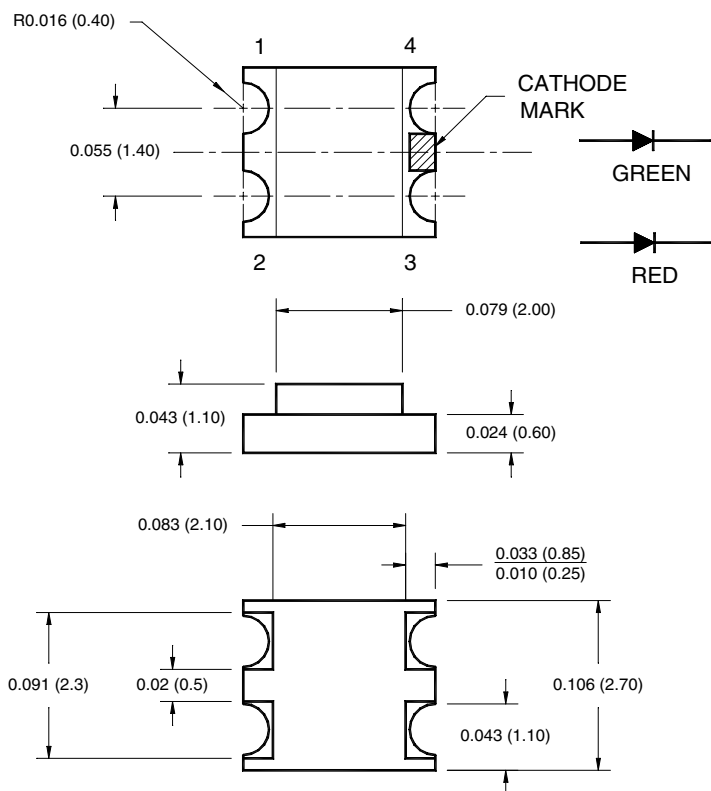


### PACKAGE DIMENSIONS



#### NOTE:

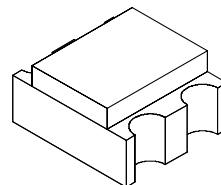
Dimensions for all drawings are in inches (mm).

HER/YELLOW  
HER /GREEN  
YELLOW/GREEN  
AlGaAs RED/GREEN

QTLP650C-23  
QTLP650C-24  
QTLP650C-34  
QTLP650C-74

### FEATURES

- Ultra-miniature
- Extremely low profile
- Wide viewing angle of 140°
- Available in 0.42" (12mm) width tape on 7" (178mm) diameter
- Moisture-proof packaging



### DESCRIPTION

These bi-color surface mount lamps are designed to fit the industry standard profile and footprint for the ultra-miniature chip type 1210. Four color combinations are available: Red/Yellow, Red/Green, Yellow/Green and AlGaAs Red/Green. The low profile package and 140° viewing angle make this chip type LED ideal for panel illumination, push button lighting and membrane switch applications.

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

Parameter	HER/Yellow QTLP650C-23	HER/Green QTLP650C-24	Yellow/Green QTLP650C-34	AlGaAs Red/Green QTLP650C-74	Units
Continuous Forward Current - I <sub>F</sub>	30/20	30/30	20/30	30/30	mA
Peak Forward Current - I <sub>F</sub> (f = 1.0 KHz, Duty Factor = 1/10)	160	160	160	160	mA
Reverse Voltage - V <sub>R</sub> (I <sub>R</sub> = 10 μA)	5	5	5	5	V
Power Dissipation - P <sub>D</sub>	100	100	100	100	mW
Operating Temperature - T <sub>OPR</sub>	-40 to +100				°C
Storage Temperature - T <sub>STG</sub>	-40 to +100				°C
Lead Soldering Time - T <sub>SOL</sub>					°C
Wave	260 for 5 sec				
Reflow	260 for 10 sec				

HER/YELLOW	QTLP650C-23
HER /GREEN	QTLP650C-24
GREEN/YELLOW	QTLP650C-34
AlGaAs RED/GREEN	QTLP650C-74

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

Part Number	HER/Yellow QTLP650C-23	HER/Green QTLP650C-24	Yellow/Green QTLP650C-34	AlGaAs Red/Green QTLP650C-74	Condition
Luminous Intensity (mcd)					I <sub>F</sub> = 20mA
Minimum	2.5/4.0	2.5/4.0	4.0/4.0	9.0/4.0	
Typical	4.0/6.5	4.0/6.5	6.5/6.5	15/6.5	
Forward Voltage (V)					I <sub>F</sub> = 20mA
Maximum	2.8/2.8	2.8/2.8	2.8/2.8	2.8/2.8	
Typical	2.0/2.0	2.0/2.0	2.0/2.0	1.9/2.0	
Peak Wavelength (nm)	635/585	635/565	585/565	660/565	I <sub>F</sub> = 20mA
Spectral Line Half Width (nm)	45/35	45/30	35/30	20/30	I <sub>F</sub> = 20mA
Viewing Angle (°)	140	140	140	140	I <sub>F</sub> = 20mA

