

LED-CCL SPECIFICATIONS

Orange(AlGaInP)

Absolute maximum ratings (TA=25°C)

Parameter	Symbol	Value	Unit
Forward current	If	30	mA
Reverse voltage	Vr	5	V
Power dissipation	Pd	75	mW
Operating temperature	Top	-40 ~+80	°C
Storage temperature	Tstg	-40 ~+85	°C
Peak pulsing current (1/8 duty f=1kHz)	Ifp	125	mA

Electro-optical characteristics (TA=25°C)

Parameter	Test Condition	Symbol	Value			Unit
			Min	Typ	Max	
Wavelength at peak emission	If=20mA	λ p	--	610	--	nm
Spectral half bandwidth	If=20mA	△ λ	--	16	--	nm
Dominant wavelength	If=20mA	λ d	600	--	610	nm
Forward voltage	If=20mA	Vf	1.9	--	2.4	V
Luminous intensity	If=20mA	lv	80	125	--	mcd
Viewing angle at 50% lv	If=10mA	2 θ 1/2	--	120	--	Deg
Reverse current	Vr=5V	Ir	--	--	10	μA

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White (InGaN/GaN)

Absolute Maximum Ratings (TA=25°C)

Parameter	Symbol	Value	Unit
Forward current	If	30	mA
Reverse voltage	Vr	5	V
Power dissipation	Pd	102	mW
Operating temperature	Top	-40 ~+80	°C
Storage temperature	Tstg	-40 ~+85	°C
Peak pulsing current (1/8 duty f=1kHz)	Ifp	125	mA

Electro-Optical Characteristics (TA=25°C)

Parameter	Test Condition	Symbol	Value			Unit
			Min	Typ	Max	
CIE Coordinates	If=5mA	X	--	0.2786	--	--
		Y	--	0.3239	--	--
Forward voltage	If=5mA	Vf	2.5	--	3.4	V
Luminous intensity	If=5mA	lv	144	200	--	mcd
Viewing angle at 50% lv	If=10mA	2 θ 1/2	--	140	--	Deg
Reverse current	Vr=5V	Ir	--	--	10	μA

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Red (AlGaInP)

Absolute maximum ratings (TA=25°C)

Parameter	Symbol	Value	Unit
Forward current	I _f	30	mA
Reverse voltage	V _r	5	V
Power dissipation	P _d	75	mW
Operating temperature	T _{op}	-40 ~+80	°C
Storage temperature	T _{stg}	-40 ~+85	°C
Peak pulsing current (1/8 duty f=1kHz)	I _{fp}	125	mA

Electro-optical characteristics (TA=25°C)

Parameter	Test Condition	Symbol	Value			Unit
			Min	Typ	Max	
Wavelength at peak emission	I _f =20mA	λ _p	--	630	--	nm
Spectral half bandwidth	I _f =20mA	△λ	--	20	--	nm
Dominant wavelength	I _f =20mA	λ _d	620	625	630	nm
Forward voltage	I _f =20mA	V _f	1.7	--	2.5	V
Luminous intensity	I _f =20mA	I _v	80	150	--	mcd
Viewing angle at 50% I _v	I _f =10mA	2θ 1/2	--	120	--	Deg
Reverse current	V _r =5V	I _r	--	--	10	μA

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Green (GaN/GaN)

Absolute maximum ratings (TA=25°C)

Parameter	Symbol	Value	Unit
Forward current	If	30	mA
Reverse voltage	Vr	5	V
Power dissipation	Pd	102	mW
Operating temperature	Top	-40 ~+80	°C
Storage temperature	Tstg	-40 ~+85	°C
Peak pulsing current (1/8 duty f=1kHz)	Ifp	100	mA

Electro-optical characteristics (TA=25°C)

