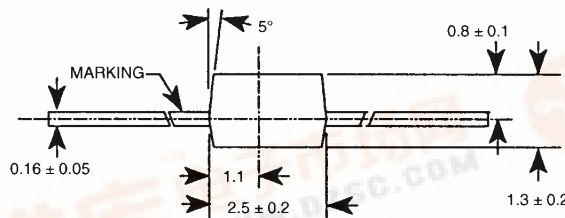
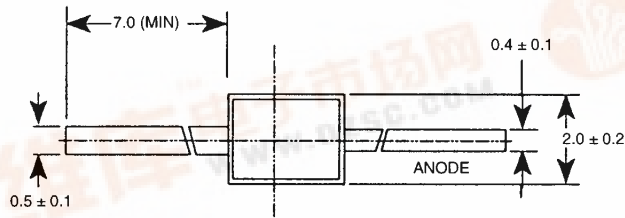




## SURFACE MOUNT LED LAMP FLAT TYPE

RED **QTLP282-2** CLEAR  
YELLOW **QTLP282-3** CLEAR  
GREEN **QTLP282-4** CLEAR  
AlGaAs/RED **QTLP282-7** CLEAR

### PACKAGE DIMENSIONS



ST1709

#### NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS
2. LEAD SPACING IS MEASURED WHERE THE LEADS EMERGE FROM THE PACKAGE
3. PROTRUDED RESIN UNDER THE FLANGE IS 1.5 mm (0.059") MAXIMUM

### DESCRIPTION

These subminiature LED lamps are intended for high volume, low cost status indication on PCBs, and for backlighting keyboards and switches. They are compatible with vapor phase reflow or wave solder surface mount equipment. Available in "Gull-Wing" lead bend configuration. They have clear, flat lenses. Tape and reel options are also available.

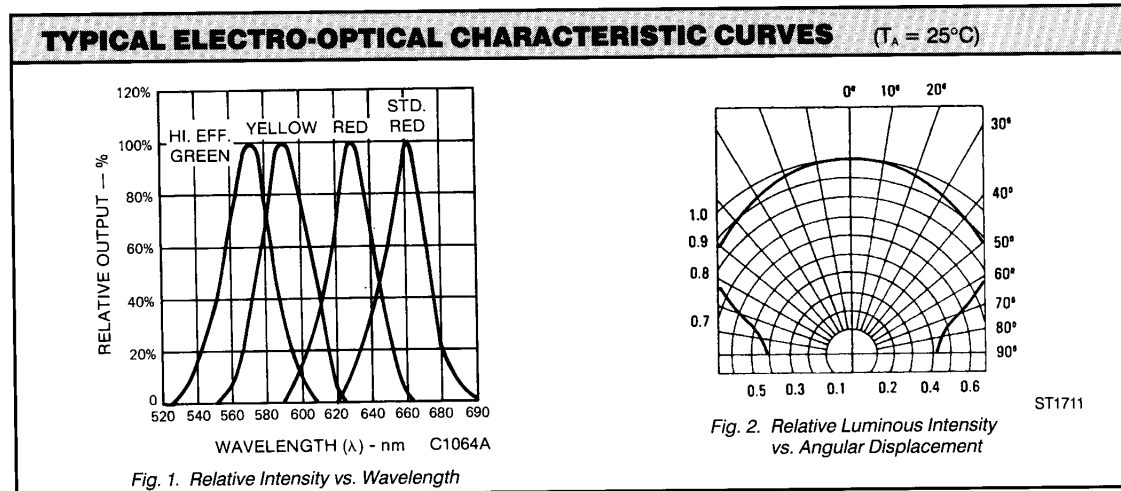
### FEATURE

- Subminiature package
- Flat package profile
- Wide viewing angle
- Lead bend options for surface mounting

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

PART NUMBER QTLP-	282-2	282-3	282-4	282-7
DC forward current ( $I_f$ )	30 mA	20 mA	30 mA	40 mA
Operating temperature range		$-40^\circ\text{C}$ to $+85^\circ\text{C}$		
Storage temperature range		$-40^\circ\text{C}$ to $+100^\circ\text{C}$		
Lead soldering time (at 1/16 inch (1.6 mm) from the bottom of lamp)		5 seconds @ $260^\circ\text{C}$		
Peak forward current (at $f = 1.0$ KHz, Duty factor = 1/10)	160 mA	160 mA	160 mA	200 mA
Power dissipation ( $P_d$ )	100 mW	85 mW	100 mW	110 mA
Recommended operating current ( $I_f$ Rec)		20 mA		

<b>ELECTRO-OPTICAL CHARACTERISTICS</b> ( $T_A=25^\circ\text{C}$ Unless Otherwise Specified)					
PART NUMBER	282-2	282-3	282-4	282-7	TEST CONDITIONS
Luminous intensity (mcd)					$I_F=20\text{ mA}$
minimum	1.5	3.5	1.0	11	
typical	5.6	6.0	5.6	17	
Forward voltage ( $V_F$ )					$I_F=20\text{ mA}$
minimum	1.7	1.7	1.7	1.7	
typical	2.0	2.0	2.1	2.0	
maximum	2.8	2.8	2.8	2.8	
Peak wavelength (nm)	640	585	565	660	$I_F=20\text{ mA}$
Spectral line half width (nm)	45	35	30	20	$I_F=20\text{ mA}$
Reverse breakdown voltage ( $V_R$ )	5	5	5	5	$I_R=10\text{ }\mu\text{A}$
Viewing angle ( $^\circ$ )	150	150	150	150	$I_F=20\text{ mA}$



