Solderless High–Intensity Light Emitting Diode (LED) Holder

NOTE

All numerical values are in metric units [with U.S. customary units in brackets]. Dimensions are in millimeters [and inches]. Unless otherwise specified, dimensions have a tolerance of ±0.13 [±.005] and angles have a tolerance of ±2°. Figures and illustrations are for identification only and are not drawn to scale.

1. INTRODUCTION

This specification covers the requirements for application of Solderless High–Intensity LED Holder for use in direct lighting applications (such as office, automotive, communications, and architectural). The LED holder is designed to house and provide electrical interconnection for the LUXEON Rebel high–power LED. The LED holder has two–contact loading to accommodate the anode and cathode contact pads of the LED. Soldering or thermally–conductive adhesive is not required for assembly. These LED holders are designed to be used with an Underwriters Laboratories Inc. (UL) Class 2 power supply.

The LED holder consists of a contact carrier assembly and retention clip and is available with a lens carrier to hold commercially–available standard 20–mm lenses. A heat sink is available separately or can be customer–designed. The available heat sink provides thermal management; is made of 1.00 [.039] thick (18–gauge) aluminum and has integrated mounting slots that enable the heat sink to be mounted to a fixture. The heat sink is designed for a standard mount or flush mount.

The contact carrier assembly is pre–loaded with power contacts. The contact carrier assembly features a pocket locator that properly positions the LED, an outlet that accepts a wire harness with Mini–Common Termination (CT) connectors (available separately), and flexible latches used to install and hold the contact carrier assembly onto the available heat sink. The contact carrier assembly is available in 6 configurations based on compatibility with the nominal thickness of the heat sink; the thickness is identified with a marking on the assembly. The retention clip holds the LED against the power contacts. The lens carrier features latches designed to snap onto the mounting holes of the available heat sink to provide proper alignment of the lens.

When corresponding with personnel, use the terminology provided in this specification to facilitate your inquiries for information. Basic terms and features of this product are provided in Figure 1.

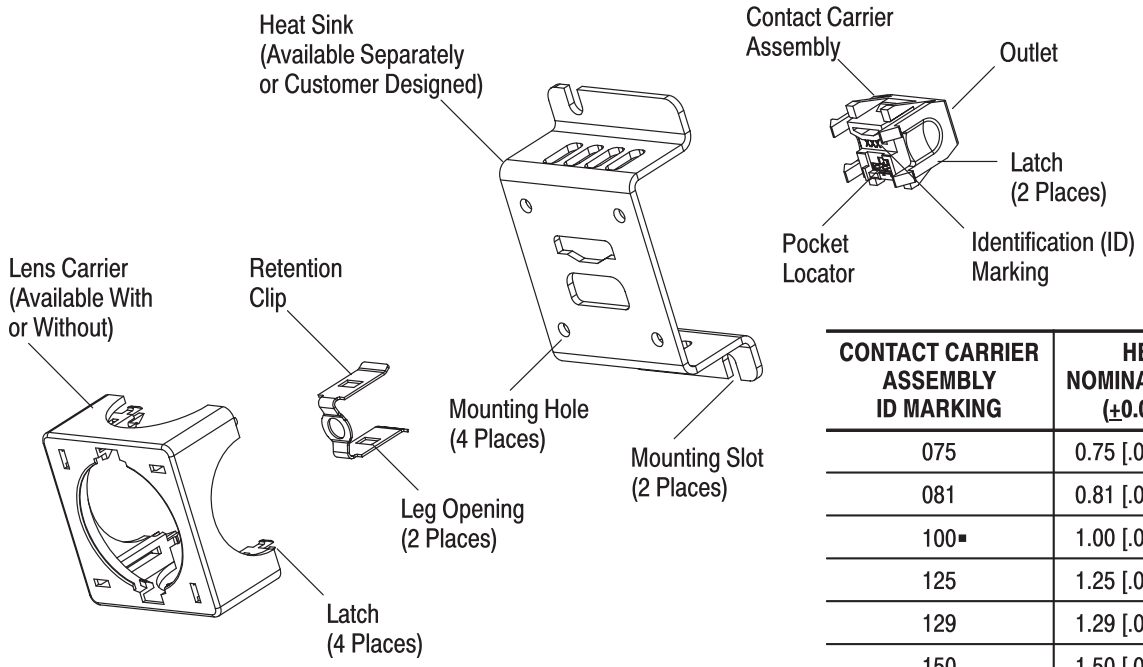

Figure 1

CONTACT CARRIER ASSEMBLY ID MARKING	HEAT SINK NOMINAL THICKNESS (±0.04 [±.0016])
075	0.75 [.029]
081	0.81 [.032] (20–Gauge)
100▪	1.00 [.039] (18–Gauge)
125	1.25 [.049]
129	1.29 [.050] (16–Gauge)
150	1.50 [.059]

▪ Compatible with heat sink available separately.

