PRODUCT SPECIFICATION

Model No.：CSDV-12031X-01

Descriptions:
■Touch Display (W/O touch drive IC)
■Emitting Color：Pure Green ; Yellow ; Amber ; Orange ; Red ; Deep Red
■White Face
■White Segment

CUSTOMER APPROVED SIGNATURES	APPROVED BY	CHECKED BY	PREPARED BY

OPTO PLUS TECHNOLOGIES CO.,LTD
Address:No.696,Yangming North Rd,
ShaoXing City,ZheJiang Province, P.R.China.
Tel :86-575-88623888
Fax:86-575-88623112

Model No.：CSDV-12031X-01

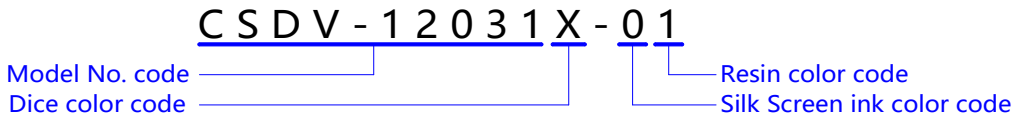
■ Features -

1. Case mold type.
2. RoHS compliant.
3. Low power consumption.
4. Easy mounting on P.C. board or socket.

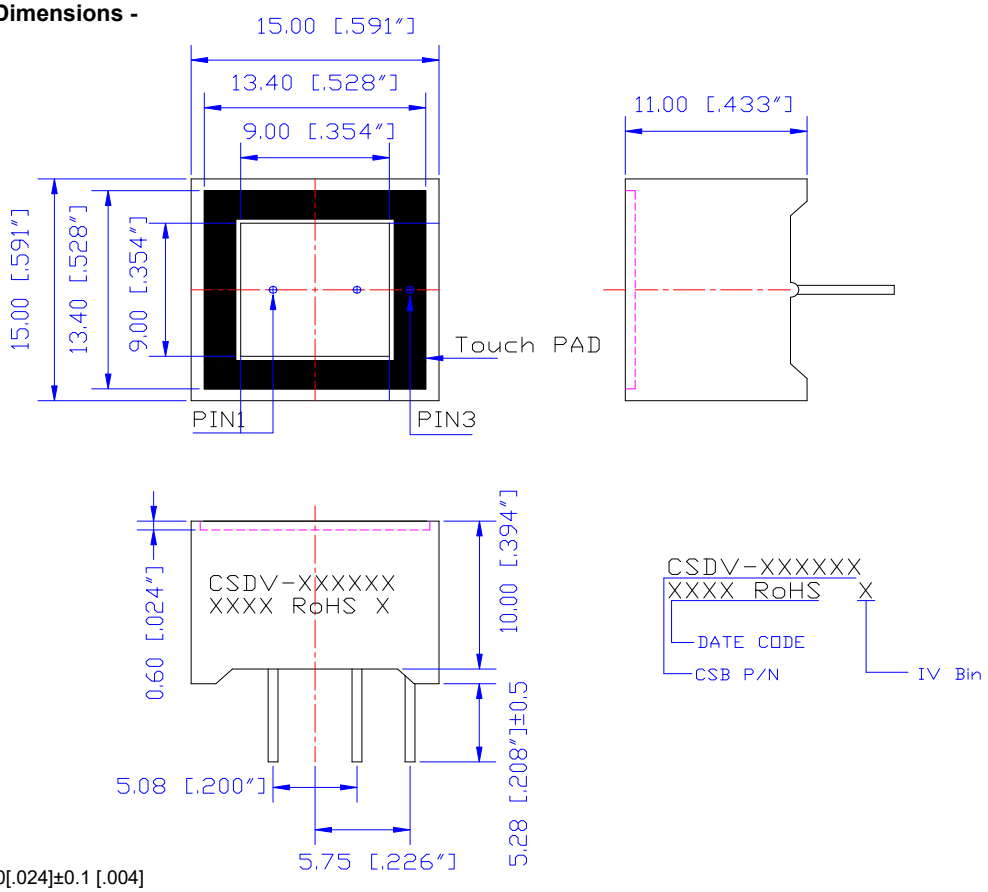
■ Device Selection Guide -

Model No.	Chip		Characteristics
	Material	Emitting Color	
CSDV-12031X-01	InGaN	Pure Green (2)	Annex 1
	AlGaInP	Yellow (T)	Annex 2
	AlGaInP	Amber (A)	Annex 3
	AlGaInP	Orange (V)	Annex 4
	AlGaInP	Red (L)	Annex 5
	AlGaInP	Deep Red (U)	Annex 6

■ LED Numeric/Alphanumeric Display



■ Mechanical Dimensions -

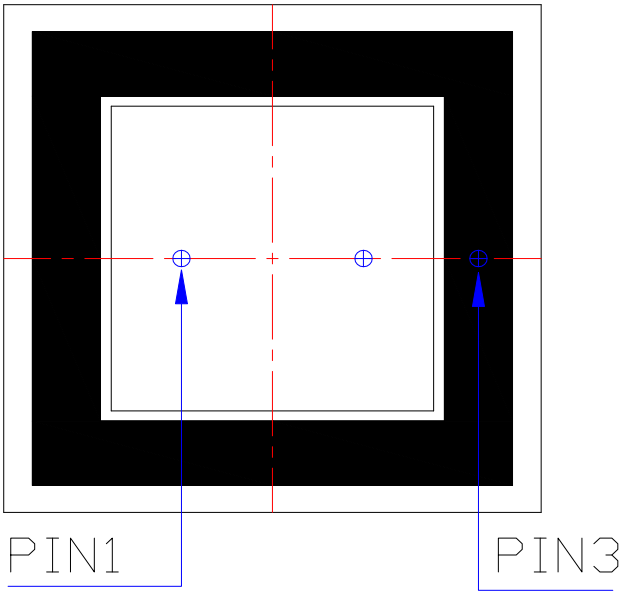


Notes:

