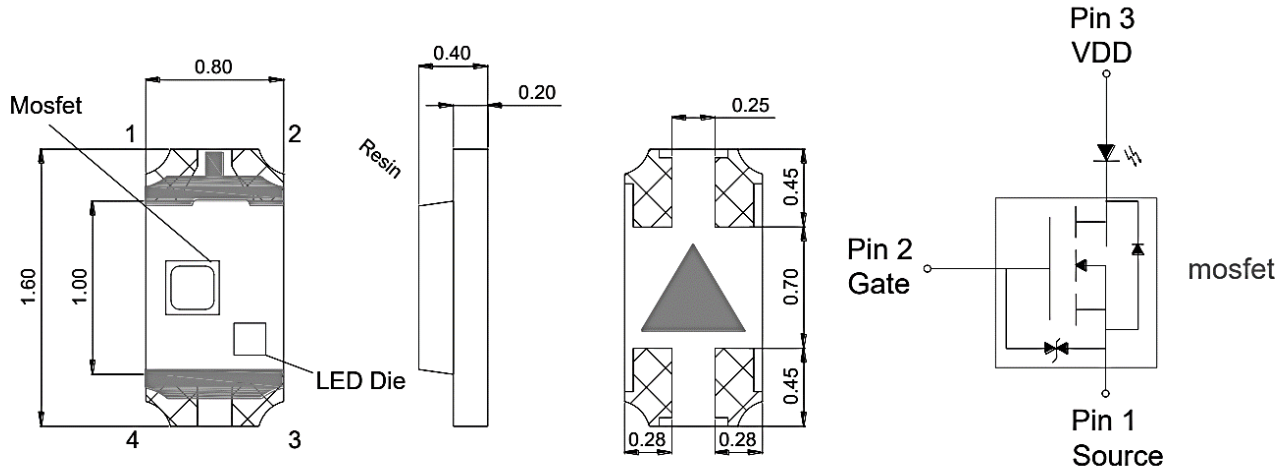
American Opto Plus LED Corp.
L196L-QBC-MSF
1.6 x 0.8 x 0.4 mm Blue SMD LED with built in MOSFET (0603 Package)

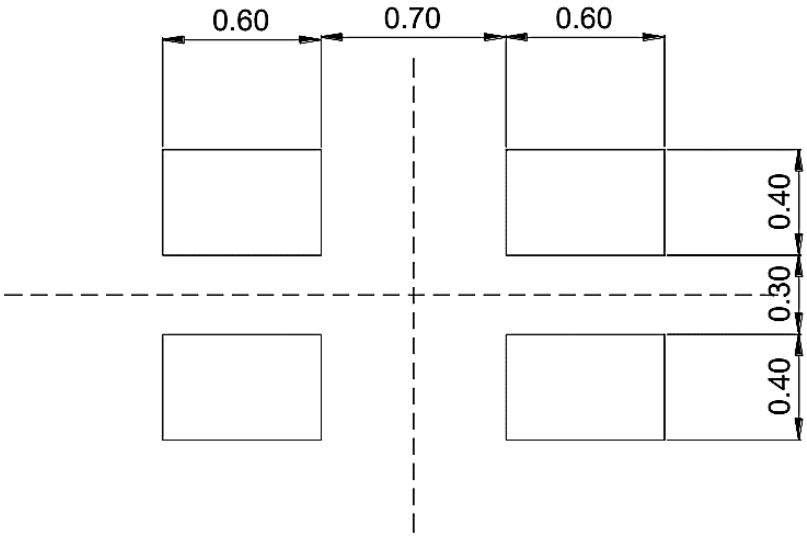
PACKAGE OUTLINES



Notes:

1. All dimensions are in millimeters tolerance is ±0.1mm unless otherwise noted.
2. Specifications are subject to change without notice.

