



**APEX OPTO
CORP**

HIGH POWER LIGHT AOL-EX5AA0-XXX 5W Line Series



Features

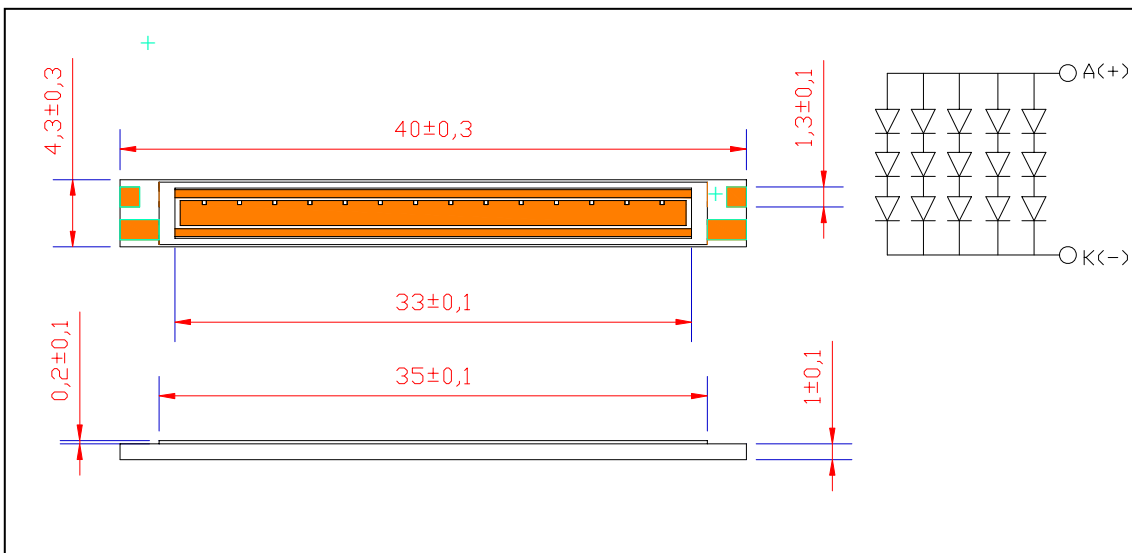
- Linear type
- More energy efficient than incandescent, most halogen lamps, and fluorescent lamp.
- Low power consumption
- Instant light
- Long operating life

Typical Applications

- General lighting
- Contour lights
- Ceiling lights
- Decoration lights
- Architectural lighting

Package Outlines

Circuit diagram



Notes:

1. All dimensions are in mm.
2. Drawings are not to scale.
3. It is strongly recommended that the temperature of lead be not higher than 55°C .

Absolute Maximum Ratings

Parameter	Symbol	Rating	Units/Color
DC Forward Current	I _F	500mA	W、WW、B、T
		600mA	R、A
Arc Voltage	V _{FC}	20	V
LED junction Temperature	T _j	125	°C
Operating Temperature	T _{opr}	-30 ~ +110	°C
Storage Temperature	T _{stg}	-40 ~ +120	°C
ESD Sensitivity	V _B	500	V
Manual Soldering Time at 260°C (Max.)	T _{sol}	5	seconds

Luminous Flux Characteristics (T_i=25°C):

Part Name	Color	Test Current	Min.	Flux Typ.	Max.	Units
AOL-EW5AA0-B00	White	500mA	151.5	220	--	lm
AOL-EX5AA0-D00	Warm White	500mA	89.5	160	--	lm
AOL-ER5AA0-A00	Red	600mA	50	80	--	lm
AOL-EA5AA0-A00	Amber	600mA	50	80	--	lm
AOL-ET5AA0-A00	True Green	500mA	140	180	--	lm
AOL-EB5AA0-A00	Blue	500mA	30	60	--	lm

Forward Voltage Characteristics (T_i=25°C):

Part Name	Color	Test Current	V _F			Units
			Min.	Typ.	Max.	
AOL-EW5AA0-B00	White	500mA	9.3	--	12.0	V
AOL-EX5AA0-D00	Warm White	500mA	9.3	--	12.0	V
AOL-ER5AA0-A00	Red	600mA	6.0	--	9.0	V
AOL-EA5AA0-A00	Amber	600mA	6.0	--	9.0	V
AOL-ET5AA0-A00	True Green	500mA	9.3	--	12.0	V
AOL-EB5AA0-A00	Blue	500mA	9.3	--	12.0	V