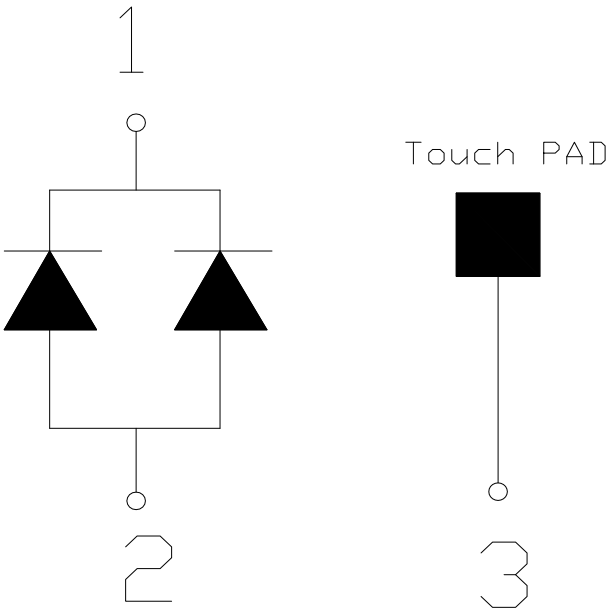
1. All pins are Φ0.60[.024]±0.1 [.004]
2. Dimension in millimeter [inch], tolerance is ±0.25 [.010] and angle is ±1° unless otherwise noted.

Model No.：CSDV-12031X-01

■ All Light On Segments Feature & Pin Position



■ Internal Circuit Diagrams -



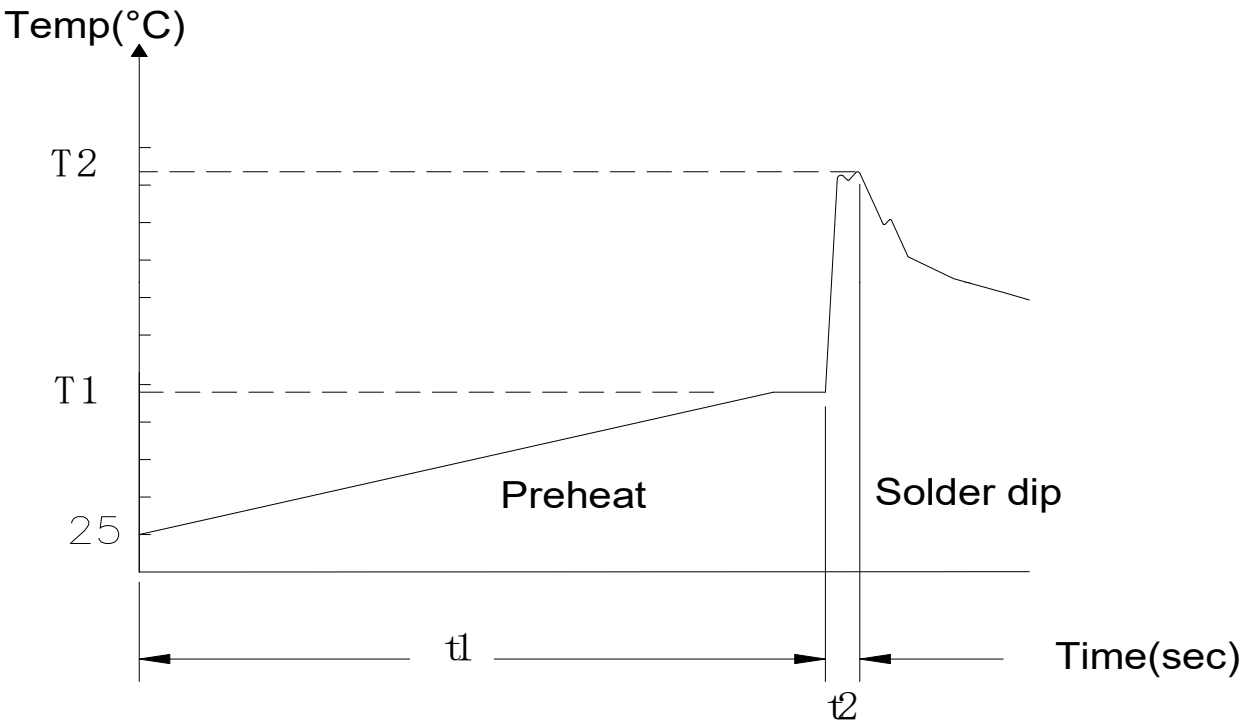
Model No.：CSDV-12031X-01

■ Precautions For Use -

1.Wave Soldering Profile

Distance:1.6mm min(From seating plane)

Item	Condition		Note
Preheat	Temperature T1	80 – 120°C	PWB temperature (Soldering side surface)
	Time t1	60 – 180sec	
Solder Dip	Temperature T2	230 – 260°C	Bath temperature
	Time t2	2 – 4sec	Solder tank passage time