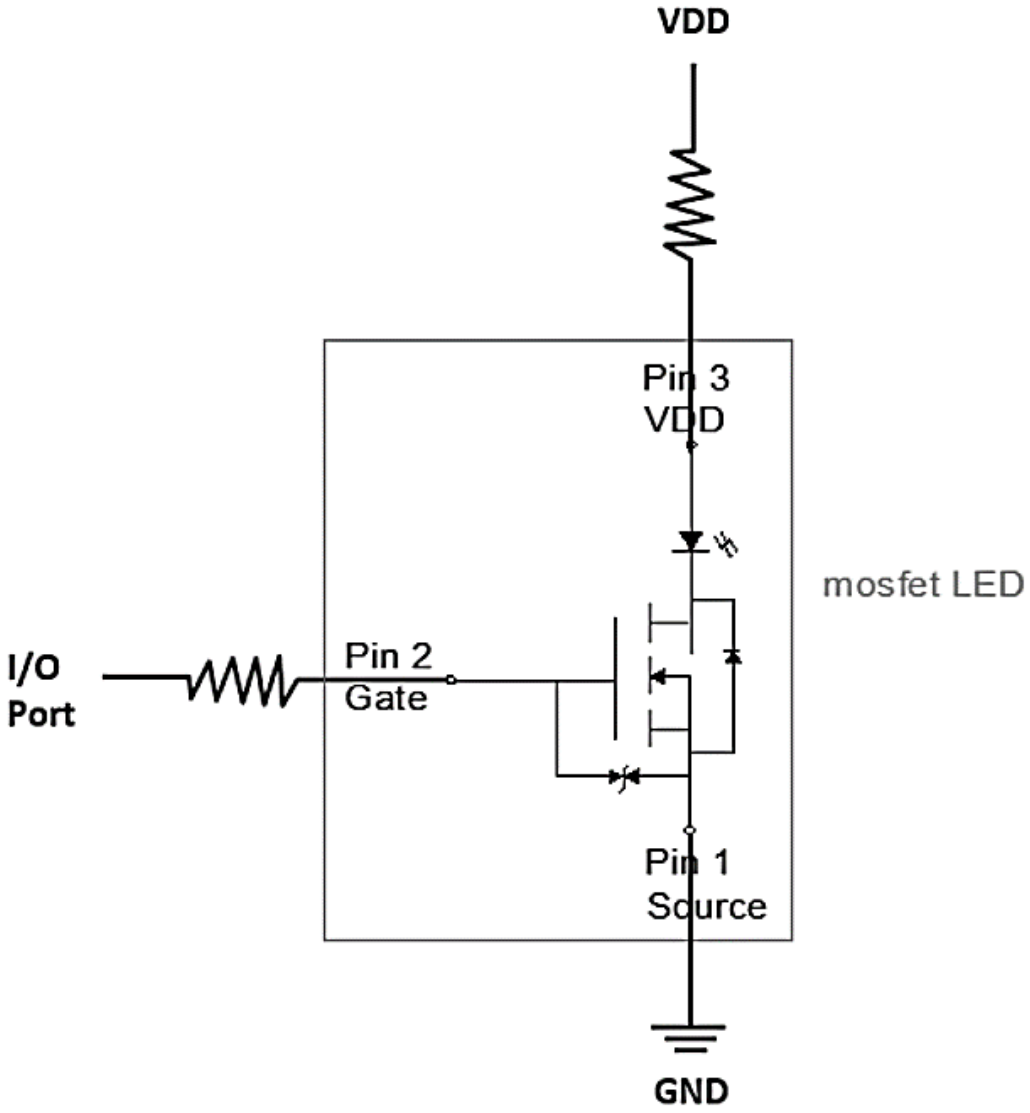
RECOMMENDED SOLDERING PAD DIMENSIONS



Notes:

1. The tolerances unless mentioned is ±0.1mm, Angle ±0.5. Unit=mm.

APPLICATION CIRCUIT



ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

Parameter		Symbol	Rating	Unit
Mosfet	Drain-Source Voltage	BVdss	20	V
	Gate-Source Voltage	Vgs	±8	V
LED	Power Dissipation	PD	70	mW
	Peak Forward Current (Duty 1/10@10K Hz)	IFP	100	mA
	Forward Current	IF	20	mA
Operating Temperature		Topr	-40 ~ +85	°C
Storage Temperature		Tstg	-40 ~ +100	°C

OPTICAL-ELECTRICAL CHARACTERISTICS (Ta=25°C)

Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit
Mosfet	Drain-Source Breakdown Voltage	BVdss	VGS= 0V, ID= 250uA	20	--	--	V
	Gate Threshold Voltage	Vgs(th)	VDS= VGS, ID= 250uA	0.3	--	1	V
	Drain-Source On-State Resistance	RDS(on)	VGS= 4.5V, ID= 0.5A	--	0.2	0.3	Ω
			VGS= 2.5V, ID= 0.4A	--	0.25	0.4	Ω
			VGS= 1.8V, ID= 0.2A	--	0.3	0.55	Ω
			VGS= 1.5V, ID= 0.1A	--	0.37	0.8	Ω
	Zero Gate Voltage Drain Current	IDSS	VDS= 20V, VGS= 0V	--	--	1	uA
	Gate-Source Leakage Current	IGSS	VGS= +8V, VDS= 0V	--	--	±90	uA
LED	Luminous Intensity	Iv	IF=20mA	50	90	--	mcd
	Dominant Wavelength	λd		--	470	--	nm
	Forward Voltage	Vf		2.7	--	3.5	V
	Spectral Line Half-Width	Δλ		--	36	--	nm
	Viewing Angle	2θ1/2		--	130	--	deg

LUMINOUS INTENSITY CLASSIFICATION

Bin Code	Iv(mcd) at 20mA	
	Min.	Max.
P	50	80
Q	80	125
R	125	200

DOMINANT WAVELENGTH CLASSIFICATION

Bin Code	λD(nm) at 20mA	
	Min.	Max.
0E	462	465
0D	465	468
0C	468	471
0B	471	474

FORWARD VOLTAGE CLASSIFICATION

VF (v) at 20mA	
Min	Max
2.7	2.8
2.8	2.9
2.9	3
3	3.1
3.1	3.2
3.2	3.3
3.3	3.4
3.4	3.5

