Migrating from LUXEON K2 with TFFC to LUXEON Rebel

LUXEON Rebel Advantages:

- Deliver more usable light and higher flux density.
- Optimize applications to reduce size and cost.
- Tightly pack the LEDs for mixing.
- Engineer more robust applications.
- Utilize standard lower cost FR4 PCB technology.
- Unsurpassed reliability performance.
- Exceed ENERGY STAR® lumen maintenance requirements.
- Specified CCT & CRI combinations.
- ANSI compliant binning.
- High efficacy for sustainable design.
- Deliver 100 lm/W Performance at 350mA.
- Higher Efficiency means less Power Consumption with same performance

Light Output / LED Count:

- Keep the same number of LEDs while driving them at maximum current produces a light out put different of less than 20%.
    - *Note*: for portable applications, it is highly unlikely that batteries will support up to 1500mA of current for a prolonged period time.

Results from ULT	***LXK2-PWC4-0200***	***LXML-PWC1-0100****
Number of LEDs	1	1
Drive Current (mA)	1500	1000
Light Output (lumens)	226	190
Junction Temperature (oC)	108	86
Power Consumption (W)	5.7	4.2

* This part number was chosen as an example. Other flux bins may be leveraged

- Increase the number of LUXEON Rebel LEDs, while driving them at the maximum current increases light output and generates LED cost savings
- Lower cost thermal solution may be implemented

Results from ULT	***LXK2-PWC4-0200***	***LXML-PWC1-0100****
Number of LEDs	10	13
Drive Current (mA)	1500	1000
Light Output (lumens)	2291	2420
Junction Temperature (oC)	104	93
Power Consumption (W)	5.7	4.2

* This part number was chosen as an example. Other flux bins may be leveraged

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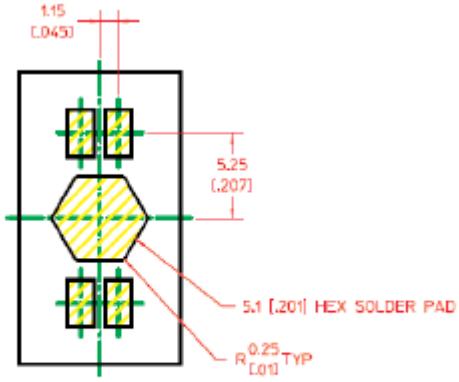
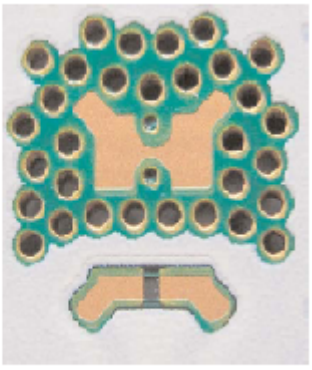
Mechanical Characteristics:

- LUXEON Rebel has a smaller package; therefore, the board design needs to be modified to accommodate the new footprint.
- LUXEON Rebel can be supplied on a star board.
- If MCPCB was in use, it is recommended to change it to the lower cost FR4 board and accordingly add thermal vias to the board as per the recommended layout.
- Please refer to AB32 for more information.



Pad layout for LUXEON K2 with TFFC



Pad layout for LUXEON Rebel

Optical Characteristics:

- Optics need to be changed to correspond to the optical and mechanical properties of the LUXEON Rebel.
- Refer to the ray-set files for optical characteristics.
- Suggested optics alternatives for transitioning to LUXEON Rebel include:

Beam angle	*LUXEON K2 wTFFC Optics*	*LUXEON Rebel Optics*
Narrow	Carclo: 10003	Carclo: 10193
	Fraen: FLP-N4-K2-HRF	Fraen: FLP-N4-RE-HRF
	Polymer: 120/151	Polymer: 120/180
Medium	Carclo: 10108	Carclo: 10412
	Khatod: PL26625LSD	Khatod: PL119840
Wide	Carclo: 10003/25	Carclo: 10414
	Polymer: 124/151	Polymer: 124/180
	Khatod: KEPL119640	Khatod: KEPL115440
Tri-lens	Polymer: 157/160	Polymer: 181/160

Thermal Characteristics:

- Although LUXEON K2 with TFFC has a lower thermal resistance than LUXEON Rebel, its impact can be offset by:
  - Higher lumen maintenance junction temperature of LUXEON Rebel (135°C) compared to LUXEON K2 with TFFC (120°C for white)
- Thermal design may be modified to a smaller size/lower cost solution
- Please refer to AB33 for more information

Power Characteristics:

- Since higher flux LEDs are more efficient than lower flux LEDs:
  - Less power consumed to provide the same light output
  - Allows for smaller lower wattage power supply solutions