3W High Power 3535 Full Color LED
Technical Data Sheet

Part No.: DL-PCB3535RGBC

◆ Features:

1. Very long operating life (up to100k hours).
2. Three chips (color) in one package.
3. Independent control of each color.
4. More energy efficient than incandescent and most halogen lamps.
5. Low voltage operated.
6. Instant light.
7. Long operating life.
8. IR reflow process compatible.
9. The product itself will remain within RoHS compliant Version.

◆ Descriptions:

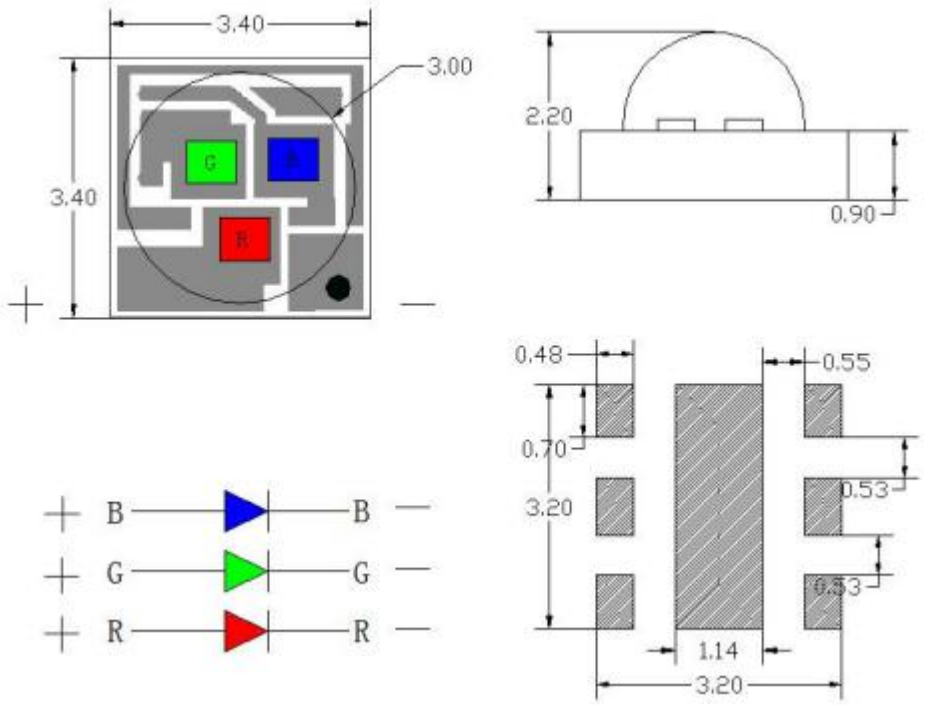
1. DL-PCB3535RGBC is one of the highest flux LEDs in the world. It is designed to satisfy applications of Solid-State lighting. It is designed to have three chips in one package. It has various colors for choice and can be independently controlled. More important, it can be pass reflow process.

◆ Applications:

1.Up-lighters and Down-lighters.

2. Contour lights.
3. Ceiling lights.
4. Garden lighting.
5. Architectural lighting.
6. Beacon lights.

◆ Mechanical Dimensions:



Part No.	Chip Material		Source Color
DL-PCB3535RGBC	R	AlGaInP	Ultra Red
	G	InGaN	Pure Green
	B	InGaN	Blue

Notes:

1. All dimensions are in millimeters.
2. Tolerance is ± 0.25 mm (.010”) unless otherwise noted.

◆ Absolute Maximum Ratings at Ta=25℃

Parameters	Symbol	Rating	Units
Forward Current	*IF*	350	mA
Peak Pulse Current (tp≤100μs, Duty cycle=0.25)	*I pulse*	1000	mA
Reverse Voltage	*VR*	5	V
LED Junction Temperature	*Tj*	135	℃
Operating Temperature Range	*Topr*	-40 to +80	℃
Storage Temperature Range	*Tstg*	-40 to +100	℃
Soldering Time at 260 ℃ (Max.)	*Tsol*	5	Seconds

Notes:

1. Proper current derating must be observed to maintain junction temperature below the maximum.
2. LEDs are not designed to be driven in reserve bias.

