



## Low Current

LTL1CHJxDNN	60 degree
LTL2F7JxDNN	60 degree
LTL2R3JxDNN	45 degree

### Features

- Low Power Consumption.
- High Efficiency.
- CMOS-MOS Compatible.
- TTL Compatible.
- Wide Viewing Angle.
- Choice of Package.
- Choice of Color

### Description

These tinted diffuse LED lamps are designed and optimized specifically for low DC current operation. Luminous intensity and forward voltage are tested at 2mA to assure consistent brightness at TTL output current level.

### Application

- Low Power DC Circuits.
- Telecommunications Indicators.
- Portable Equipment.
- Keyboard Indicators.

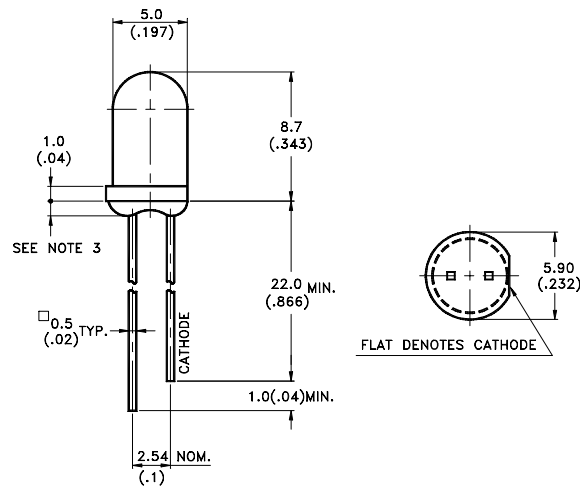
### Devices

Part No. (LTL)	Lens	Source Color
1CHJDDNN / 2F7JDDNN / 2R3JDDNN	Red Diffused	AllnGap Hyper Red
1CHJRDNN / 2F7JRDNN / 2R3JRDNN	Red Diffused	AllnGap Super Red
1CHJEDNN / 2F7JEDNN / 2R3JEDNN	Red Diffused	AllnGap Red
1CHJFDNN / 2F7JFDNN / 2R3JFDNN	Amber Diffused	AllnGap Yellow Orange
1CHJYDNN / 2F7JYDNN / 2R3JYDNN	Yellow Diffused	AllnGap Amber Yellow
1CHJSDNN / 2F7JSDNN / 2R3JSDNN	Yellow Diffused	AllnGap Yellow
1CHJGDNN / 2F7JGDNN / 2R3JGDNN	Green Diffused	AllnGap Green

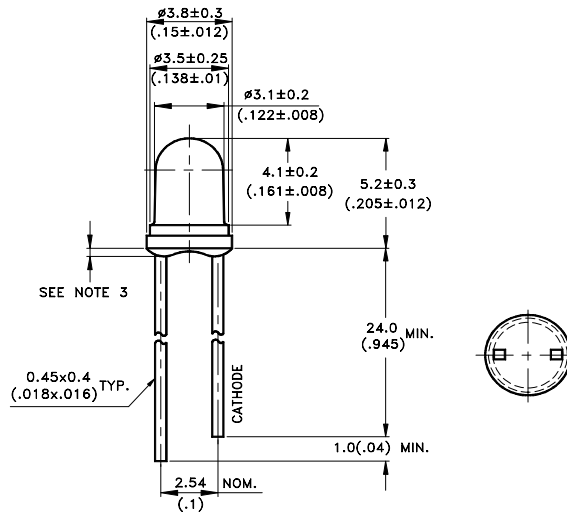
## Package Dimensions

### LTL2F7x Series

### LTL2R3x Series



### LTL1CHx Series



#### Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is  $\pm 0.25\text{mm}(.010\text{'})$  unless otherwise noted.
3. Protruded resin under flange is  $1.0\text{mm}(.04\text{'})$  max.
4. Lead spacing is measured where the leads emerge from the package.
5. Specifications are subject to change without notice.