2.Hand Soldering (Iron Condition)

Soldering Iron:30W Max

Temperature 350°C Max

Soldering Time:3 Seconds Max(One Time)

Distance:1.6mm min(From seating plane)

Model No.: CSDV-120312-01 Pure Green

■ Absolute Maximum Rating -

(Ta=25℃)

Parameter	Symbol	Rating	Unit
Power Dissipation Per Dice	P_d	114	mW
Derating Liner from 25℃ per Dice	-	0.4	mA/℃
Continuous Forward Current Per Dice	I_f	30	mA
Peak Current Per Dice(duty cycle 1/10,1KHz)	I_{fp}	100	mA
Electrostatic discharge(HBM)	ESD	1000	V
Reverse Voltage Per Dice	V_r	5	V
Operating Temp.	T_{opr}	-35 ~ +85	℃
Storage Temp.	T_{stg}	-35 ~ +85	℃

■ Electro-optical Characteristics -

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Forward Voltage	V_f	-	3.2	3.8	V	I_f=20mA
Luminous Intensity	I_v	289	612	-	mcd	I_f=20mA
Peak Emission Wavelength	λ_p	-	-	-	nm	I_f=20mA
Dominant Wavelength	λ_d	-	525	-	nm	I_f=20mA
Spectrum Radiation Bandwidth	$\Delta\lambda$	-	30	-	nm	I_f=20mA
Reverse Current	I_r	-	-	50	μA	V_r=5V
Luminous Intensity Matching Ratio	I_v-m	-	-	2:1	-	I_f=10mA

Model No.: CSDV-120312-01 Pure Green

■ Electrical / Optical Characteristics Curves -

(Ta = 25℃ Unless Otherwise Noted)

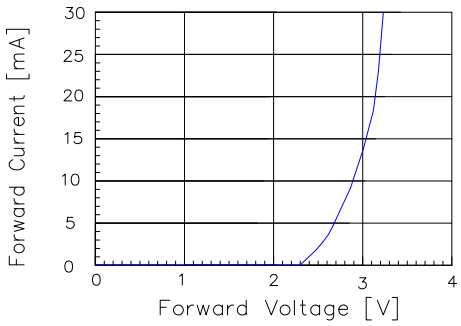


Fig 1. Forward Current vs. Forward Voltage

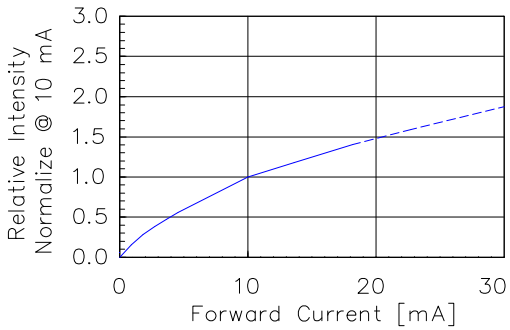


Fig 2. Relative Intensity vs. Forward Current

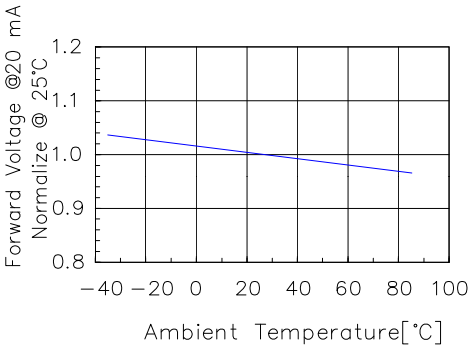


Fig 3. Forward Voltage vs. Temperature

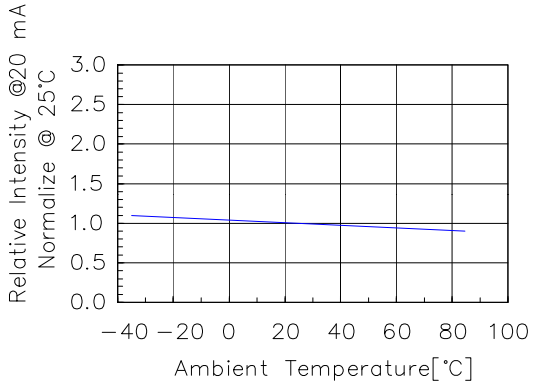


Fig 4. Relative Intensity vs. Temperature

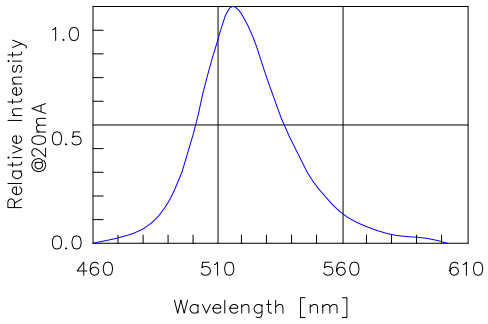


Fig 5. Relative Intensity vs. Wavelength

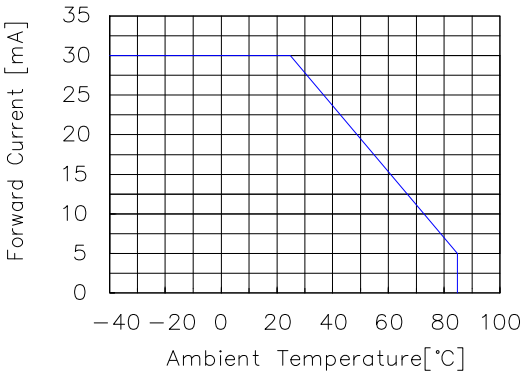


Fig 6. Forward current vs. Temperature

Model No.: CSDV-12031T-01 Yellow

■ Absolute Maximum Rating -

(Ta=25℃)