LUXEON is a trademark of Philips Lumileds Lighting Company

2. REFERENCE MATERIAL

2.1. Revision Summary

Revisions to this application specification include:

- Added size of lens to Section 1
- Added reference note to Figure 1
- Added instruction sheet reference to Paragraph 2.5
- Updated cutout in Figure 2
- Added thickness requirement for lens carrier to Paragraph 3.6.A
- Added NOTE to Step 1 of Paragraph 3.7

2.2. Customer Assistance

Reference Product Base Part Number 2058673 and Product Code L012 are representative of Solderless High–Intensity LED Holder. Use of these numbers will identify the product line and expedite your inquiries through a service network established to help you obtain product and tooling information. Such information can be obtained through a local Representative or, after purchase, by calling PRODUCT INFORMATION at the number at the bottom of page 1.

2.3. Drawings

Customer Drawings for product part numbers are available from the service network. If there is a conflict between the information contained in the Customer Drawings and this specification or with any other technical documentation supplied, call PRODUCT INFORMATION at the number at the bottom of page 1.

2.4. Specifications

Product Specification 108–2349 provides product performance and test information.

2.5. Instructional Material

Instruction Sheets (408–series) provide product assembly instructions or tool setup and operation procedures. Documents available which pertain to this product are:

408–10279 Solderless High–Intensity LED Holders 2058673–[ ]

3. REQUIREMENTS

3.1. Material

The contact carrier assembly and lens carrier are made of polybutylene terephthalate (PBT). The contacts are made of copper alloy plated with gold over nickel. The retention clip is made of stainless steel.

3.2. Safety

Do not stack product shipping containers so high that the containers buckle or deform.

3.3. Limitations

The LED holder is designed to operate in a temperature range of –40° to 120°C [–40° to 248°F].

3.4. Storage

A. Shelf Life

The LED holder should remain in the shipping containers until ready for use to prevent deformation. The LED holder should be used on a first in, first out basis to avoid storage contamination that could adversely affect performance.

B. Chemical Exposure

Do not store the LED holder near any chemical listed below as they may cause stress corrosion cracking in the contacts.

Alkalies	Ammonia	Citrates	Phosphates Citrates	Sulfur Compounds
Amines	Carbonates	Nitrites	Sulfur Nitrites	Tartrates

3.5. Thermal Performance

The thermal performance of the overall system is paramount to the life of the LED. The available heat sink supports 1 watt of input to the LED without using forced air cooling or additional heat sink. IT IS IMPORTANT that the thermal management is adequate for the specific LED and lighting fixture used. LEDs with higher wattage rating can be used if forced air cooling or additional heat sink is employed.

3.6. Customer–Designed Heat Sink

A. Material and Thickness

The heat sink shall be made of aluminum. The thickness shall be 0.75 [.029], 0.81 [.032], 1.00 [.039], 1.25 [.049], 1.29 [.050], or 1.50 [.059] (all with a tolerance of ±0.04 [±.0016]). These thicknesses will accommodate the contact carrier assembly.

If using the available lens carrier, the thickness must be 1.00 [.039] (18–gauge) thick.

B. Cutout

The heat sink must be cut using the dimensions provided in Figure 2 (the cutout is also provided on the customer drawing for the LED holder). If using the lens carrier, the mounting holes must be cut for mounting the lens carrier.

C. Process

The pattern for the cutout can be laser etched or stamped onto sheet metal.