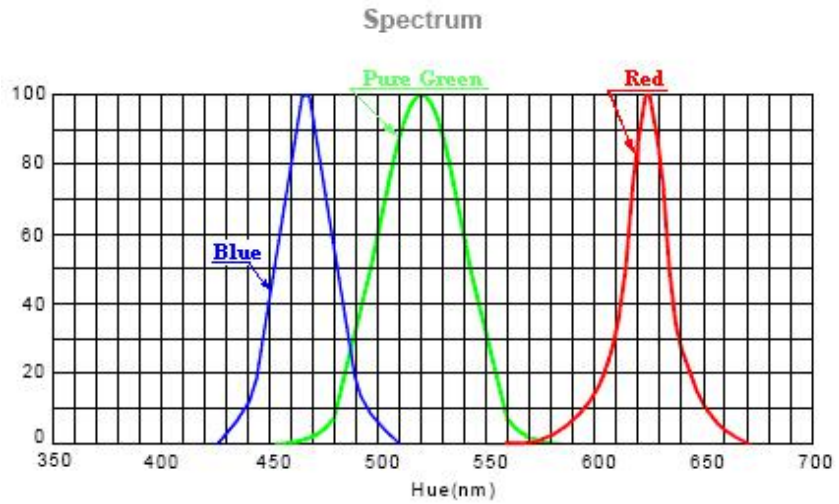
◆ Electrical Optical Characteristics at Ta=25℃

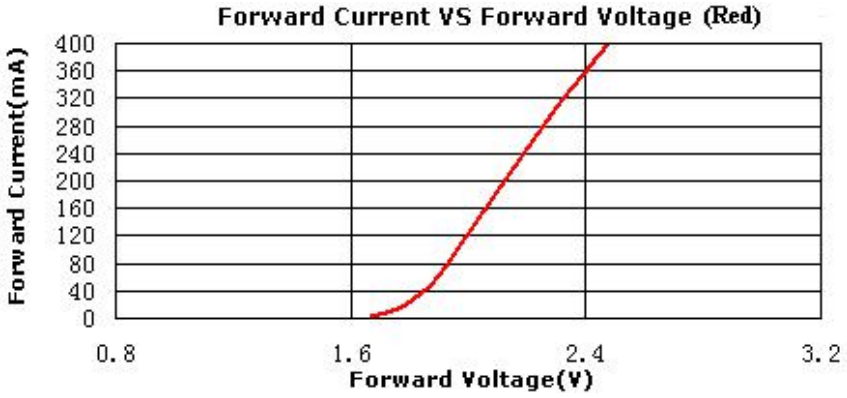
Parameters	Symbol	Emitting Color	Min.	Typ.	Max.	Unit	Test Condition
Viewing Angle	$2\vartheta_{1/2}$	Full color	---	120	---	Deg	IF=350mA
Forward Voltage	V_F	Red	2.0	2.2	3.0	V	I_F=350mA
		Green	2.8	3.2	4.0		
		Blue	2.8	3.5	4.0		
Peak Emission Wavelength	λp	Red	---	625	---	nm	Measurement @Peak
		Green	---	520	---		
		Blue	---	465	---		
Dominant Wavelength	λd	Red	620	626	630	nm	
		Green	525	528	530		
		Blue	460	464	470		
Spectral Line Half-Width	△λ	Red	---	18	---	nm	I_F=350mA
		Green	---	36	---		
		Blue	---	20	---		
Luminous Flux	Φv	Red	40	---	60	lm	I_F=350mA
		Green	80	---	100		
		Blue	20	---	30		