**Absolute Maximum Ratings at TA=25°C**

Parameter	Hyper Red	Super Red	Red	Yellow Orange	Amber Yellow	Yellow	Green	Unit
Power Dissipation	75	75	75	75	75	75	75	mW
Peak Forward Current (1/10 Duty Cycle, 0.1ms Pulse Width)	90	90	90	60	60	60	60	mA
Continuous Forward Current	30	30	30	30	30	30	30	mA
Derating Linear From 70°C	0.4	0.4	0.4	0.4	0.4	0.4	0.4	mA / °C
Reverse Voltage (IR =100 $\mu$ A)	5	5	5	5	5	5	5	V
Operating Temperature Range	-40°C to + 100°C							
Storage Temperature Range	-55°C to + 100°C							
Lead Soldering Temperature [1.6mm(.063") From Body]	260°C for 5 Seconds							



**Electrical / Optical Characteristics at TA=25°C (F Series)**

Parameter	Symbol	Part No. (LTL)	Min.	Typ.	Max.	Unit	Test Condition
Luminous Intensity	Iv	1CHJDDNN	3.0	5.0		mcd	IF = 2mA Note 1 Note 2
		1CHJRDNN	3.0	5.6			
		1CHJEDNN	3.0	7.2			
		1CHJFDNN	3.0	7.2			
		1CHJYDNN	3.0	7.2			
		1CHJSDNN	3.0	7.2			
		1CHJGDNN	3.0	7.2			
Viewing Angle	2 θ1/2			60		deg	Note 3 (Fig.5)
Peak Emission Wavelength	λP	1CHJDDNN		650		nm	Measurement @ peak (Fig.1)
		1CHJRDNN		639			
		1CHJEDNN		632			
		1CHJFDNN		611			
		1CHJYDNN		595			
		1CHJSDNN		588			
		1CHJGDNN		575			
Dominant Wavelength	λd	1CHJDDNN		639		nm	Note 5
		1CHJRDNN		632			
		1CHJEDNN		624			
		1CHJFDNN		605			
		1CHJYDNN		592			
		1CHJSDNN		587			
		1CHJGDNN		572			
Spectral Line Half-Width	Δλ	1CHJDDNN		20		nm	
		1CHJRDNN		20			
		1CHJEDNN		20			
		1CHJFDNN		17			
		1CHJYDNN		15			
		1CHJSDNN		15			
		1CHJGDNN		15			
Forward Voltage	VF	1CHJDDNN		1.8	2.4	V	IF = 2mA
		1CHJRDNN		1.8	2.3		
		1CHJEDNN		1.8	2.4		
		1CHJFDNN		1.8	2.4		
		1CHJYDNN		1.8	2.4		
		1CHJSDNN		1.8	2.4		
		1CHJGDNN		1.8	2.4		
Reverse Current	IR				100	μA	VR = 5V
Capacitance	C			40		pF	VF = 0, f = 1 MHz

NOTES:

- Luminous intensity is measured with a light sensor and filter combination that approximates the CIE eye-response curve.
- Luminous intensity rank classified products support two ranks.
- θ 1/2 is the off-axis angle at which the luminous intensity is half the axial luminous intensity.
- Iv classification code is marked on each packing bag.
- The dominant wavelength, λd is derived from the CIE chromaticity diagram and represents the single wavelength which defines the color of the device.



