Soldering SuperFlux LEDs

SuperFlux LEDs

HPWx-xxxx Standard Part Numbers

Caution is recommended with the preheat conditions to ensure that the LED lamps are not damaged due to prestressing. Prestress damage can result in cracks and/or delamination of structures within the device.

Recommended Soldering Conditions

The recommended soldering conditions are listed in Table 1. A sample solder profile taken on the LED lead on the bottom-side of the PCB is shown in Figure 1. Both the recommended and maximum conditions are shown in Figure 1.

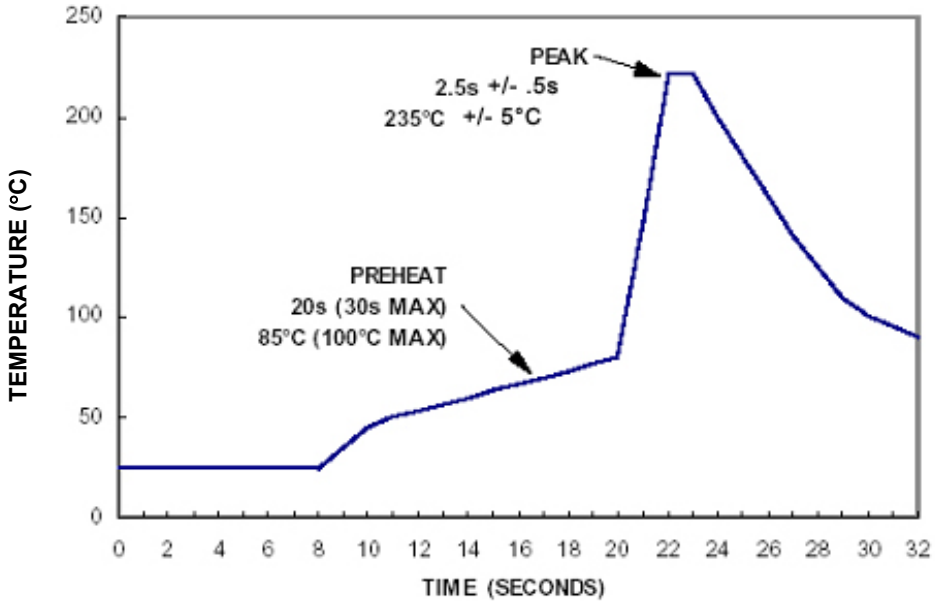

Figure 1

Recommended Temperature Profile of a Wave Solder Process.

Preheat Temperature	85 +/- 15°C
Preheat Time*	20 sec (Max 30 sec)
Peak Profile Temperatures	235 +/- 5°C
Soak Time above 200°C	2.5s +/- .5s

*Note: All top preheat stages are to be turned off so that the lamp body is not directly exposed to the heat source.

Table 1

Recommended Soldering Conditions.

Post Soldering Inspection Criteria

Delamination

Epoxy-chip delamination is indicated by "rainbow" patches when viewed from above (see Figure 2.) This type of prestress damage will severely impact the durability of the device and may result in premature catastrophic failure.

Epoxy Crazes

Stress damage is indicated by small epoxy crack(s) originating from the anode anchor hole. This type of prestress damage does not effect the durability of the device, but serves as an indicator of improper soldering conditions.

Solder Fillet Criteria

Solder climb or filleting should not extend beyond the "standoff" location of the leads. Should the solder climb extend beyond this location, the soldering profile should be recalibrated to the recommended parameters.

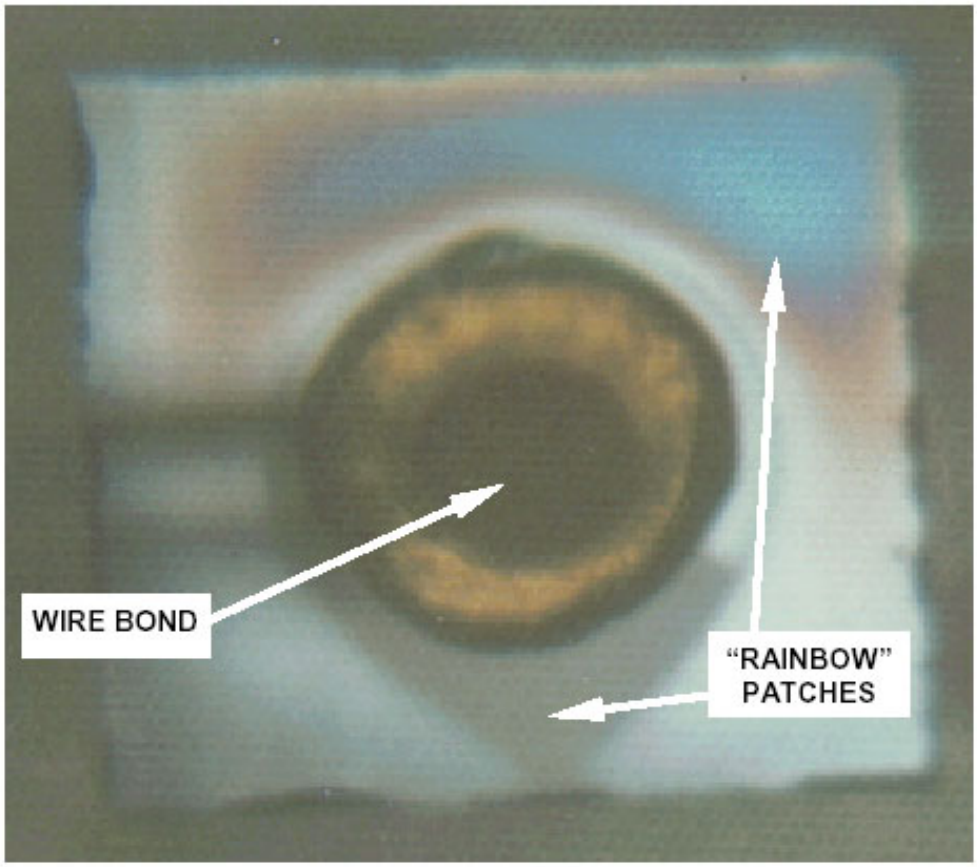

Figure 2

Epoxy-die delamination on the top side of the die. Darker regions shown appear as "rainbow" patches when viewed through a microscope.

Rework

Minimal heat exposure is recommended while rework is being performed. The suggested method is to use a gauze or aluminum foil opening over a solder pot, which only exposes the solder defect location for rework. Peak solder temperature and exposure parameters per the solder profile should be observed.

Flux and Cleaning

Due to the low recommended preheat temperature, fluxes with low activation temperatures (<85°C) should be used.

Flux and solvents consistent with environmental CFC reduction/elimination processes is recommended.

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+00 800 443 88873

Fax: 408-435-6855
Email us at info@lumileds.com

Lumileds Lighting, LLC
370 West Trimble Road
San Jose, CA 95131

Future Electronics
237 Hymus blvd.
Pointe-Claire, Quebec
H9R 5C7