Dominant Wavelength or Color Temperature Characteristics (Tj=25°C):

Part Name	Color	Test Current	$\lambda_d/\lambda_p/CCT$			Units
			Min.	Typ.	Max.	
AOL-EW5AA0-B00	White	500mA	4,500	--	10,000	K
AOL-EX5AA0-D00	Warm White	500mA	2,800	--	3,800	K
AOL-ER5AA0-A00	Red	600mA	620	--	630	nm
AOL-EA5AA0-A00	Amber	600mA	585	--	595	nm
AOL-ET5AA0-A00	True Green	500mA	515	--	535	nm
AOL-EB5AA0-A00	Blue	500mA	460	--	475	nm

Temperature Coefficient of Forward Voltage & Thermal Resistance Junction to Case Characteristics (Ti=25°C) :

Part Name	Color	Test Current	$\Delta V_f/\Delta T$		$R\theta_{J-B}$	
			Typ.	Units	Typ.	Units
AOL-EW5AA0-B00	White	500mA	-2	mV/°C	5	°C/W
AOL-EX5AA0-D00	Warm White	500mA	-2	mV/°C	5	°C/W
AOL-ER5AA0-A00	Red	600mA	-2	mV/°C	5	°C/W
AOL-EA5AA0-A00	Amber	600mA	-2	mV/°C	5	°C/W
AOL-ET5AA0-A00	True Green	500mA	-2	mV/°C	5	°C/W
AOL-EB5AA0-A00	Blue	500mA	-2	mV/°C	5	°C/W

Emission Angle Characteristics (Ti=25°C):

Part Name	Color	Test Current	$2\theta_{1/2}(Typ.)$		Units
			X direction	Y direction	
AOL-EW5AA0-B00	White	500mA	120	130	Degrees
AOL-EX5AA0-D00	Warm White	500mA	120	130	Degrees
AOL-ER5AA0-A00	Red	600mA	120	130	Degrees
AOL-EA5AA0-A00	Amber	600mA	120	130	Degrees
AOL-ET5AA0-A00	True Green	500mA	120	130	Degrees
AOL-EB5AA0-A00	Blue	500mA	120	130	Degrees

Note

1. Flux is measured with an accuracy of $\pm 10\%$.
2. CCT selection acc. to CCT groups and an accuracy of $\pm 300K$
3. Forward Voltage is measured with an accuracy of $\pm 0.1V$
4. Wavelength is measured with an accuracy of $\pm 0.5nm$
5. White、warm white、True green and blue emitters are built with InGaN
6. Red and amber emitters are built with AlGaInP

Operating life, mechanical, and environmental tests performed on Line Series package:

Stress Test	Stress Conditions	Stress Duration	Failure Criteria
Room Temperature Operating Life	25°C, I _F = max DC (Note 1)	1000 hours	Note 2
High Temperature High Humidity	85°C / 85%RH	1000 hours	Note 2
Thermal Shock	-40 / 120°C, 20 min dwell / < 20 sec transfer	200 cycles	No catastrophics
Mechanical Test	3kg push		No catastrophics

Note

1. Depending on the maximum derating curve.
2. Failure Criteria:

Electrical failures

V_F shift >=10%

I_R<50uA @V_r=5V

Light Output Degradation

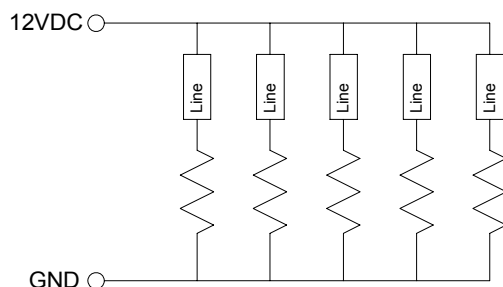
% I_v shift >= 30% @1,000hrs or 200cycle

