Lunar Accents design ®

2/16/2008

2774 North Cobb Parkway, Suite 109 • Kennesaw, GA 30152 • 404-460-7888
www.LunarAccents.com • Info@LunarAccents.com

Custom LED Interior Lighting System

Prepared for Company XYZ

Design Parameters

Based on the client's original list of design criteria, Lunar Accents Design Corporation has compiled a design parameter outline. These parameters directly correspond with the numbered items located on the document entitled "Specification Checklist", initially submitted by the client.

- A small wall mounted power supply wired directly to wire terminals on the left-hand side of each LED array enables direct mating capabilities with any standard 110/120 volt AC power outlet. The UL approved device contains internal circuitry that converts high input voltage to a 12 volt DC output voltage, rated at 1250 mA maximum current. Manufacturer's part number: DMS120125-P5P-SZ.
- White LED, Nichia part number NSPW500CS, offers a typical 18,000 mcd with a 15 degree beam. If a white LED containing a wider beam angle is desired, the Nichia NSPW500BS offers a typical 9,200 mcd with a 20 degree beam. If yet a wider beam angle is desired, the Nichia white LED, part number NSPW510BS, offers a typical 2500 mcd with a 50 degree beam.
- At maximum power and at 25 degrees Celsius, a fully populated board (36 LED emitters) will meet or exceed the 48 lumen output requirement if the NSPW500CS it utilized. This is assuming that the LED has derived from at least the middle intensity bin, and is producing greater than the minimum specified luminous intensity rating. The NSPW500BS will fall short of the 48 lumen output requirement unless the LED has derived from the high intensity bin Intensity bins can be specified during ordering but are not guaranteed.
- Reverse polarity correction will require a series of rectifier diodes. The circuit board location in proximity to the power wire terminals will include the necessary diodes. In the case of a polarity mix up, current flows through the corresponding diodes, redirecting current as required.
- The Nichia NSPW515BS offers a 70 degree beam. However, the critical 48 lumen requirement will be satisfied only when the LED has been pulled from the highest intensity bin and meets at least the typical luminous output rating. Requesting the high intensity bin does not guarantee the bin. Additionally, the typical luminous intensity rating may rate below the typical intensity rating. Therefore, this LED may not meet the minimum luminous intensity requirements. However, the Nichia NSPW510BS will meet minimum lumen requirements. Although the LED contains a 50 degree beam, the critical 48 lumen minimum requirement is satisfied anywhere within the luminous intensity range of the middle bin.
- A copper etch or white top layer silkscreen can display the company name and company website URL on the top layer along upper and lower edges of the printed circuit board. The silkscreen option typically offers increased visibility. Actual font sizes will vary depending on component placement.
- Placing resistors and other required non-LED components on the bottom circuit board layer or switching to surface mount (SMT) components include several options that can help conceal their existence. However, placing components on the bottom circuit board layer or switching to surface mount components, may increase production costs drastically.
- A series of break-lines depicted by the top layer silkscreen will indicate predefined longitudes permitting printed circuit board cutting without affecting circuit operation.
- Top and bottom circuit board layers will contain a black solder mask. Unfortunately, the black solder mask may act as a circuit board insulator, degrading thermal efficiency and retaining extra heat. However, this undesired thermal effect should not become a major design issue in this specific application.
- Each LED array will measure 10.8 inches in overall length and LED spacing will be exactly 0.3 inches.

Lunar Accents design ®

2/16/2008

2774 North Cobb Parkway, Suite 109 • Kennesaw, GA 30152 • 404-460-7888
www.LunarAccents.com • Info@LunarAccents.com

Design Parameters Summary and Conclusions

In conclusion, the overall design scheme should not present any significant drawbacks. In addition, the overall design costs will not exceed the amount discussed during the initial phone conversation on 2/10/2008, between the client and applications engineer. The following list items summarize all recommended design parameters as based on the clients original "specification checklist". Non-listed items may have led to potential design drawbacks.

RECOMMENDED	120 volt AC to 12 volt DC wall mount ed power supply, DMS120125-P5P-SZ
RECOMMENDED	white LED, Nichia NSPW510BS
RECOMMENDED	white top layer silkscreen to depict company and website URL
RECOMMENDED	through-hole resistor placed on the top circuit board layer
RECOMMENDED	series of break-lines depicted by a top layer silkscreen
RECOMMENDED	top and bottom layer solder mask, black in color
RECOMMENDED	10.8 inch overall length with a 0.3 inch LED spacing

The following additional recommendations refer to items with no history of previous documentation. However, these items are highly recommended in order to achieve an operational and well-structured overall design.

RECOMMENDED	vertical LED-lead orientation will promote the wave soldering process as well as reduce physical component stresses
RECOMMENDED	circuit boards manufacturing array configuration will promote efficient mass assembly
RECOMMENDED	reducing LED drive current to 75% of the maximum allowable rating will promote longevity without sacrificing a significant portion of the total luminous output
RECOMMENDED	grouping three LEDs per current limiting resistor will reduce overall current and power requirements
RECOMMENDED	non-standard 0.031 inch thick printed circuit board material promotes ease of cutting in pre-defined break-lines
RECOMMENDED	top side component identifiers promote maintenance and repair documentation
RECOMMENDED	unique bar code labels provide referencing for warranties, maintenance procedures, and dissimilar LED lot numbers

Important Notes

Lunar Accents Design Corporation offers a variety of customizable sample products. Sample products offer a cost efficient alternative to custom-designed prototypes. Sample products are affordable yet extremely diverse, and custom engineering is not required. If you are interested in ordering a sample product for pre-testing or prototyping purposes, please refer to our website for additional information.