**TYPICAL ELECTRO-OPTICAL CHARACTERISTIC CURVES** ( $T_A = 25^\circ\text{C}$ )

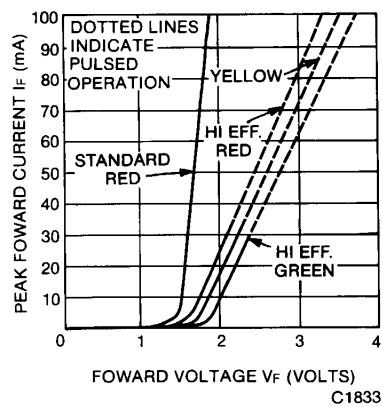


Fig. 3. Forward Current vs. Forward Voltage

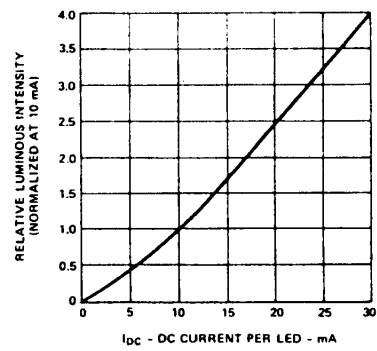


Fig. 4. Relative Luminous Intensity vs. DC Forward Current

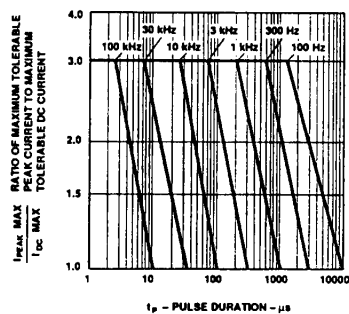


Fig. 5. Maximum Peak Current vs. Pulse Duration

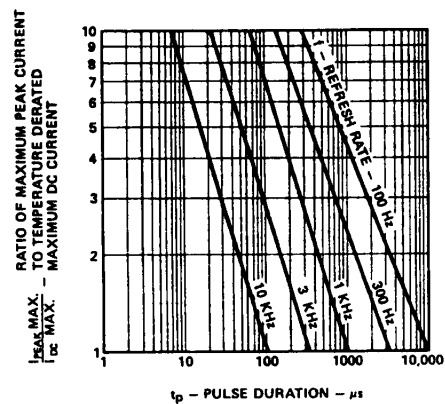
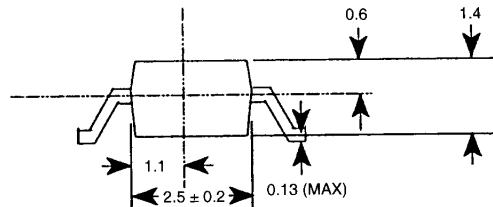
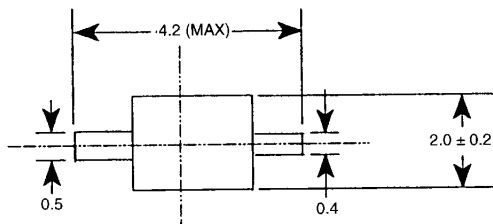


Fig. 6. Maximum Peak Current Vs. Pulse Duration (AlGaAs Red)

**SURFACE MOUNT OPTION FOR  
QTLP282-X FLAT TYPE LED LAMP  
GULL WING LEAD CONFIGURATION**

**LEAD BEND OPTIONS**



ST1690

**DESCRIPTION**

These flat package LED lamps are encapsulated in an axial lead package with a clear lens. Automatic placement equipment can be used to mount these LEDs on PC boards. The lamps can be mounted using either batch or in line vapor phase reflow solder processes. Subminiature lamps are available in red, high efficiency red, yellow, and green.

**FEATURES**

- Gull Wing lead configuration for surface mount application
- Compatible with automatic placement equipment
- Compatible with vapor phase reflow solder processes.
- Supplied on tape and reel or in bulk packaging

**ABSOLUTE MAXIMUM RATING** ( $T_A = 25^\circ\text{C}$  Unless Otherwise Specified)

Wave soldering temperature (1.6 mm (0.063") from body)	260° for 3 seconds
Surface Mount Reflow	
Soldering:	
Convective IR	235°C for 90 seconds
Vapor phase	215°C for 3 minutes

**ABSOLUTE MAXIMUM SOLDER RATINGS AND  
ELECTRICAL/OPTICAL CHARACTERISTICS**

The absolute maximum ratings and electrical/optical specifications are identical to the basic catalogue device, except for the vapor phase soldering rating as specified above.



## SURFACE MOUNT LED LAMP FLAT TYPE

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