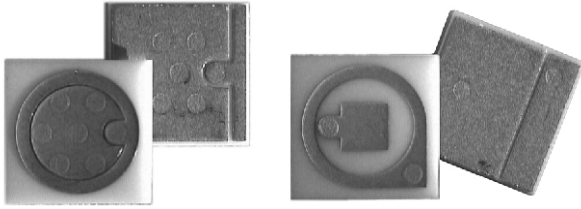


Ceramic Submount for High Power LED



The LSUB series substrates are ceramic LED package bases designed to provide thermal management for high power (> 1 W) LED devices; the LSUB is designed to minimize the thermal resistance between the die junction and the package termination. The LSUB's enhanced thermal management enables a lower junction temperature and increased efficiency and reliability compared to other technologies. In addition to the increased brightness, the lower junction temperature results in better color uniformity.

The LSUB is available in two configurations; in the standard configuration the LED die is mounted directly over filled vias and an offset version where the filled via is located to the side of the die pad. The standard configuration is designed for the attach methods including conductive epoxies and thick solders (greater than 12 μm) while the offset configuration is designed for thin eutectic solder layers in the 2 μm to 3 μm range. An additional benefit of the standard configuration is the pad size is large enough to accommodate a parallel diode for ESD protection.

The LSUB is available singulated as individual die or in square arrays. Additional LED configurations and form factors available upon request.

FEATURES

- Ultra-low thermal resistance
- Eutectic or epoxy LED die attach pads
- Surface-mounted component assembly

APPLICATIONS

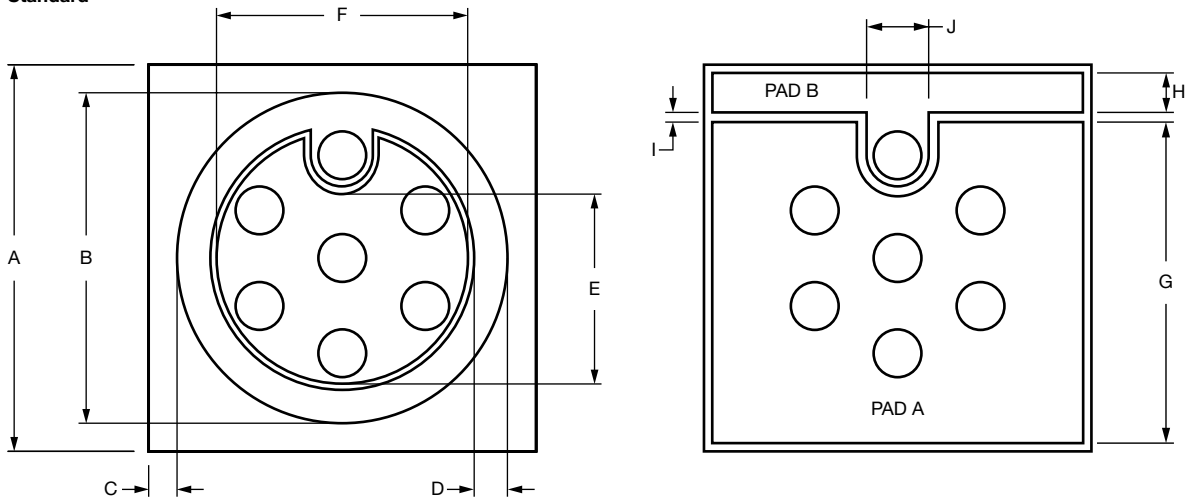
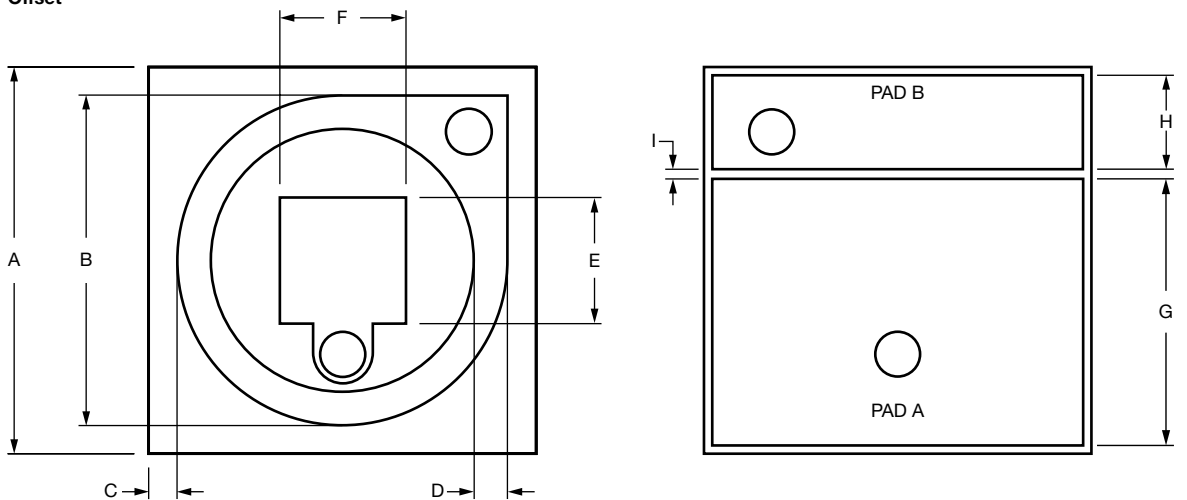
- High power LED for automotive, industrial and home applications
- High power laser diodes for industrial applications