Parameter	Symbol	Rating	Unit
Power Dissipation Per Dice	P_d	70	mW
Derating Liner from 25℃ per Dice	-	0.33	mA/℃
Continuous Forward Current Per Dice	I_f	25	mA
Peak Current Per Dice(duty cycle 1/10,1KHz)	I_{fp}	90	mA
Reverse Voltage Per Dice	V_r	5	V
Operating Temp.	T_{opr}	-35 ~ +85	℃
Storage Temp.	T_{stg}	-35 ~ +85	℃

■ Electro-optical Characteristics -

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Forward Voltage	V_f	-	2.1	2.8	V	I_f=20mA
Luminous Intensity	I_v	113	220	-	mcd	I_f=20mA
Peak Emission Wavelength	λ_p	-	592	-	nm	I_f=20mA
Dominant Wavelength	λ_d	-	590	-	nm	I_f=20mA
Spectrum Radiation Bandwidth	$\Delta\lambda$	-	20	-	nm	I_f=20mA
Reverse Current	I_r	-	-	100	μA	V_r=5V
Luminous Intensity Matching Ratio	I_v-m	-	-	2:1	-	I_f=10mA

Model No.: CSDV-12031T-01 Yellow

■ Electrical / Optical Characteristics Curves -

(Ta = 25℃ Unless Otherwise Noted)

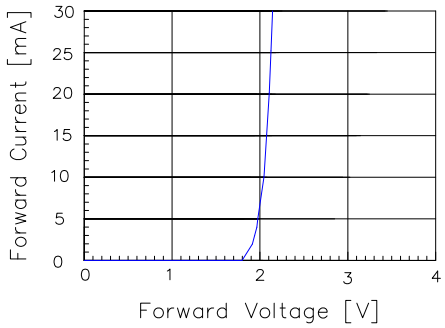


Fig 1. Forward Current vs. Forward Voltage

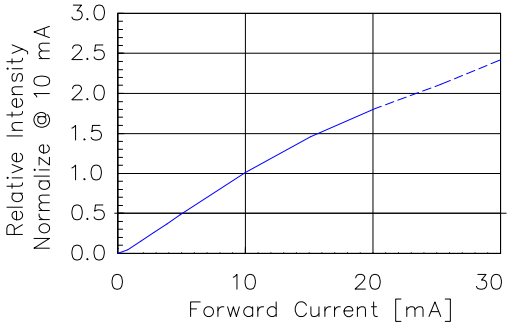


Fig 2. Relative Intensity vs. Forward Current

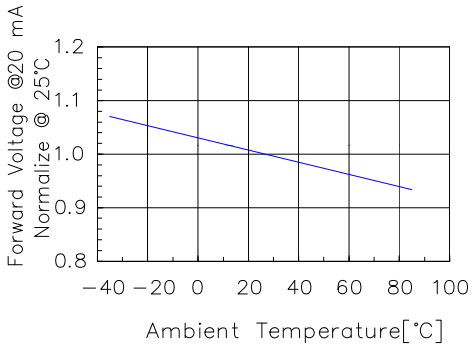


Fig 3. Forward Voltage vs. Temperature

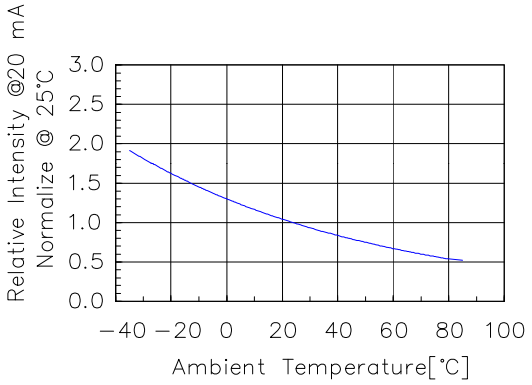


Fig 4. Relative Intensity vs. Temperature

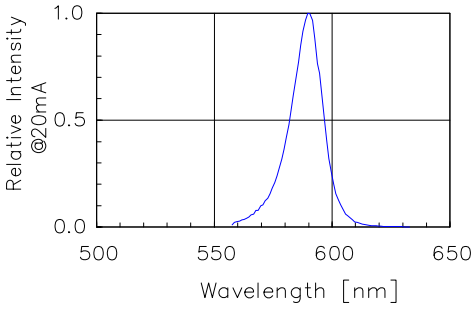


Fig 5. Relative Intensity vs. Wavelength

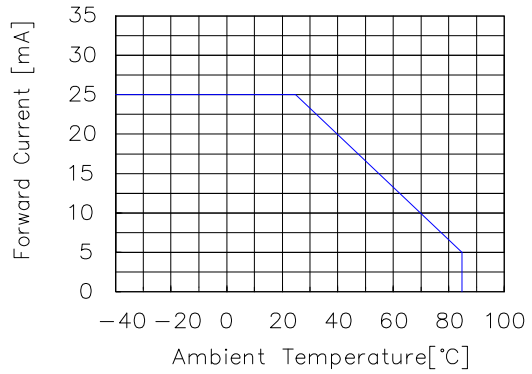


Fig 6. Forward current vs. Temperature

Model No.: CSDV-12031A-01 Amber

■ Absolute Maximum Rating -

(Ta=25℃)

