

# CTL0402FRD1T-L DATASHEET

Chip Type LED, 0402, Flat Lens, Red, Low Profile

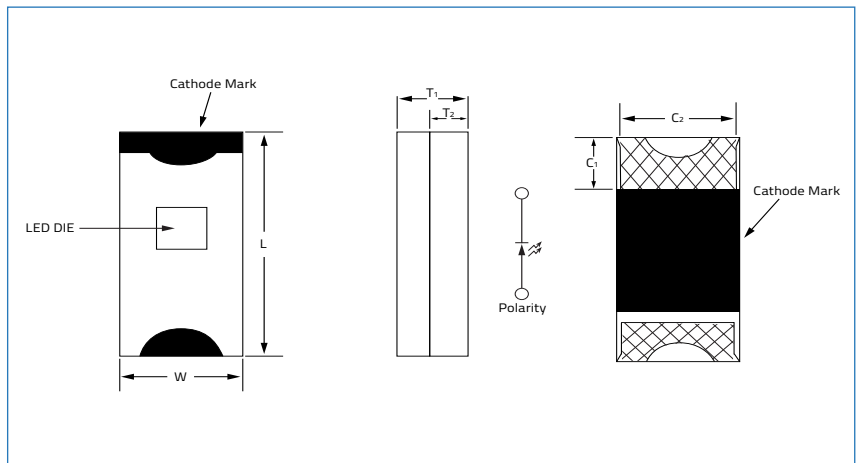


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Part Number	Size	Emitting Color	Emitting Material	Lens-Color	Luminous Intensity ( $I_F=20\text{mA}$ ) mcd	Wavelength nm $\lambda_P$	Viewing Angle ( $2\theta_{1/2}$ )
CTL0402FRD1T-L	0402	Red	AllnGaP	Water Clear	45 min 71.5 typ	632	130°

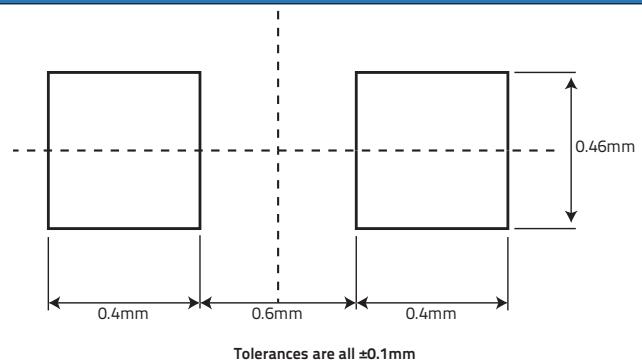
Electrical & Optical Specifications ( $T_A=25^\circ\text{C}$ )		RD1 (AllnGaP)	Unit
Forward Voltage (Min.) ( $I_F=20\text{mA}$ )	$V_F$	2.0	V
Forward Voltage (Max.) ( $I_F=20\text{mA}$ )	$V_F$	2.4	V
Reverse Current (Max) ( $V_R=5\text{V}$ )	$I_R$	10	$\mu\text{A}$
Peak Wavelength (Typ.) ( $I_F=20\text{mA}$ )	$\lambda_P$	632	nm
Dominant Wavelength (Typ.) ( $I_F=20\text{mA}$ )	$\lambda_D$	624	nm
Spectral Line Half Width (Typ.) ( $I_F=20\text{mA}$ )	$\Delta\lambda$	20	nm

Absolute Maximum Ratings ( $T_A=25^\circ\text{C}$ )		RD1 (AlGaInP)	Unit
Reverse Voltage	$V_R$	5	V
DC Forward Current	$I_F$	20	mA
Peak Forward Current 1/10 Duty Cycle @ 10KHz	$I_{FP}$	40	mA
Power Dissipation	$P_D$	48	mW
Operating Temperature	$T_A$	-40 ~ +85	°C
Storage Temperature	$T_{stg}$	-40 ~ +100	



Dimensions		Units: Inches (mm)	
$L_1$	W	$T_1$	$T_2$
0.039±0.004 (1.0±0.1)	0.0196±0.004 (0.5±0.1)	0.01±0.004 (0.25±0.1)	0.0055±0.004 (0.14±0.1)
$C_1$	$C_2$		
0.0079±0.004 (0.20±0.1)	0.018±0.004 (0.46±0.1)		

## Soldering Pad Layout



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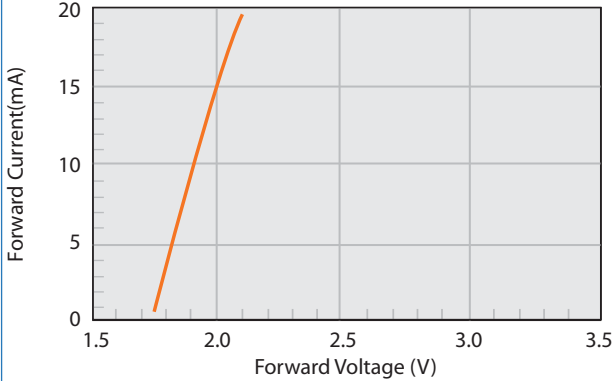
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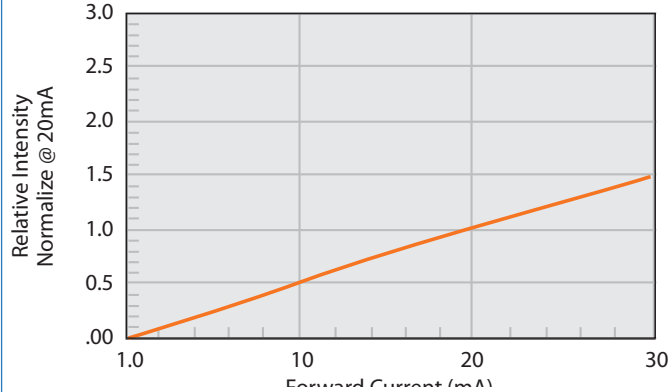
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## Graphs