### TYPICAL PERFORMANCE CURVES

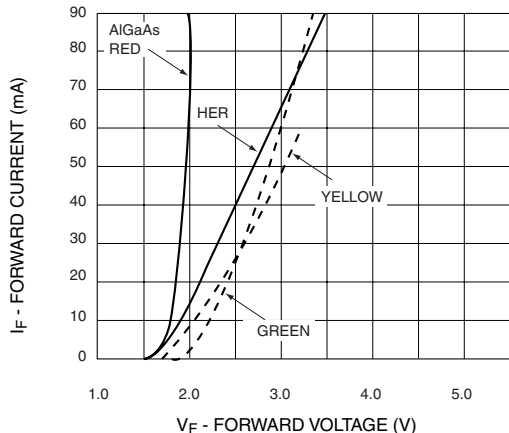


Fig. 1 Forward Current vs. Forward Voltage

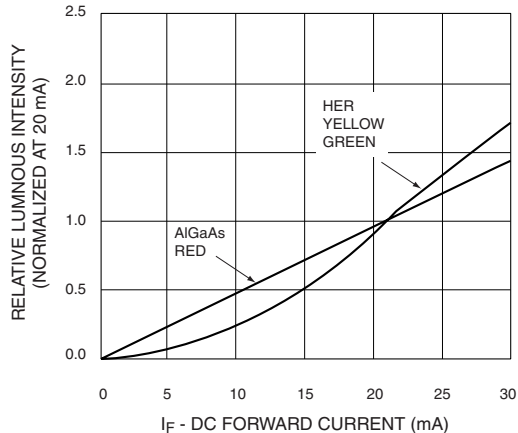
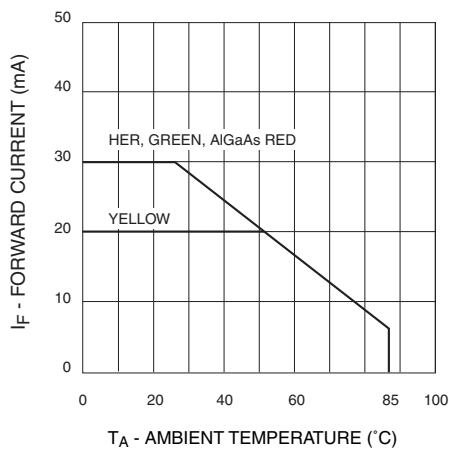
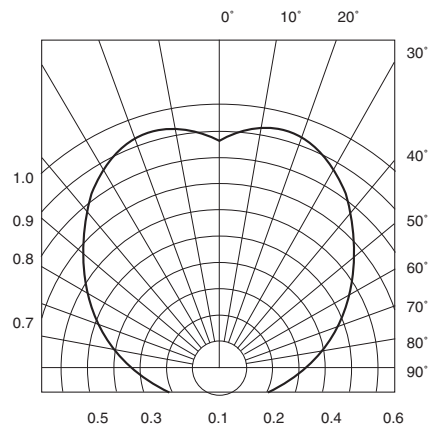
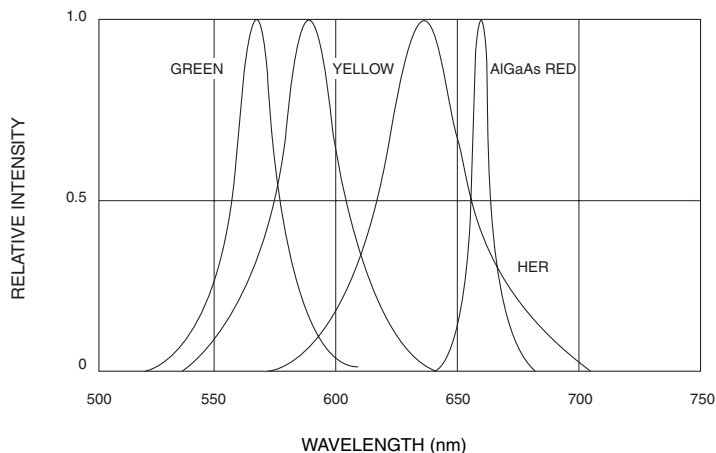