Parameter	Symbol	Rating	Unit
Power Dissipation Per Dice	P_d	70	mW
Derating Liner from 25℃ per Dice	-	0.33	mA/℃
Continuous Forward Current Per Dice	I_f	25	mA
Peak Current Per Dice(duty cycle 1/10,1KHz)	I_{fp}	90	mA
Reverse Voltage Per Dice	V_r	5	V
Operating Temp.	T_{opr}	-35 ~ +85	℃
Storage Temp.	T_{stg}	-35 ~ +85	℃

■ Electro-optical Characteristics -

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Forward Voltage	V_f	-	2	2.8	V	I_f=20mA
Luminous Intensity	I_v	44	91	-	mcd	I_f=20mA
Peak Emission Wavelength	λ_p	-	612	-	nm	I_f=20mA
Dominant Wavelength	λ_d	-	605	-	nm	I_f=20mA
Spectrum Radiation Bandwidth	$\Delta\lambda$	-	20	-	nm	I_f=20mA
Reverse Current	I_r	-	-	100	μA	V_r=5V
Luminous Intensity Matching Ratio	I_v-m	-	-	2:1	-	I_f=10mA

Model No.: CSDV-12031A-01 Amber

■ Electrical / Optical Characteristics Curves -

(Ta = 25℃ Unless Otherwise Noted)

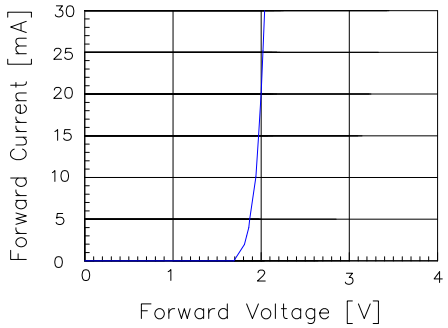


Fig 1. Forward Current vs. Forward Voltage

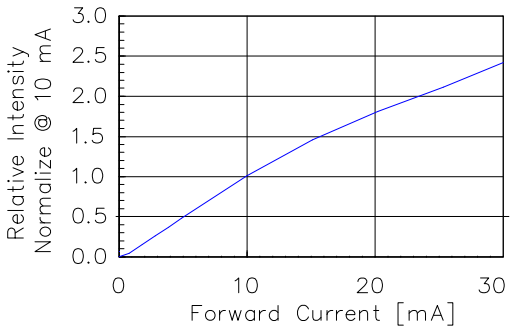


Fig 2. Relative Intensity vs. Forward Current

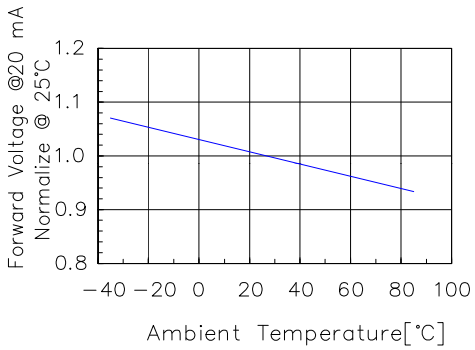


Fig 3. Forward Voltage vs. Temperature

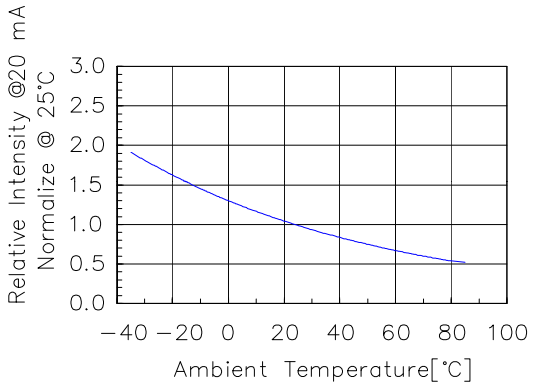


Fig 4. Relative Intensity vs. Temperature

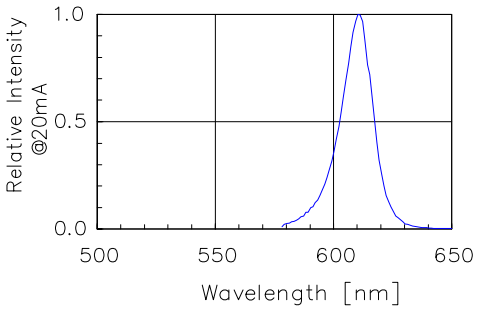


Fig 5. Relative Intensity vs. Wavelength

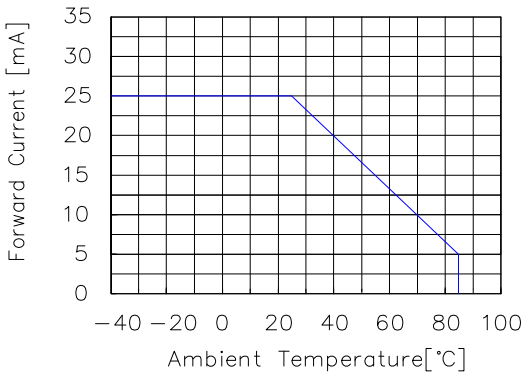


Fig 6. Forward current vs. Temperature

Model No.: CSDV-12031V-01 Orange

■ Absolute Maximum Rating -

(Ta=25℃)