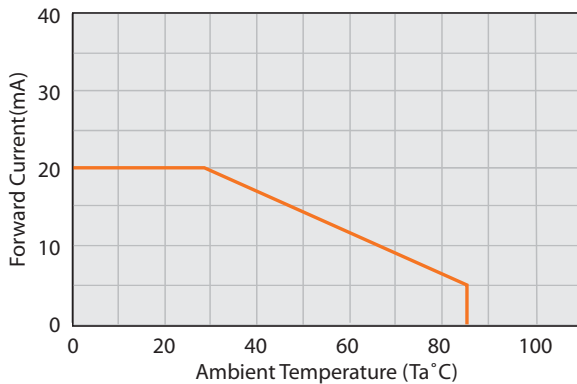
**Fig.1 Forward Current vs Forward Voltage**



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

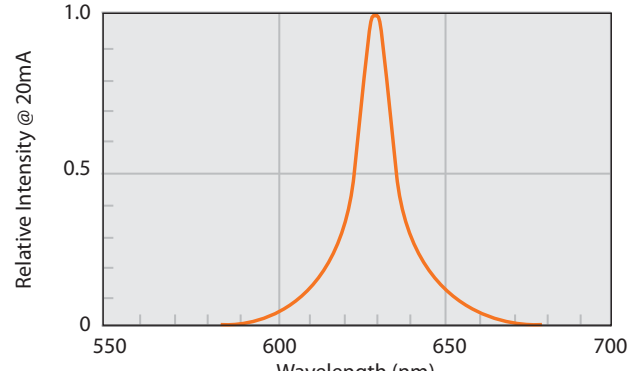


**Fig.3 Current vs Temp**

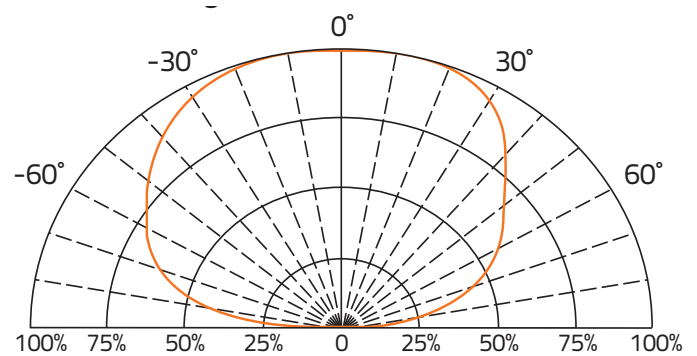


**CTL0603FRD1T**

**Fig.5 Relative Intensity vs Wavelength**



**Fig. 5 Direct Radiation**



### Environmental information

RoHS Status	6 of 6 Compliant
REACH Status	Compliant
Halogen Status	Halogen Free
Conflict Mineral Status	Conflict Mineral Free
Moisture Sensitivity Level (MSL)	3

### Reflow profile

Max Reflow Temperature	260°C
Number of Reflow Cycles	2

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## Label Example

Item: CTL0402FRD1T-L

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Qty: 3000 D/C: 1616

Lot: E1A1A22L12

BIN/HUE: Q/AD VF: 1.6-2.4

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**YOUR SINGLE SOURCE FOR SURFACE MOUNT PASSIVES**

## Codes:

VF: Forward Voltage | BIN: Luminous Intensity | HUE: Dominant Wavelength

## Luminous Intensity Classification (BIN Code)

BIN Code	Iv(mcd) at 20mA	
	Min.	Max.
P	45	71.5
Q	71.5	112.5
R	112.5	180

## Dominant Wavelength Classification (HUE Code)

HUE Code	$\lambda_D$ (nm) at 20mA	
	Min.	Max.
AD	615	635

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**Reel Specifications** Units: mm

M	C	F	E	G
178±1.50	56.0±1.0	12.0±1.0	60.0±1.0	9.0±1.0

**Packaging Specifications**

Reel Size:	7"
Quantity per Reel :	3,000

- Storage Specifications**
1. Storage temperature and RH: 5°C~35°C, RH60%
  2. Once the package is opened, the LEDs should be used within a week. Otherwise, they should be kept in a moisture proof bag with desiccant. We suggest that you use this product within one year from date code.
  3. If opened for more than one week in an atmosphere of 5°C~35°C, RH60%. The parts should be heat treated at 60°C±5°C for 15 hours.

**Tape Specifications** Units: mm

T	W	A	B	F
0.38±0.03	8.0±0.3	1.11±0.03	0.60±0.03	3.5±0.05
E	H	J	D	G
1.75±0.1	4.0±0.1	2.0±0.05	1.5±0.1	4.0±0.1

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Environmental Test Criteria			
Classification	Test Item	Test Condition	Sample Size
Endurance Test	Operating Life	1. 25°C 2. 1000hrs	40
	High Temperature Storage	1. 85°C±5°C 2. 1000hrs	40
	Temperature, Humidity Bias	1. 40°C 2. 93% 3. 1000hrs	40
Environmental Test	Solderability	1. 245°C / 3±1 sec 2. 260°C / 10±1 sec	40