Parameter	Test Condition	Symbol	Value			Unit
			Min	Typ	Max	
Wavelength at peak emission	If=5mA	λ p	--	515	--	nm
Spectral half bandwidth	If=5mA	△ λ	--	30	--	nm
Dominant wavelength	If=5mA	λ d	520	525	--	nm
Forward voltage	If=5mA	Vf	2.8	--	3.7	V
Luminous intensity	If=5mA	Iv	150	200	--	mcd
Viewing angle at 50% Iv	If=10mA	2 θ 1/2	--	120	--	Deg
Reverse current	Vr=5V	Ir	--	--	10	μA

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Blue(InGaN/GaN)

Absolute maximum ratings (TA=25°C)

Parameter	Symbol	Value	Unit
Forward current	If	30	mA
Reverse voltage	Vr	5	V
Power dissipation	Pd	102	mW
Operating temperature	Top	-40 ~+80	°C
Storage temperature	Tstg	-40 ~+85	°C
Peak pulsing current (1/8 duty f=1kHz)	Ifp	100	mA

Electro-optical characteristics (TA=25°C)

Parameter	Test Condition	Symbol	Value			Unit
			Min	Typ	Max	
Wavelength at peak emission	If=20mA	λ p	--	465	--	nm
Spectral half bandwidth	If=20mA	△ λ	--	25	--	nm
Dominant wavelength	If=20mA	λ d	463	466	--	nm
Forward voltage	If=20mA	Vf	2.6	2.8		V
Luminous intensity	If=20mA	Iv	150	180	--	mcd
Viewing angle at 50% Iv	If=10mA	2 θ 1/2	--	120	--	Deg
Reverse current	Vr=5V	Ir	--	--	10	μA

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Yellow (AlGaInP)

Absolute maximum ratings (TA=25°C)

Parameter	Symbol	Value	Unit
Forward current	If	30	mA
Reverse voltage	Vr	5	V
Power dissipation	Pd	75	mW
Operating temperature	Top	-40 ~+80	°C
Storage temperature	Tstg	-40 ~+85	°C
Peak pulsing current (1/8 duty f=1kHz)	Ifp	125	mA

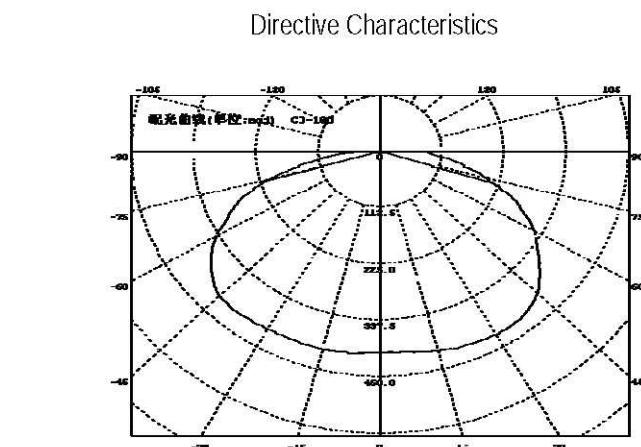
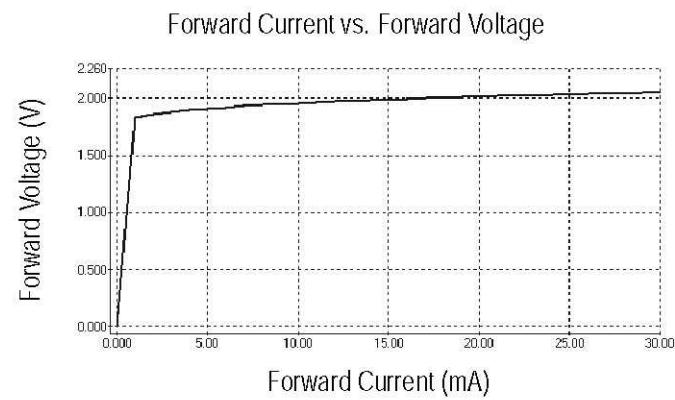
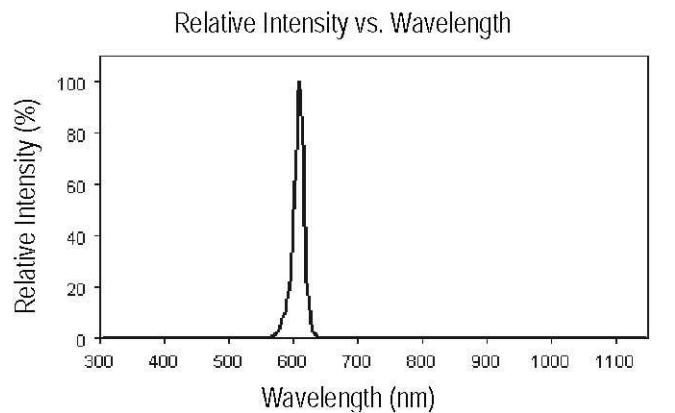
Electro-optical characteristics (TA=25°C)