GENERAL SPECIFICATIONS	
Substrate Material	Alumina 99.6 %, Alumina 96 % or AlN
Conductor Material	Copper
Conductor Thickness	5 μm ± 10 %
Substrate Thickness	25 mil (0.635 mm)
LED Die Size	40 mil x 40 mil (1 mm x 1 mm)
Operating Temperature (°C)	- 55 to + 125
Storage Temperature (°C)	- 55 to + 125
Die Bond Pad Metallization	Ni/Au or 80 %/20 % AuSn over Ni/Au

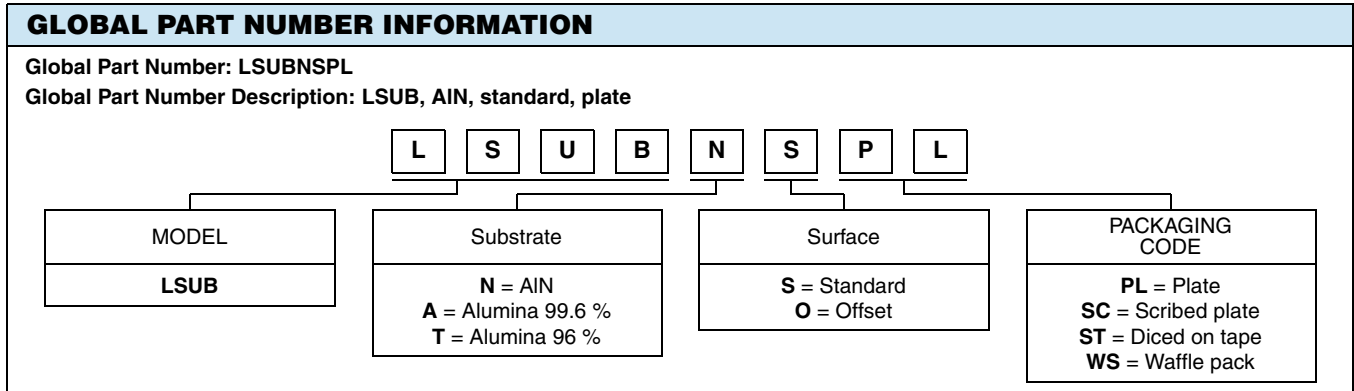
TYPICAL THERMAL RESISTANCE ⁽¹⁾ (K/W)		
SUBSTRATE	STANDARD	OFFSET
AlN	3	5
Alumina (99.6 %)	6	8
Alumina (96 %)	10	12

Note

⁽¹⁾ Thermal resistance between die pad and package termination (anode)

DIMENSIONS
Standard

Offset


DIMENSIONS in inches (millimeters)		
DIMENSION	STANDARD	OFFSET
A	0.138 (3.500)	0.138 (3.500)
B	0.118 (3.000)	0.118 (3.000)
C	0.010 (0.254)	0.010 (0.254)
D	0.012 (0.300)	0.012 (0.300)
E	0.068 (1.727)	0.045 (1.143)
F	0.090 (2.286)	0.045 (1.143)
G	0.114 (2.896)	0.095 (2.413)
H	0.014 (0.356)	0.033 (0.838)
I	0.003 (0.076)	0.003 (0.076)
J	0.016 (0.406)	n/a



LAYOUT CONSIDERATIONS

The thermal performance of the LSUB package is strongly influenced by PCB layout. The package ensures that heat flows from the die junction to the package termination (anode); however, the heat must be carried from the termination by the PCB layout. Special consideration must be given to insure minimal thermal resistance between the package termination and the ambient. The following guidelines should be considered.

- The filled vias in the standard configuration can be up to 0.5 mils lower than the surrounding surface, when mounting dies on top of these vias care should be taken to use an attachment method capable of overcoming this surface profile.
- The traces that carry current to and from the component also carry the heat away from the component. These traces should be made as wide and thick as possible to help spread the heat on the PCB.
- The LED die should be kept as far as possible from other hot components such as DC circuitry, FETs and inductors.
- Heat sink elements are to be positioned as closely as possible to the LED package.



Disclaimer

All product specifications and data are subject to change without notice.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.