A Novel Hybrid Method for Reliability Prediction of High-Power LED Luminaires

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The junction temperature of LED package can be calculated based on a one-dimension model (formula (1)) of thermal resistance easily [9].

$$T_j = \Delta T + T_c = R_{th} \times \phi_h + T_i \qquad (1)$$

Where,

T_i: Temperature of solder joint of LED package;

T_j: Junction temperature;
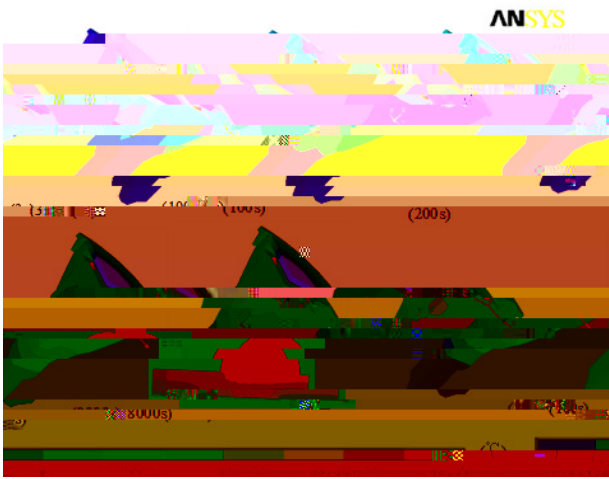
ΔT : Thermal difference between T_j

Fig. 3 Thermal distributions of quarter-sized modeling

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