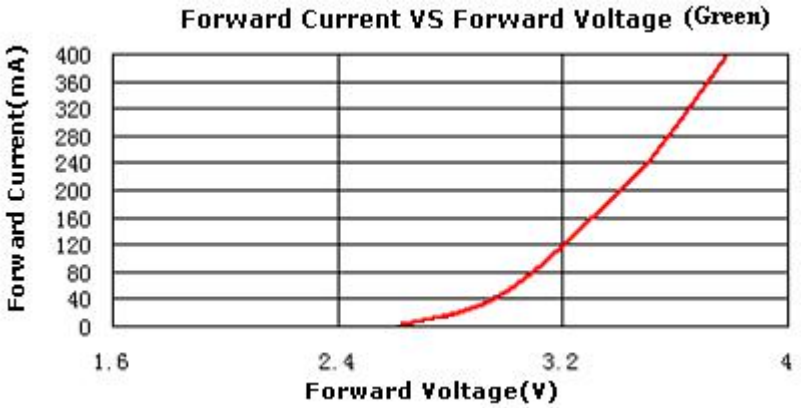
Notes:

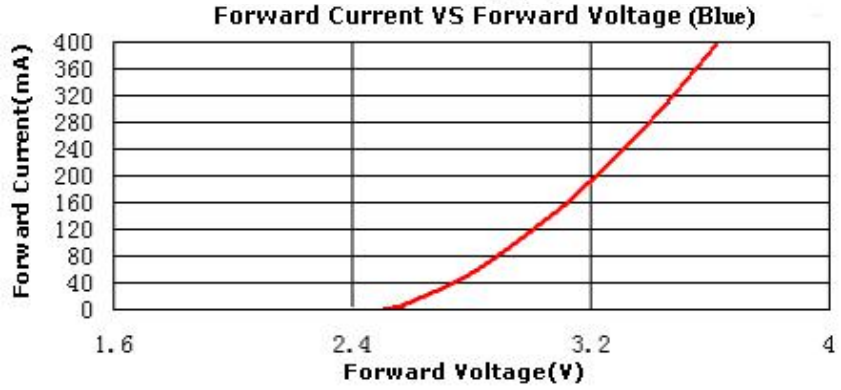
1. Luminous Flux Measurement allowance is ± 10%.
2. $\theta_{1/2}$ is the off-axis angle at which the luminous intensity is half the axial luminous intensity.

◆ **Typical Electrical-Optical Characteristics Curves**
(25℃ Ambient Temperature Unless Otherwise Noted)