Visual failures

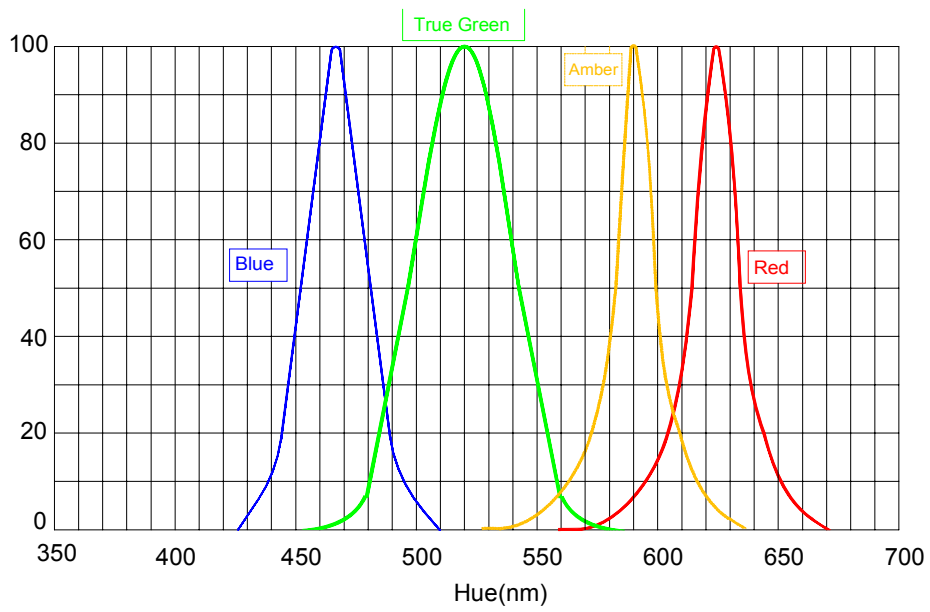
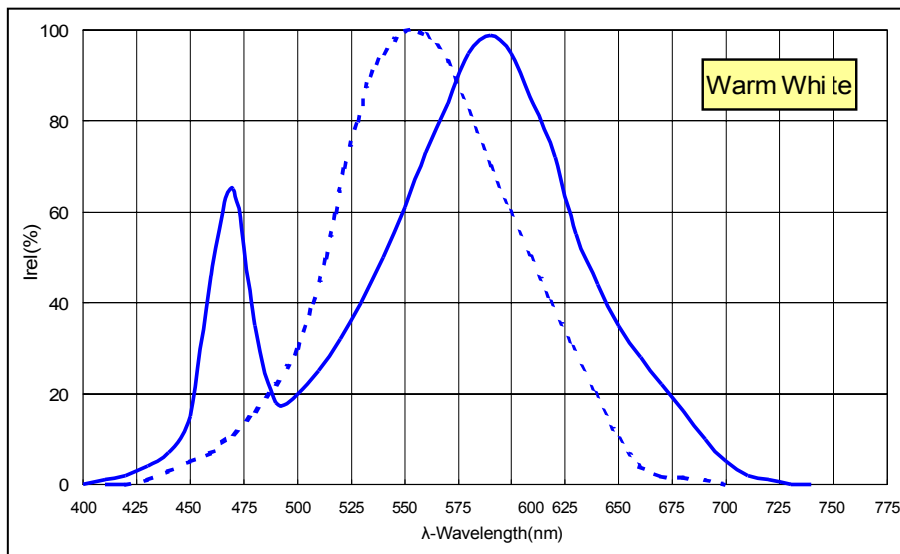
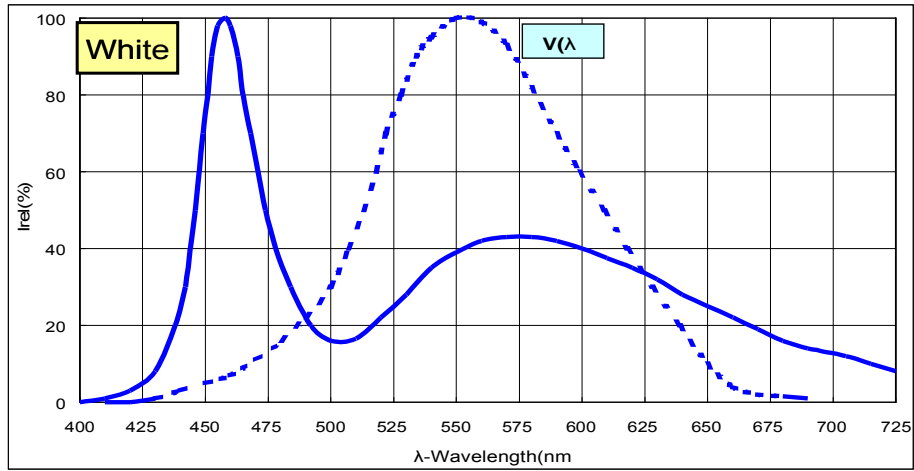
Broken or damaged package or ALPCB