Parameter	Test Condition	Symbol	Value			Unit
			Min	Typ	Max	
Wavelength at peak emission	If=20mA	λ p	--	593	--	nm
Spectral half bandwidth	If=20mA	△ λ	--	17	--	nm
Dominant wavelength	If=20mA	λ d	584	--	594	nm
Forward voltage	If=20mA	Vf	1.8	--	2.4	V
Luminous intensity	If=20mA	lv	80	125	--	mcd
Viewing angle at 50% lv	If=10mA	2 θ 1/2	--	120	--	Deg
Reverse current	Vr=5V	Ir	--	--	10	μA

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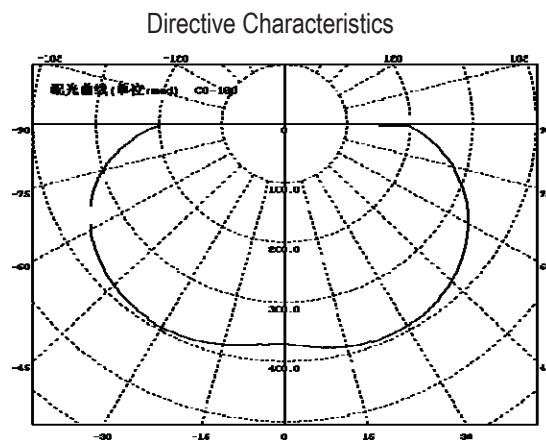
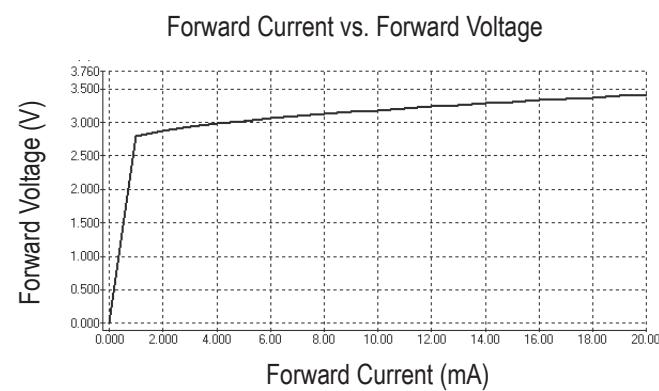
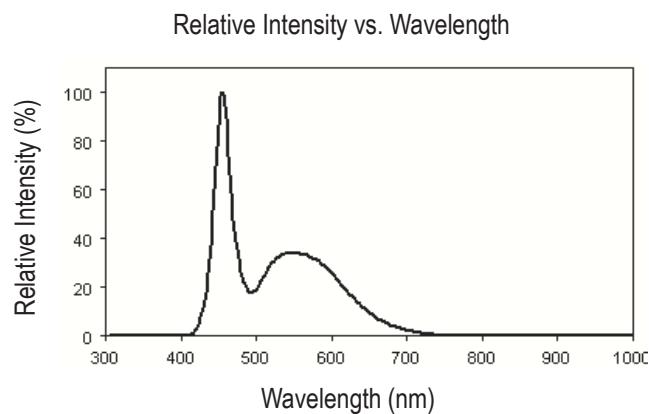
Optical Characteristic Curves(Orange)