**Electrical / Optical Characteristics at TA=25°C (H Series)**

Parameter	Symbol	Part No. (LTL)	Min.	Typ.	Max.	Unit	Test Condition
Luminous Intensity	Iv	2F7JDDNN	3.0	5.0		mcd	IF = 2mA Note 1 Note 2
		2F7JRDNN	3.0	5.6			
		2F7JEDNN	3.0	7.2			
		2F7JFDNN	3.0	7.2			
		2F7JYDNN	3.0	7.2			
		2F7JSDNN	3.0	7.2			
		2F7JGDNN	3.0	7.2			
Viewing Angle	2 θ1/2			60		deg	Note 3 (Fig.5)
Peak Emission Wavelength	λP	2F7JDDNN		650		nm	Measurement @ peak (Fig.1)
		2F7JRDNN		639			
		2F7JEDNN		632			
		2F7JFDNN		611			
		2F7JYDNN		595			
		2F7JSDNN		588			
		2F7JGDNN		575			
Dominant Wavelength	λd	2F7JDDNN		639		nm	Note 5
		2F7JRDNN		632			
		2F7JEDNN		624			
		2F7JFDNN		605			
		2F7JYDNN		592			
		2F7JSDNN		587			
		2F7JGDNN		572			
Spectral Line Half-Width	Δλ	2F7JDDNN		20		nm	
		2F7JRDNN		20			
		2F7JEDNN		20			
		2F7JFDNN		17			
		2F7JYDNN		15			
		2F7JSDNN		15			
		2F7JGDNN		15			
Forward Voltage	VF	2F7JDDNN		1.8	2.4	V	IF = 2mA
		2F7JRDNN		1.8	2.3		
		2F7JEDNN		1.8	2.4		
		2F7JFDNN		1.8	2.4		
		2F7JYDNN		1.8	2.4		
		2F7JSDNN		1.8	2.4		
		2F7JGDNN		1.8	2.4		
Reverse Current	IR				100	μA	VR = 5V
Capacitance	C			40		pF	VF = 0, f = 1 MHz

NOTES:

- Luminous intensity is measured with a light sensor and filter combination that approximates the CIE eye-response curve.
- Luminous intensity rank classified products support two ranks.
- θ 1/2 is the off-axis angle at which the luminous intensity is half the axial luminous intensity.
- Iv classification code is marked on each packing bag.
- The dominant wavelength, λd is derived from the CIE chromaticity diagram and represents the single wavelength which defines the color of the device.



**Electrical / Optical Characteristics at TA=25°C (H Series)**

Parameter	Symbol	Part No. (LTL)	Min.	Typ.	Max.	Unit	Test Condition
Luminous Intensity	I <sub>v</sub>	2R3JDDNN	3.8	7.2		mcd	I <sub>F</sub> = 2mA Note 1 Note 2
		2R3JRDNN	3.8	8.0			
		2R3JEDNN	3.8	10.6			
		2R3JFDNN	3.8	10.6			
		2R3JYDNN	3.8	10.6			
		2R3JSDNN	3.8	10.6			
		2R3JGDNN	3.8	10.6			
Viewing Angle	2 θ1/2			45		deg	Note 3 (Fig.5)
Peak Emission Wavelength	λ <sub>P</sub>	2R3JDDNN		650		nm	Measurement @ peak (Fig.1)
		2R3JRDNN		639			
		2R3JEDNN		632			
		2R3JFDNN		611			
		2R3JYDNN		595			
		2R3JSDNN		588			
		2R3JGDNN		575			
Dominant Wavelength	λ <sub>d</sub>	2R3JDDNN		639		nm	Note 5
		2R3JRDNN		632			
		2R3JEDNN		624			
		2R3JFDNN		605			
		2R3JYDNN		592			
		2R3JSDNN		587			
		2R3JGDNN		572			
Spectral Line Half-Width	Δλ	2R3JDDNN		20		nm	
		2R3JRDNN		20			
		2R3JEDNN		20			
		2R3JFDNN		17			
		2R3JYDNN		15			
		2R3JSDNN		15			
		2R3JGDNN		15			
Forward Voltage	V <sub>F</sub>	2R3JDDNN		1.8	2.4	V	I <sub>F</sub> = 2mA
		2R3JRDNN		1.8	2.3		
		2R3JEDNN		1.8	2.4		
		2R3JFDNN		1.8	2.4		
		2R3JYDNN		1.8	2.4		
		2R3JSDNN		1.8	2.4		
		2R3JGDNN		1.8	2.4		
Reverse Current	I <sub>R</sub>				100	μA	V <sub>R</sub> = 5V
Capacitance	C			40		pF	V <sub>F</sub> = 0, f = 1 MHz

NOTES:

- Luminous intensity is measured with a light sensor and filter combination that approximates the CIE eye-response curve.
- Luminous intensity rank classified products support two ranks.
- θ 1/2 is the off-axis angle at which the luminous intensity is half the axial luminous intensity.
- I<sub>v</sub> classification code is marked on each packing bag.
- The dominant wavelength, λ<sub>d</sub> is derived from the CIE chromaticity diagram and represents the single wavelength which defines the color of the device.