Parameter	Symbol	Rating	Unit
Power Dissipation Per Dice	P_d	70	mW
Derating Liner from 25℃ per Dice	-	0.33	mA/℃
Continuous Forward Current Per Dice	I_f	25	mA
Peak Current Per Dice(duty cycle 1/10,1KHz)	I_{fp}	90	mA
Reverse Voltage Per Dice	V_r	5	V
Operating Temp.	T_{opr}	-35 ~ +85	℃
Storage Temp.	T_{stg}	-35 ~ +85	℃

■ Electro-optical Characteristics -

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Forward Voltage	V_f	-	2	2.8	V	I_f=20mA
Luminous Intensity	I_v	44	91	-	mcd	I_f=20mA
Peak Emission Wavelength	λ_p	-	632	-	nm	I_f=20mA
Dominant Wavelength	λ_d	-	625	-	nm	I_f=20mA
Spectrum Radiation Bandwidth	$\Delta\lambda$	-	20	-	nm	I_f=20mA
Reverse Current	I_r	-	-	100	μA	V_r=5V
Luminous Intensity Matching Ratio	I_v-m	-	-	2:1	-	I_f=10mA

Model No.: CSDV-12031V-01 Orange

■ Electrical / Optical Characteristics Curves -

(Ta = 25℃ Unless Otherwise Noted)

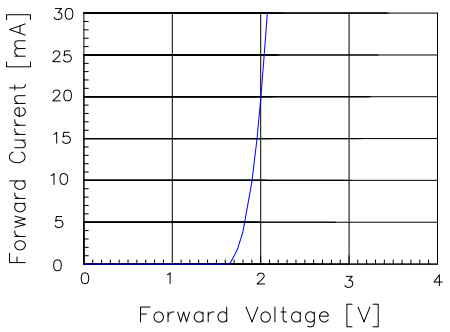


Fig 1. Forward Current vs. Forward Voltage

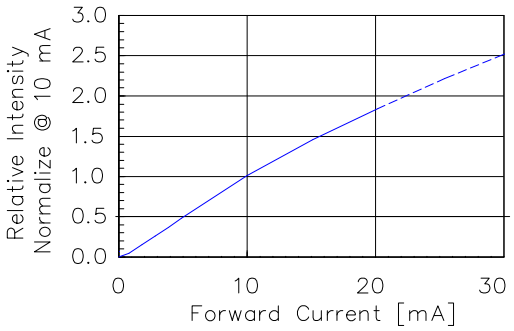


Fig 2. Relative Intensity vs. Forward Current

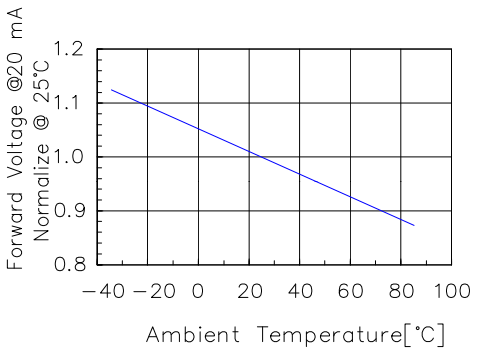


Fig 3. Forward Voltage vs. Temperature

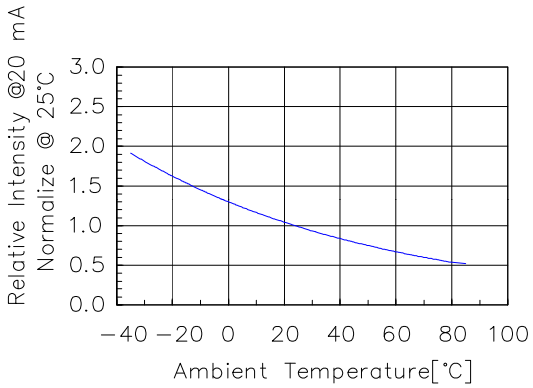


Fig 4. Relative Intensity vs. Temperature

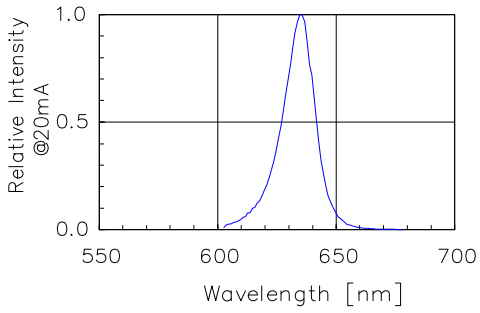


Fig 5. Relative Intensity vs. Wavelength

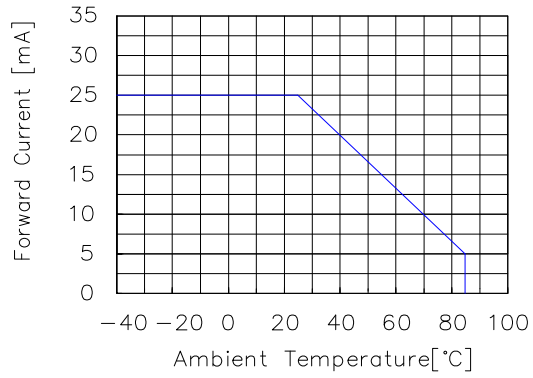


Fig 6. Forward current vs. Temperature

Model No.: CSDV-12031L-01 Red

■ Absolute Maximum Rating -

(Ta=25℃)