Fig. 2 Relative Luminous Intensity vs. DC Forward Current

HER/YELLOW	QTLP650C-23
HER /GREEN	QTLP650C-24
GREEN/YELLOW	QTLP650C-34
AlGaAs RED/GREEN	QTLP650C-74

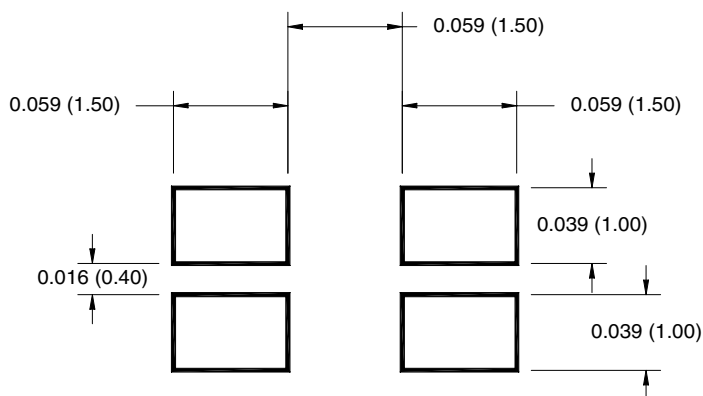


HER/YELLOW	QTLP650C-23
HER /GREEN	QTLP650C-24
GREEN/YELLOW	QTLP650C-34
AlGaAs RED/GREEN	QTLP650C-74

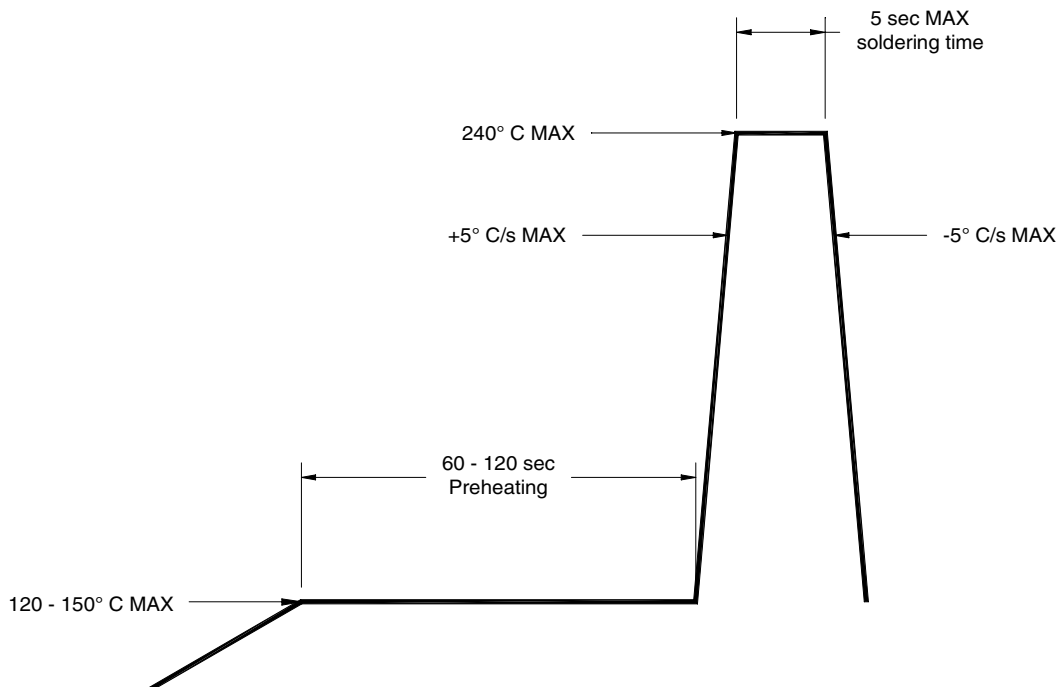
### PIN-OUT

Part Number	Pin #1	Pin #2	Pin #3	Pin #4
QTLP650C-23	YELLOW (+)	HER (+)	HER (-)	YELLOW (-)
QTLP650C-24	GREEN (+)	HER (+)	HER (-)	GREEN (-)
QTLP650C-34	GREEN (+)	YELLOW (+)	YELLOW (-)	GREEN (-)
QTLP650C-74	GREEN (+)	RED (+)	RED (-)	GREEN (-)

### RECOMMENDED PRINTED CIRCUIT BOARD PATTERN



### RECOMMENDED IR REFLOW SOLDERING PROFILE



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