Property of Lite-On Only

## Typical Electrical / Optical Characteristics Curves

(25°C Ambient Temperature Unless Otherwise Noted)

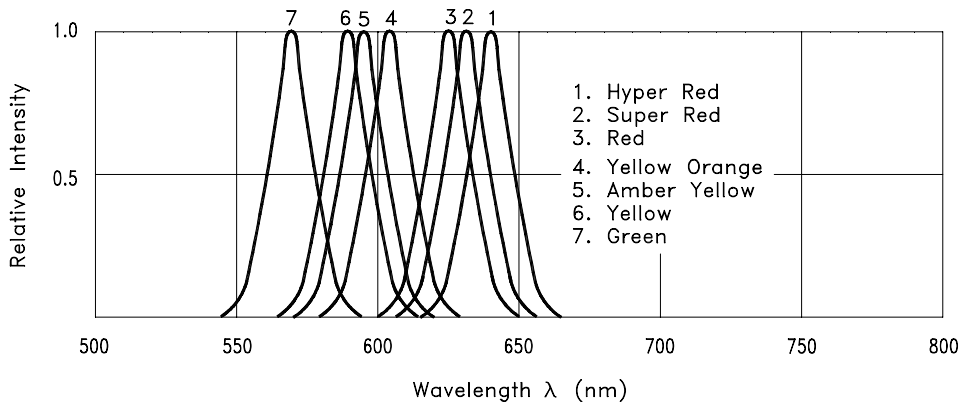


Fig.1 Relative Intensity vs. Wavelength

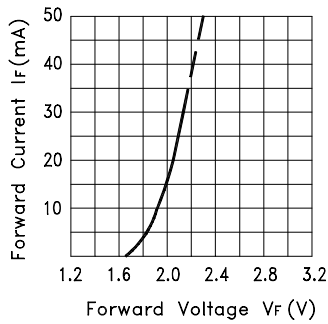


Fig.2 Forward Current vs. Forward Voltage

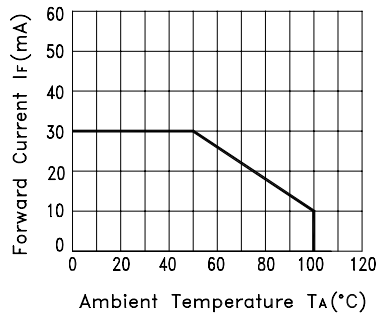


Fig.3 Forward Current Derating Curve

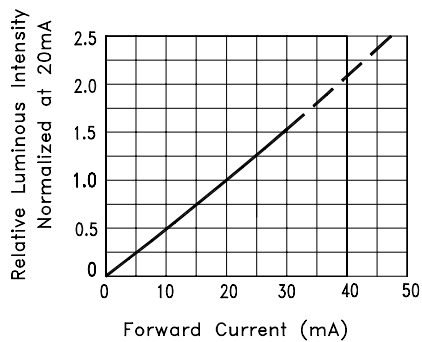


Fig.4 Relative Luminous Intensity vs. Forward Current

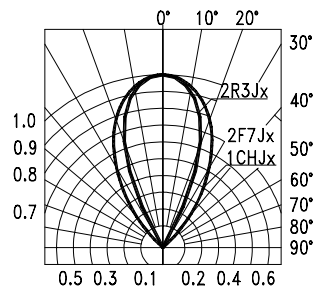


Fig.5 Spatial Distribution