Dimension out of tolerance

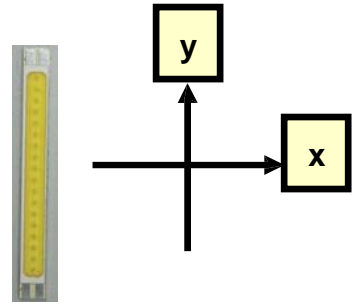
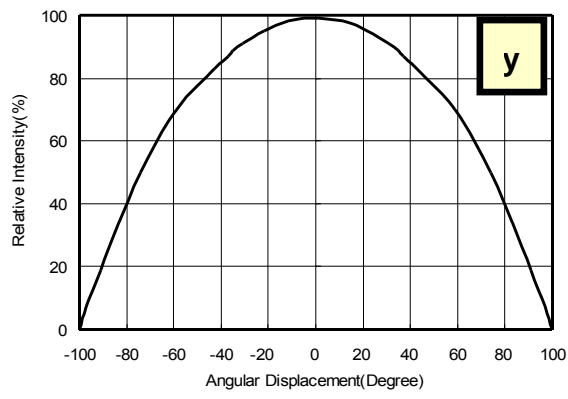
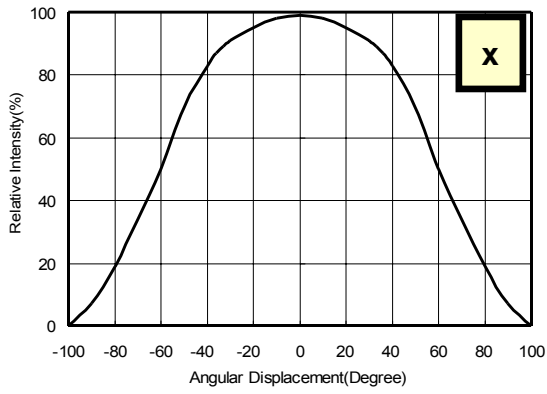
Burn-in Condition LINE Series Reliability



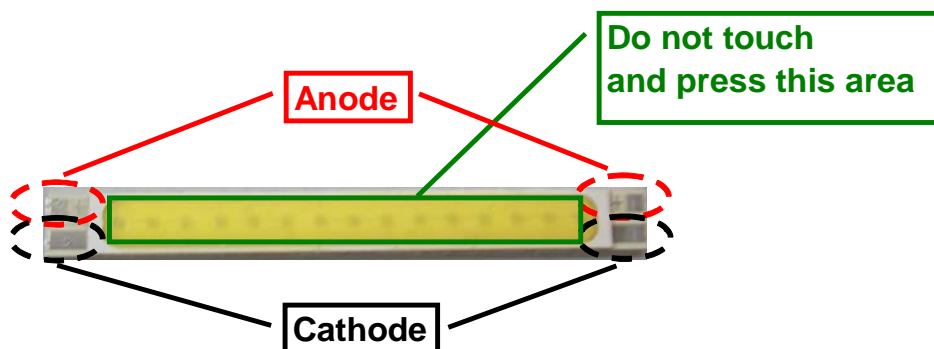
Optical Curves-Spectrum



Typical Radiation Pattern



Attentions



Driver

Input Constant Current = 0.5 or 0.6A

Input Voltage (min) = 12V

Assembly Steps:

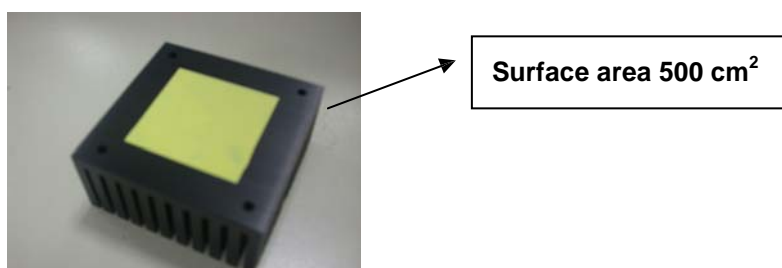
1. Spread thermal grease on heat sink or LED bottom uniformly.
2. Put LED on heat sink and press it lightly.
3. The heat sink should be anodized.
4. Wire up LED and connect to driver.
5. Use constant current driver.
6. Light it up.

Thermal grease:

GE TSE3282-G or thermal conductivity is greater than 2 w/mk.

The depth of thermal grease between LED and heat sink should be less than 200 μm

Surface area of heat sink:



It is strongly recommended that the temperature of lead be not higher than 55°C.