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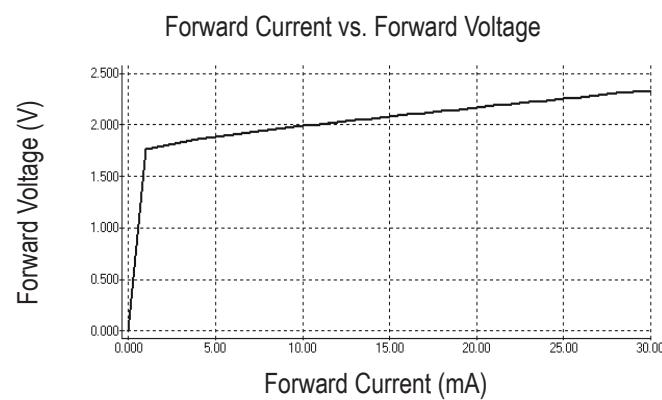
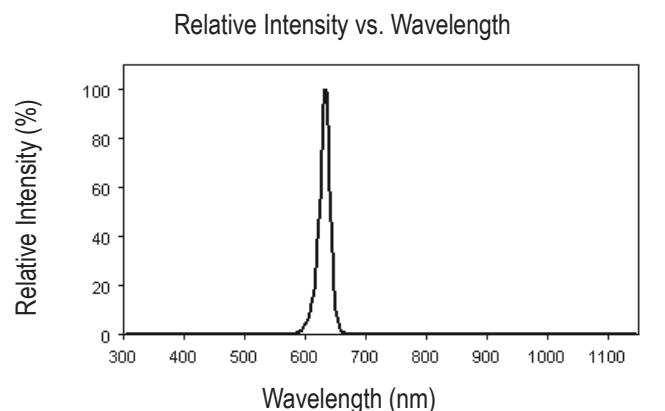
Optical Characteristic Curves(White)



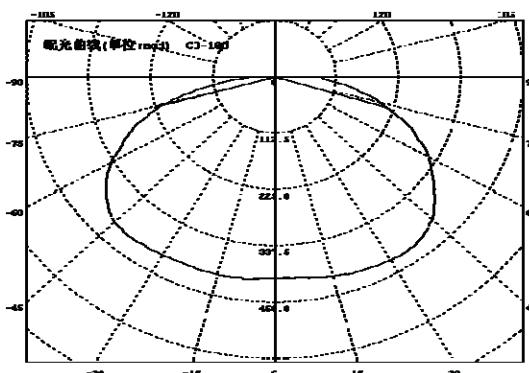
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Optical characteristic curves (Red)



Directive Characteristics

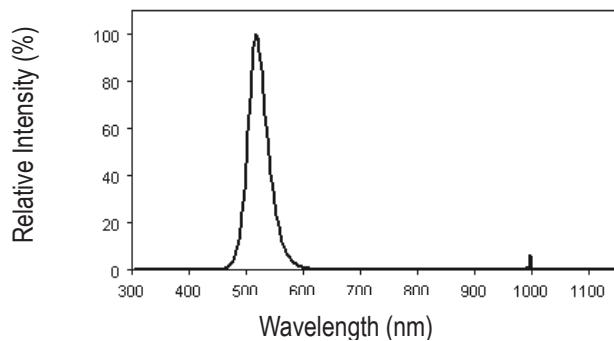


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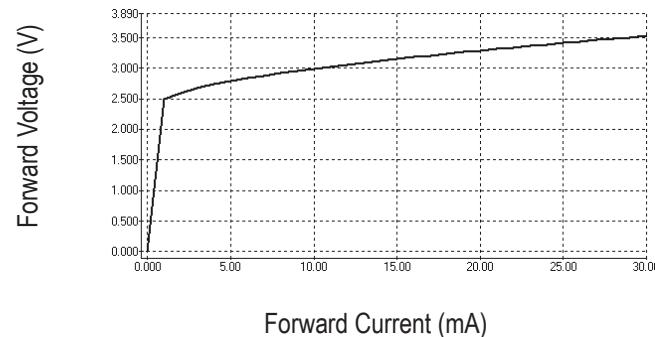
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Optical characteristic curves(Green)