Parameter	Symbol	Rating	Unit
Power Dissipation Per Dice	P_d	70	mW
Derating Liner from 25℃ per Dice	-	0.33	mA/℃
Continuous Forward Current Per Dice	I_f	25	mA
Peak Current Per Dice(duty cycle 1/10,1KHz)	I_{fp}	90	mA
Reverse Voltage Per Dice	V_r	5	V
Operating Temp.	T_{opr}	-35 ~ +85	℃
Storage Temp.	T_{stg}	-35 ~ +85	℃

■ Electro-optical Characteristics -

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Forward Voltage	V_f	-	2	2.8	V	I_f=20mA
Luminous Intensity	I_v	17	31	-	mcd	I_f=20mA
Peak Emission Wavelength	λ_p	-	644	-	nm	I_f=20mA
Dominant Wavelength	λ_d	-	630	-	nm	I_f=20mA
Spectrum Radiation Bandwidth	$\Delta\lambda$	-	20	-	nm	I_f=20mA
Reverse Current	I_r	-	-	100	μA	V_r=5V
Luminous Intensity Matching Ratio	I_v-m	-	-	2:1	-	I_f=10mA

Model No.: CSDV-12031L-01 Red

■ Electrical / Optical Characteristics Curves -

(Ta = 25℃ Unless Otherwise Noted)

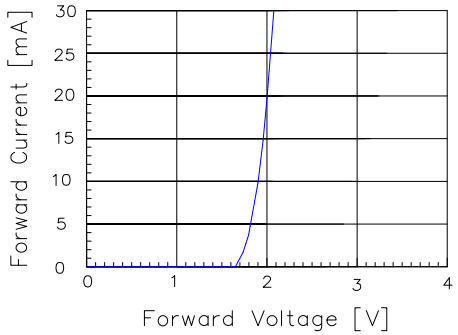


Fig 1. Forward Current vs. Forward Voltage

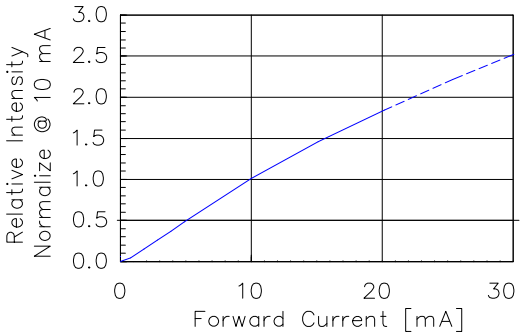


Fig 2. Relative Intensity vs. Forward Current

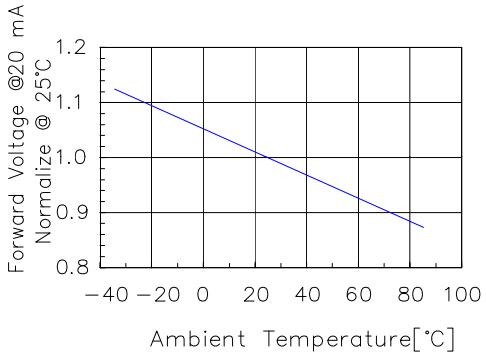


Fig 3. Forward Voltage vs. Temperature

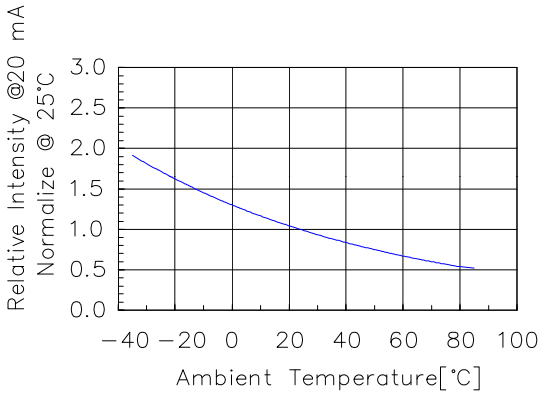


Fig 4. Relative Intensity vs. Temperature

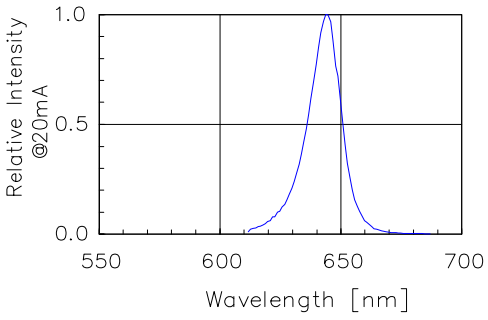


Fig 5. Relative Intensity vs. Wavelength

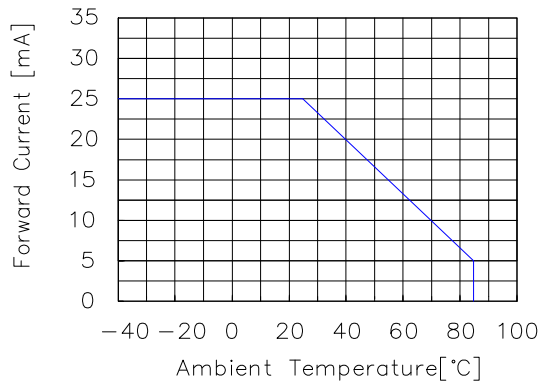


Fig 6. Forward current vs. Temperature

Model No.: CSDV-12031U-01 Deep Red

■ Absolute Maximum Rating -

(Ta=25℃)

