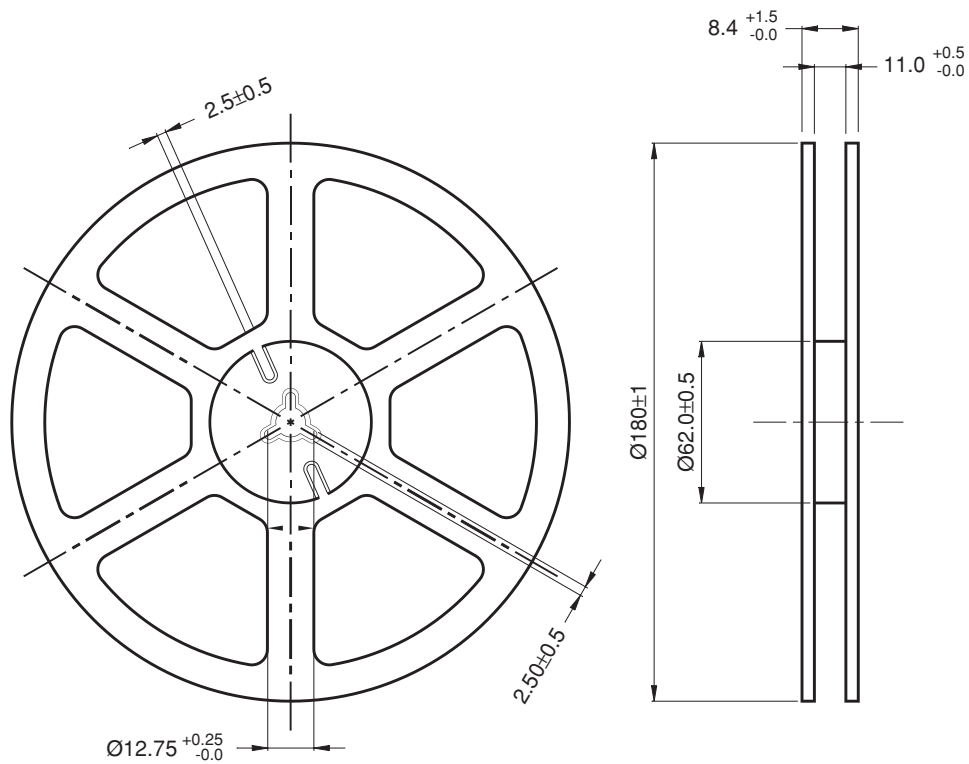
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### TAPE AND REEL DIMENSIONS



for -2, -3, -4 and -B

Polarity

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

Angle:  $\pm 0.5$

Unit: mm

Polarity marks on the sprocket side.



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**QTLP650C-B** 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.