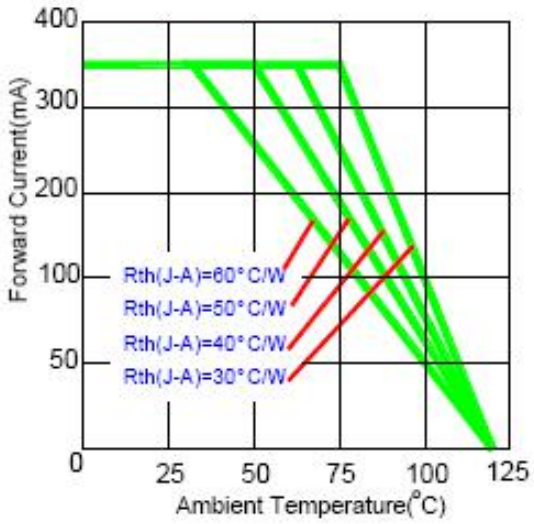




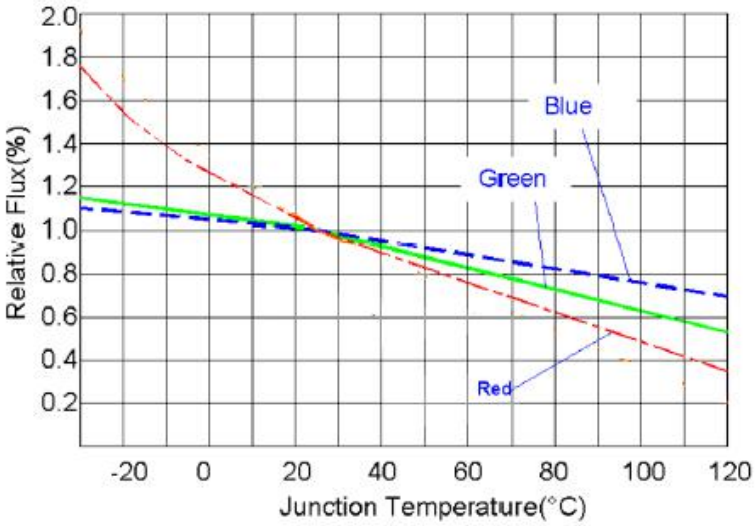


◆ **Typical Electrical / Optical Characteristics Curves**

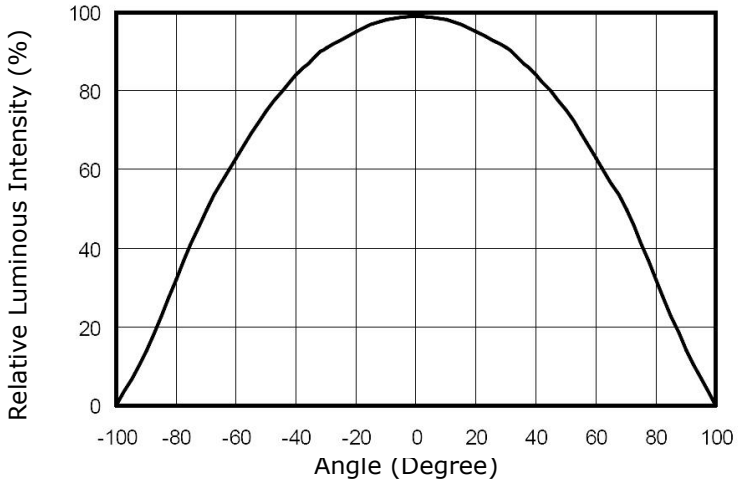
Operating Current & Ambient Temperature



Junction temperature & Relative Flux



Relative Spectral Distribution



◆ Precautions For Use:

1. Over-current-proof

Though HP60M has conducted ESD protection mechanism, customer must not use the device in reverse and should apply resistors for extra protection. Otherwise slight voltage shift may cause enormou current change and burn out failure would happen.

2. Storage

① Do not open moisture proof bag before the products are ready to use.

② Before opening the package, the LEDs should be kept at 30℃ or less and 90%RH or less.

③ The LEDs should be used within a year.

④ After opening the package, the LEDs should be kept at 30℃ or less and 70%RH or less.

⑤ The LEDs should be used within 168 hours (7 days) after opening the package.

⑥ If the moisture absorbent material (silicone gel) has faded away or the LEDs have exceeded the storag time, baking treatment should be performed using the following conditions.

⑦ Pre-curing treatment: 60±5℃ for 24 hours.

3. Thermal Management

① Because HP60M LED is a high power dissipation device, special and sufficient consideration in thermal management design must be made to optimize the thermal performance.

② Heat sink design is implemented in the device for an additional thermal connection. Since the device is capable of SMT process, tin must be spread both heat sink and solder pads areas to dissipate the heat.

③ A high thermal conductivity substrate, such as Aluminum or Copper plate etc, must be applied for external thermal management. It is strongly recommended that the outer heat sink or PCB dimension per LED can not be less than 25 x 25 x 1 (L x W x H) mm. The materials for outer heat sink can be FR4 on Aluminum, MCPCB, or FPC on Aluminum.

④ Special thermal designs are also recommended to take in outer heat sink design, such as FR4 PCB on Aluminum with thermal vias or FPC on Aluminum with thermal conductive adhesive, etc.

⑤ Sufficient thermal management must be conducted, or the die junction temperature will be over the limit under large electronic driving and LED lifetime will decrease critically.

4. Soldering Condition

① Soldering should not be done more than two times.

② While soldering, do not put stress on the LEDs during heating.

③ After soldering, do not warp the circuit board.

5. Soldering Iron

① For prototype builds or small series production runs it is possible to place and solder the LED by hand.

② Dispensing thermal conductive glue or grease on the substrates and follow its curing spec. Press LED housing to closely connect LED and substrate.

③ It is recommended to hand solder the leads with a solder tip temperature of 280°C for less than 3 seconds within once in less than the soldering iron capacity 25W. Leave two seconds and more intervals, and do soldering of each terminal.

④ Be careful because the damage of the product is often started at the time of the hand solder.

6. Handling Indications

During processing, mechanical stress on the surface should be minimized as much as possible.

Sharp objects of all types should not be used to pierce the sealing compound.