Recommended Heat Sink Cutout

Note: Not to Scale

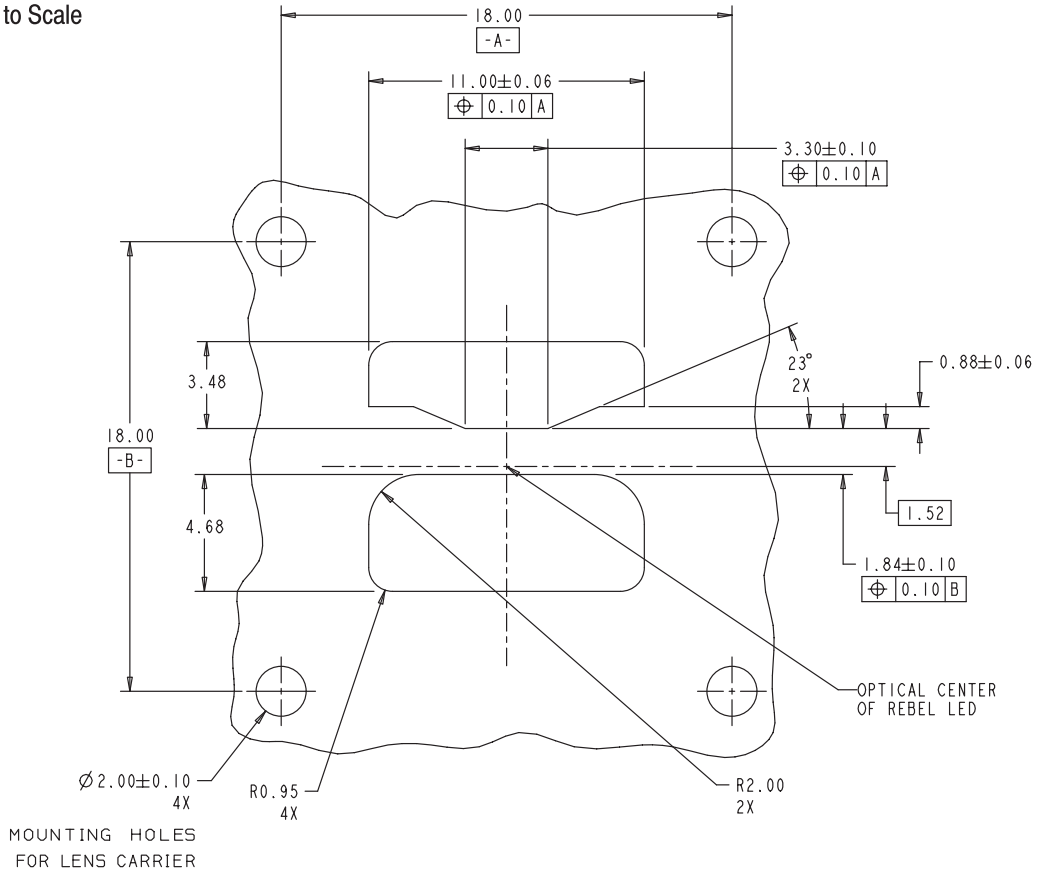

Figure 2

3.7. Assembly

The high–intensity LED holder must be assembled using the following requirements:

1. The contact carrier assembly must be installed into the cutout of the heat sink. If using the available heat sink, the contact carrier assembly must be installed from the bottom of the heat sink for standard mount and from the top of the heat sink for flush mount. The contact carrier assembly must be secured to the heat sink (by pinching the latches together, inserting them into the cutout so that the latches face the ends of the cutout, then released).

NOTE

If using the available heat sink, the LED holder can be mounted to a metallic thermally–conductive fixture (which will provide additional cooling) or non–metallic thermally–insulating fixture.

2. A small amount of thermally–conductive grease must be applied onto the center (between the cutout sections) of the heat sink.

3. The LED must be fitted into the pocket locator of the contact carrier assembly so that it contacts the locating surfaces of the pocket locator. The LED must be oriented so that the thermal pad sits on the thermally–conductive grease (on the heat sink) and the electrical pads sit on the contact carrier assembly.

CAUTION

The LED must be oriented properly when installed; otherwise, damage to the dome lens of the LED could occur during installation of the retention clip.

4. The retention clip must be installed over the LED (the hole of the retention clip must fit over the LED) and secured by the contact carrier assembly (the leg openings must fit over the latches).

NOTE

When installing the retention clip, the contact carrier assembly must be supported from the bottom to prevent it from being pushed out of the heat sink.

5. If chosen, the lens must be installed from the bottom into the opening of the lens carrier. The lens must be secured to the lens carrier (by snapping it into position) using the keying features.

6. The connector must be plugged into the outlet of the contact carrier assembly.

7. If used, the lens carrier must be secured to the heat sink (by snapping the latches of the lens carrier into the mounting holes of the heat sink located on the same surface as the LED).

8. If applicable, the heat sink must be mounted to the fixture using appropriate hardware.

Refer to Figure 3.

3.8. Replacement and Repair

The high–intensity LED holder is not repairable. Damaged or defective components MUST NOT be used.

4. QUALIFICATION

No qualifying support for Solderless High–Intensity LED Holder was defined at the time of publication of this document.

5. TOOLING

No tooling is required.

Assembly

1

Note: If using available heat sink, standard mount shown.