Parameter	Symbol	Rating	Unit
Power Dissipation Per Dice	P_d	70	mW
Derating Liner from 25℃ per Dice	-	0.33	mA/℃
Continuous Forward Current Per Dice	I_f	25	mA
Peak Current Per Dice(duty cycle 1/10,1KHz)	I_{fp}	90	mA
Reverse Voltage Per Dice	V_r	5	V
Operating Temp.	T_{opr}	-35 ~ +85	℃
Storage Temp.	T_{stg}	-35 ~ +85	℃

■ Electro-optical Characteristics -

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Forward Voltage	V_f	-	2	2.8	V	I_f=20mA
Luminous Intensity	I_v	17	31	-	mcd	I_f=20mA
Peak Emission Wavelength	λ_p	-	660	-	nm	I_f=20mA
Dominant Wavelength	λ_d	-	645	-	nm	I_f=20mA
Spectrum Radiation Bandwidth	$\Delta\lambda$	-	20	-	nm	I_f=20mA
Reverse Current	I_r	-	-	100	μA	V_r=5V
Luminous Intensity Matching Ratio	I_v-m	-	-	2:1	-	I_f=10mA

Model No.: CSDV-12031U-01 Deep Red

■ Electrical / Optical Characteristics Curves -

(Ta = 25℃ Unless Otherwise Noted)

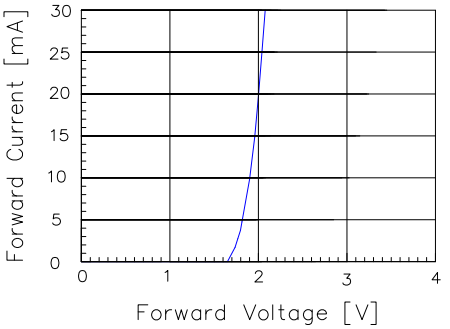


Fig 1. Forward Current vs. Forward Voltage

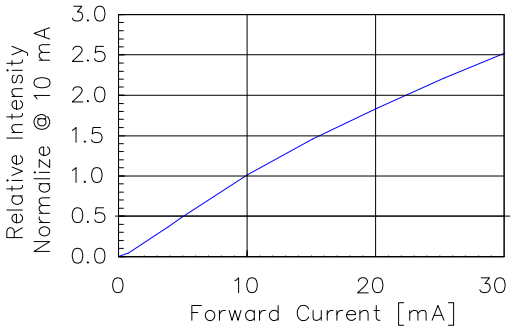


Fig 2. Relative Intensity vs. Forward Current

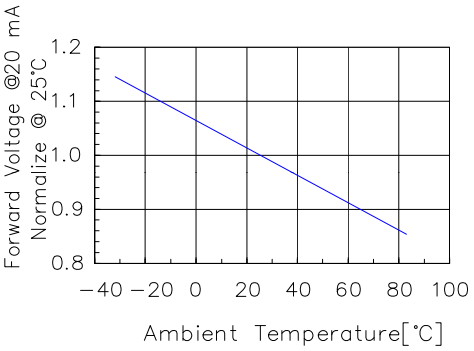


Fig 3. Forward Voltage vs. Temperature

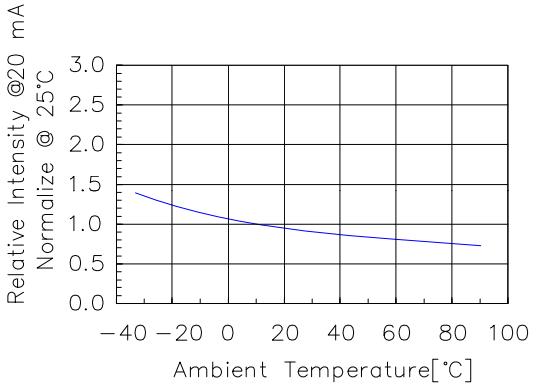


Fig 4. Relative Intensity vs. Temperature

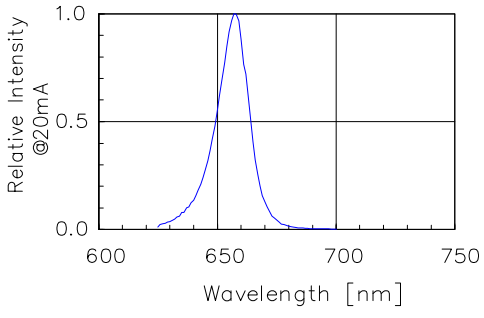


Fig 5. Relative Intensity vs. Wavelength

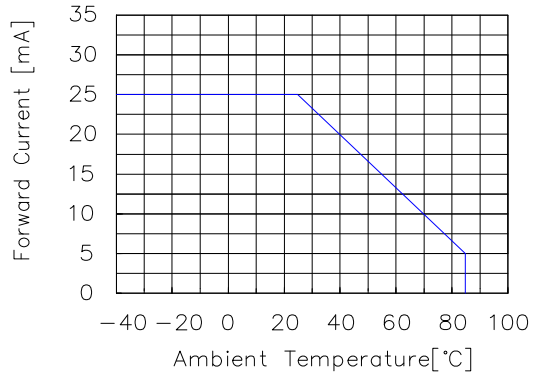


Fig 6. Forward current vs. Temperature