OPTICAL CHARACTERISTIC CURVES

Fig.1 Forward current vs. Forward Voltage

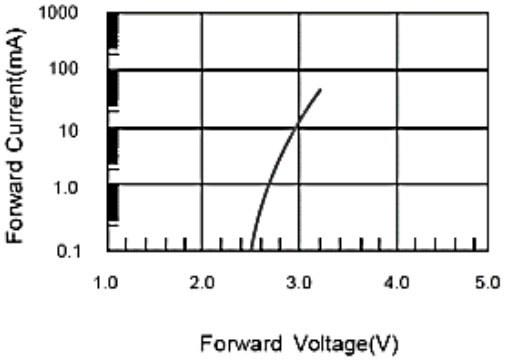


Fig.2 Relative Intensity vs. Forward Current

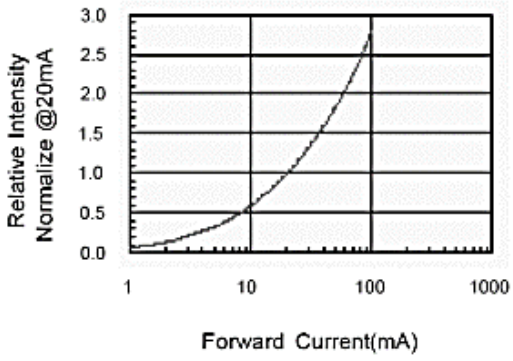


Fig.3 Forward Current vs. Temperature

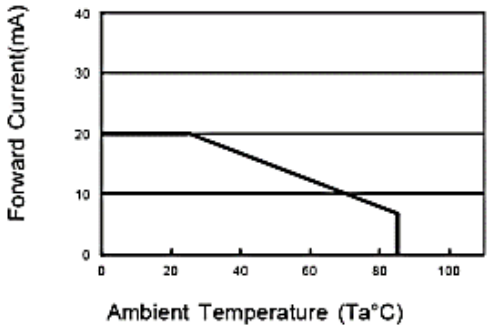


Fig.4 Relative Intensity vs. Temperature

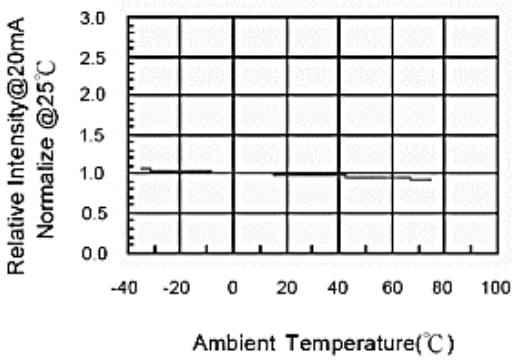


Fig.5 Relative Intensity vs. Wavelength

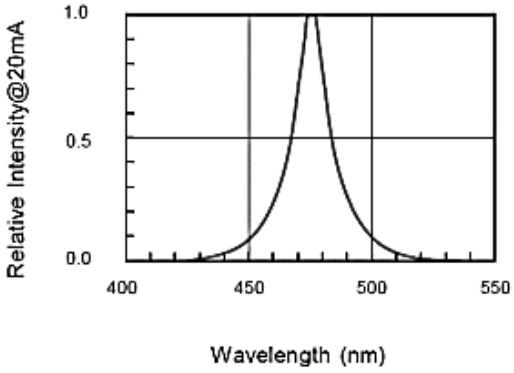
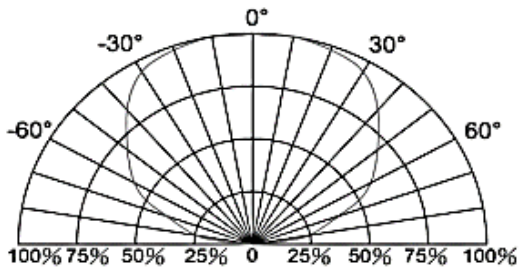
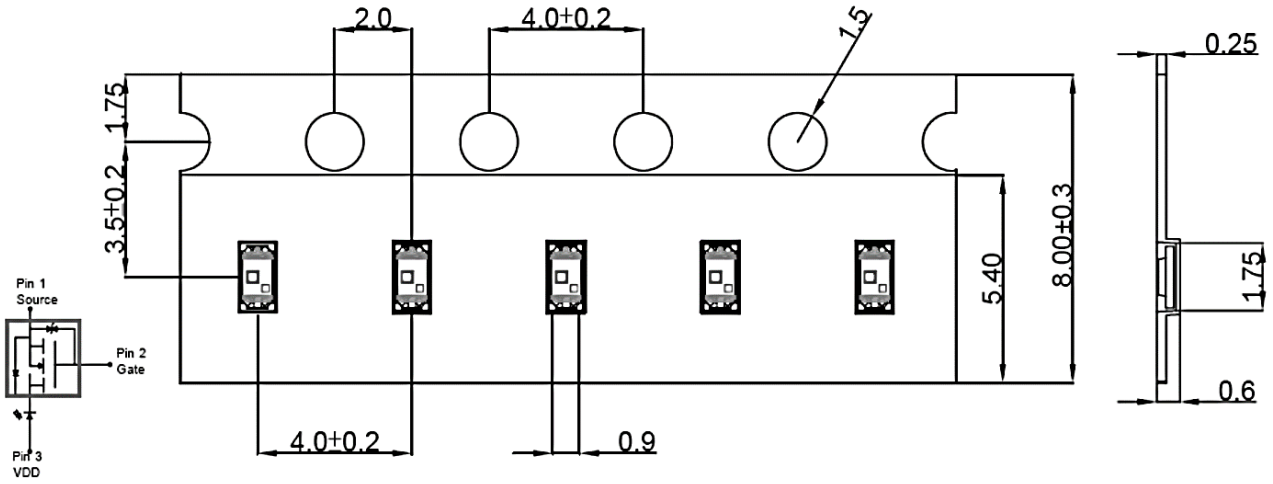


Fig.6 Directive Radiation



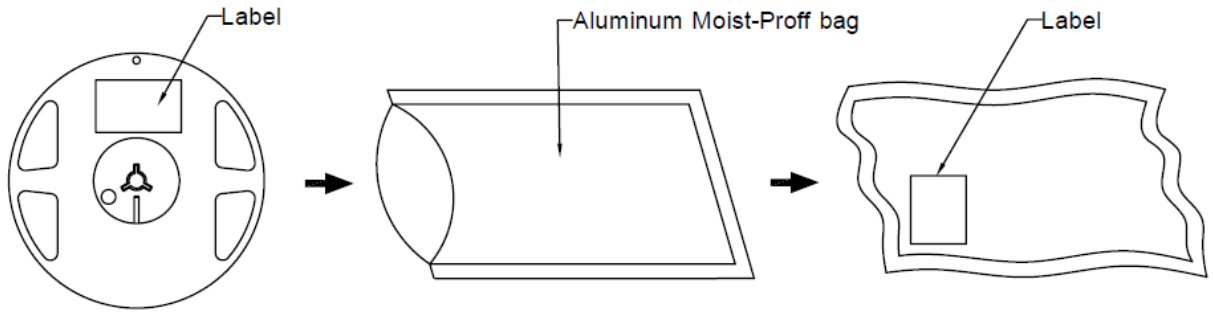
CARRIER TAPE DIMENSIONS



Note:

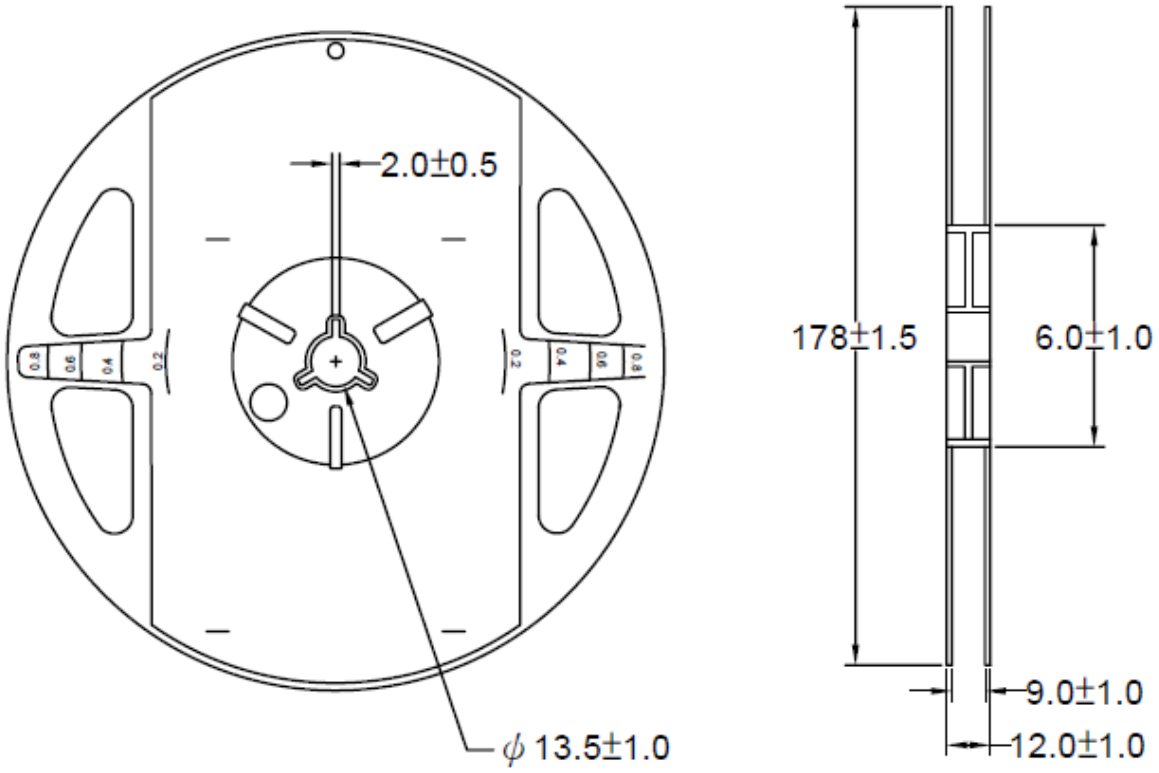
1. The tolerances unless mentioned is ±0.1mm, Angle ±0.5. Unit = mm.

PACKAGING SPECIFICATION

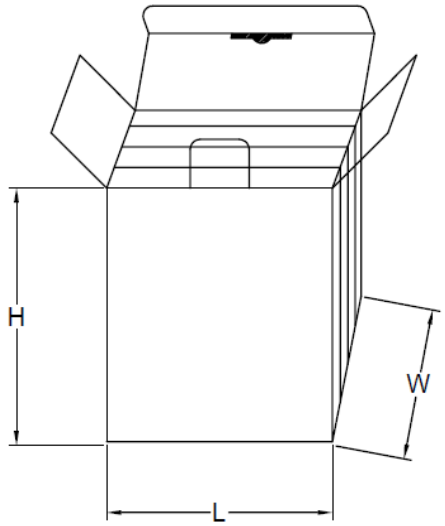


Description	Quantity/Reel
8.0mm tape, 7'' reel	4000 devices

REEL DIMENSIONS

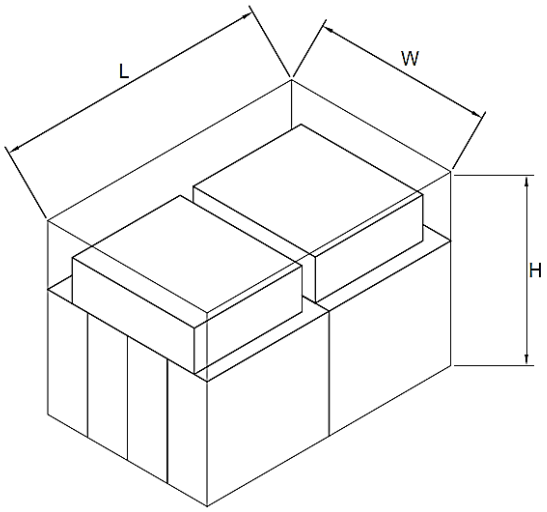


BOX EXPLANATION



Notes:

1. 5 Bag/Inner Box
2. Inner Box Size: L x W x H 23cm x 8.5cm x 26cm



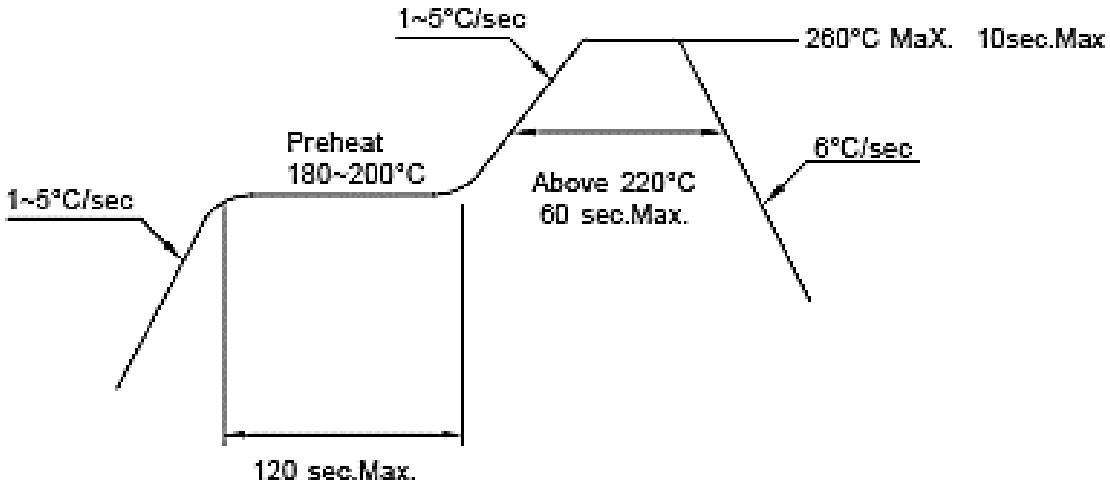
Notes:

1. 10 Inner Boxes/Carton
2. Carton Size: L x W x H 58cm x 34cm x 35cm

RECOMMENDED SOLDERING CONDITIONS

1. Hand Solder
   Basic spec is ≤ 280°C 3 sec one time only.

2. PB-Free Reflow Solder



Notes:
1. Reflow soldering should not be done more than two times.
2. When soldering, do not put stress on the LEDs during heating.
3. After soldering, do not warp the circuit board.

PRECAUTIONS FOR USE:

Storage time:

1. Calculated shelf life before opening is 18 months at < 30°C and < 90% relative humidity (RH).
2. After bag is opened, devices which will be subjected to reflow soldering or other high temperature processes must be
   a) Assembled within one year in an environment of ≦ 30°C / 60% RH, or
   b) Stored at ambient of 10% RH or less
3. Devices are required baking before assembly if:
   a) Humidity Indicator Card reads >10% (for level 2a -5a) or >60% (for level 2) at ambient temperature 23±5°C
   b) 2.a) or 2.b) doesn't meet
4. If baking is required, devices should be baked for >24 hours at 60±5°C. Performing baking only once, and using the baked devices within 72 hours.

Drive method:

LED is a current operated device, and therefore, require some kind of current limiting incorporated into the driver circuit. This current limiting typically takes the form of a current limiting resistor placed in series with the LED.

Consider worst case voltage variations than could occur across the current limiting resistor. The forward current should not be allowed to change by more than 40% of its desired value.

Cleaning:

Use alcohol-based cleaning solvents such as isopropyl alcohol to clean the LED.

ESD (Electrostatic Discharge):

Static Electricity or power surge will damage the LED. Use of a conductive wrist band or anti-electrostatic glove is recommended when handing these LED. All devices, equipment and machinery must be properly grounded