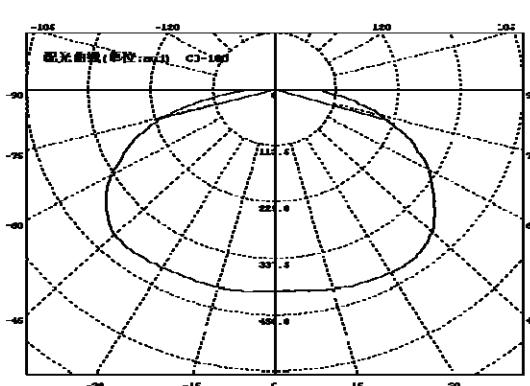
Relative Intensity vs. Wavelength



Forward Current vs. Forward Voltage



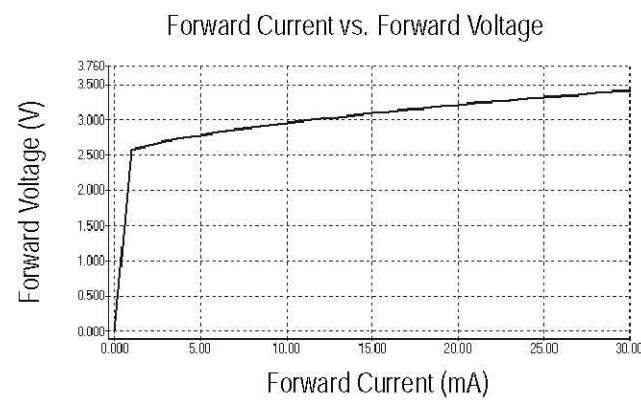
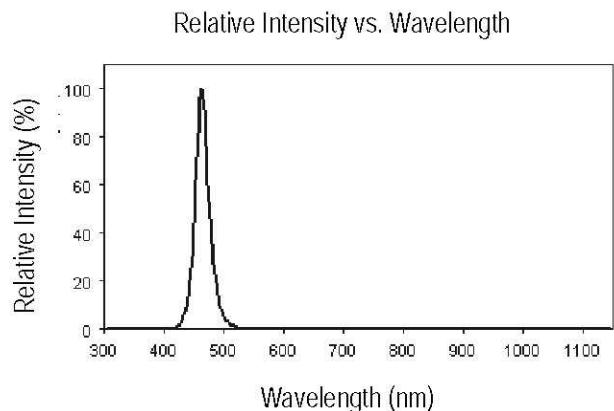
Directive Characteristics



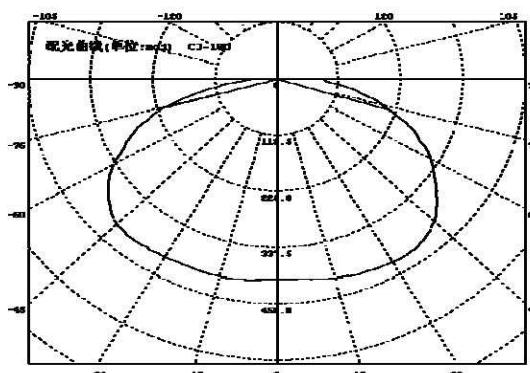
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Optical characteristic curves(Blue)



