High Brightness LED

Assembly Trends, Materials and Issues

Cost and reliability are key issues in expanding the market for high brightness LEDs (HB LEDs). Packaging materials affect the optical efficiency of an LED package significantly. Reflectivity, transmissivity, and index of refraction are all material properties that could affect the lumens output. Thermal issues account for as much as 50 percent of the failures in lighting. The stability of packaging materials (encapsulants and lenses) is also affected by exposure to elevated temperatures and to UV and other wavelength radiation.

There are no standard LED packages. The variety of materials selected, packaging methods, and ultimately reliability make cost-reduction a complex decision-making process. The report reviews HB LED assembly trends and issues, materials used today, and requirements for the future. Examples of various packages for high brightness LEDs are used to illustrate the diversity in package options. Critical issues, including thermal and optical, are addressed. TechSearch International's report is 46 pages of text with full references plus 85 PowerPoint sides.

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