Cutout of Heat Sink

Top

Pinch Here

Contact Carrier Assembly

Pinch Here

2

Thermally–Conductive Grease Applied

3

Orientation of LED

Thermal Pad of LED Must Sit on Thermally–Conductive Grease

Thermal Pad

Electrical Pads

Electrical Pads of LED Must Sit on Contact Carrier Assembly

Fit LED to Contact Locating Surfaces of Locator Pocket

4

Retention Clip Over LED and Secured by Contact Carrier Assembly

Support Bottom of Contact Carrier Assembly During Installation

5

Opening in Lens Carrier

Key Slot

Top

Key Slot

Lens Carrier (If Chosen)

Key of Lens

6

Plug Connector into Outlet of Contact Carrier Assembly

7

If Used, Lens Carrier Secured to Heat Sink

Use Mounting Holes Located on Same Surface as LED

Available Heat Sink
Standard Mount

8

Available Heat Sink
Flush Mount

If Mounting, Mounting Hardware is Secure

Figure 3

6. VISUAL AID

The illustration below shows a typical application of Solderless High–Intensity LED Holder. This illustration should be used by production personnel to ensure a correctly applied product. Applications which DO NOT appear correct should be inspected using the information in the preceding pages of this specification and in the instructional material shipped with the product or tooling.

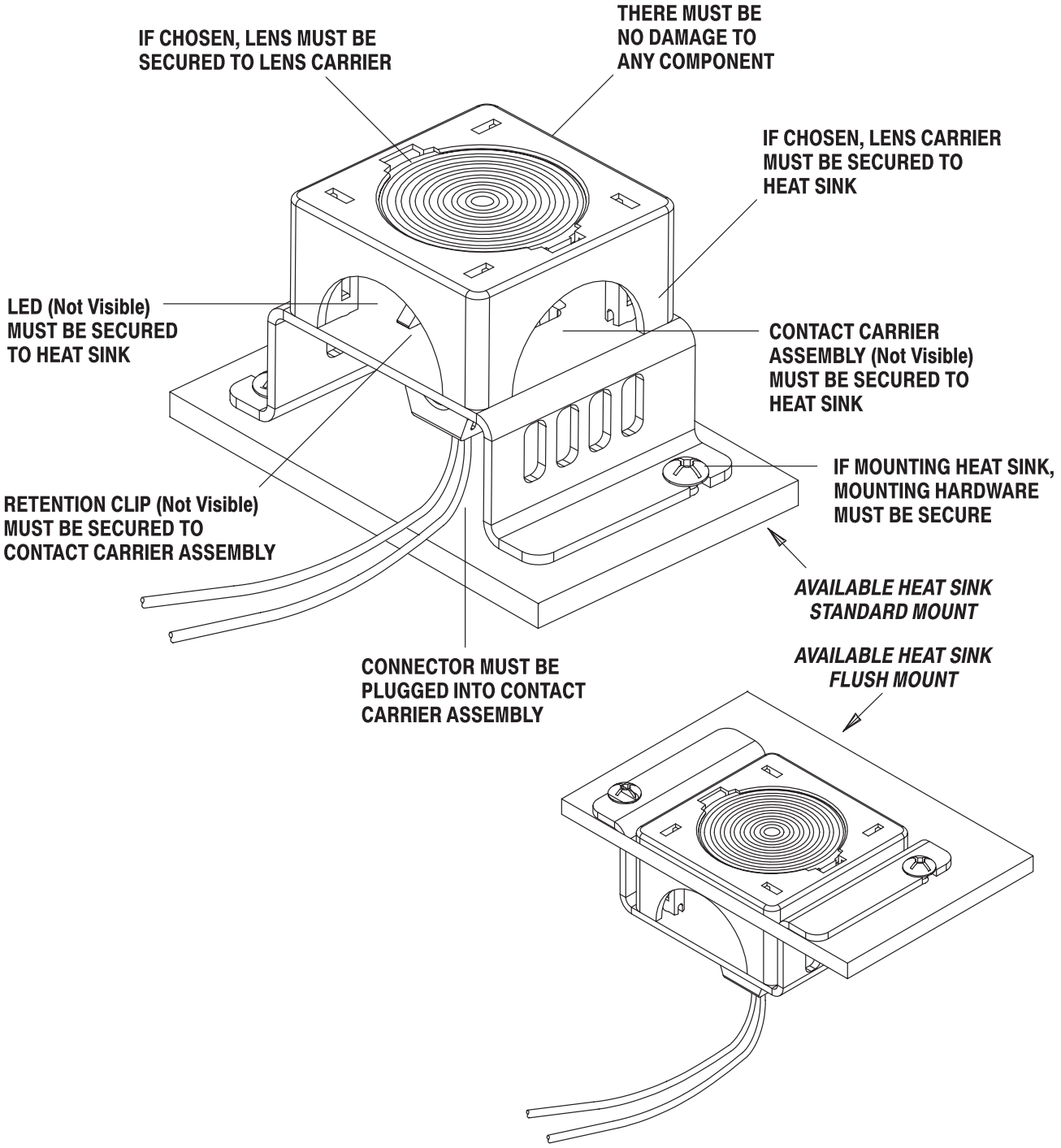

FIGURE 4. VISUAL AID