Directive Characteristics

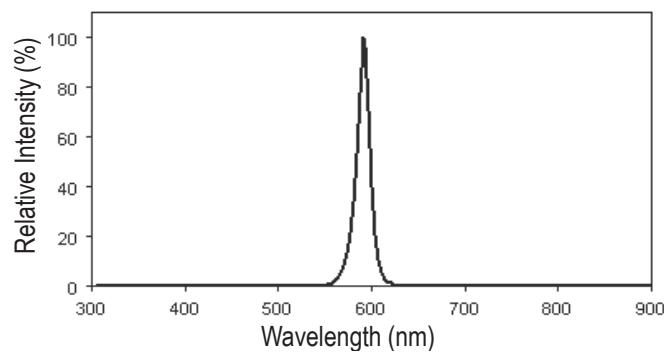


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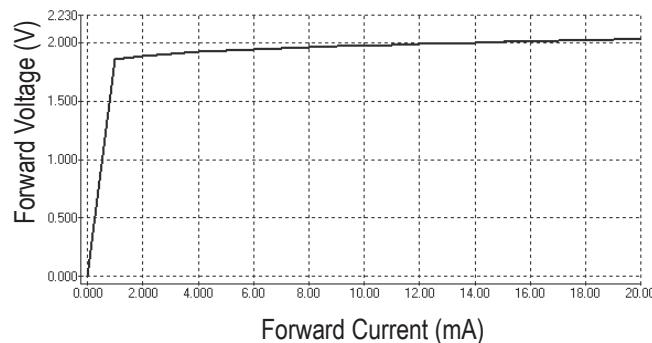
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Optical characteristic curves (Yellow)

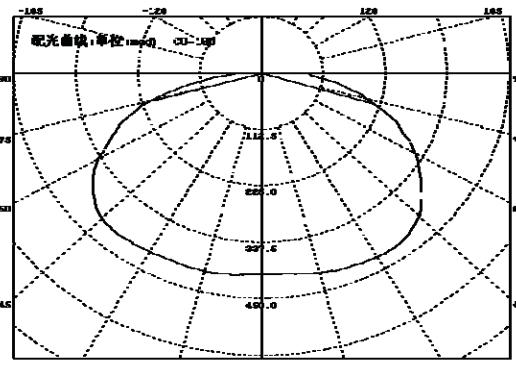
Relative Intensity vs. Wavelength



Forward Current vs. Forward Voltage



Directive Characteristics

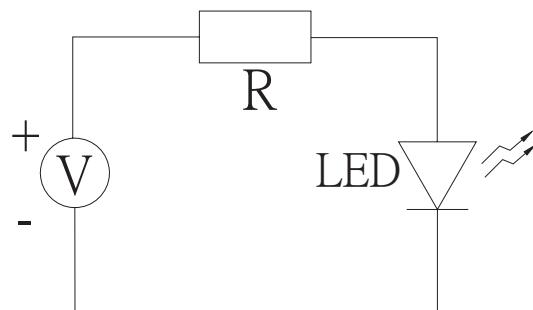


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Test circuit and handling precautions

■ Test circuit



■ Handling precautions

1. Over-current-proof

Customer must apply resistors for protection; otherwise slight voltage shift will cause big current change (Burn out will happen).

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Test items and results of reliability

Type	Test Item	Test Conditions	Note	Number of Damaged
Environmental Sequence	Temperature Cycle	-20°C 30min ↑ ↓ 80°C 30min	100 cycle	0/22
	Thermal Shock	-20°C 15min ↑ ↓ 80°C 15min	100 cycle	0/22
	High Humidity Heat Cycle	30°C ⇌ 65°C 90%RH 24hrs/1cycle	10 cycle	0/22
	High Temperature Storage	Ta=80°C	1000 hrs	0/22
	Humidity Heat Storage	Ta=60°C RH=90%	1000 hrs	0/22
	Low Temperature Storage	Ta=-30°C	1000 hrs	0/22
Operation Sequence	Life Test	Ta=25°C IF=20mA	1000 hrs	0/22
	High Humidity Heat Life Test	60°C RH=90% IF=10mA	500 hrs	0/22
	Low Temperature Life Test	Ta=-20°C IF=20mA	1000 hrs	0/22

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