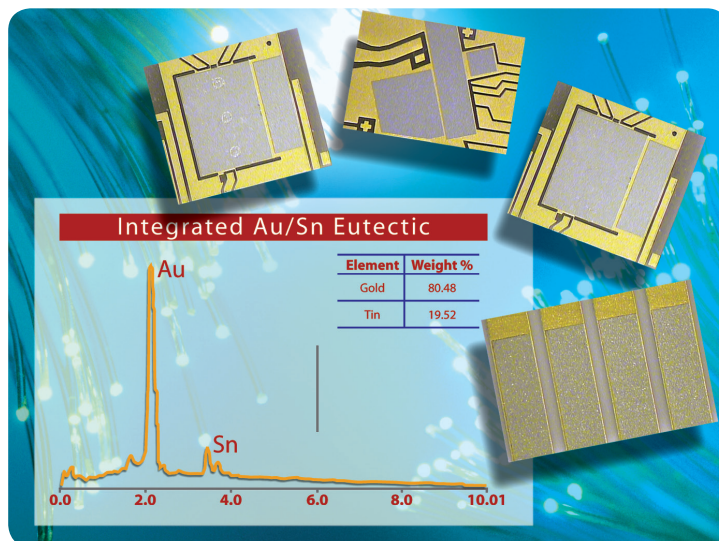




LASER DIODE SUBSTRATE MOUNTS

AuSn Series

Thin Film Patterned Substrates with Deposited Gold/Tin Pads



KEY BENEFITS

- Gold-tin composition is 80/20
- Gold-tin composition controlled to ± 2 wt%
- Replace gold-tin preforms
- Lot-to-lot deposited gold-tin: thickness of 6 μm typical
- Pad tolerance to ± 0.0002 in.
- Freeze time: 120 s at 320 °C

APPLICATIONS

- Laser diode sub-mounts
- Fiber optic pump lasers
- Optical transmitters
- Optical receivers
- Optical transceivers
- Optical TOSA/ROSA packages

RESOURCES

- Datasheet: AuSn Series - <http://www.vishay.com/doc?61081>
- For technical questions contact efi@vishay.com

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SOLUTIONS™



LASER DIODE SUBSTRATE MOUNTS

AuSn Series

Deposited Gold-Tin

Vishay Electro-Films (VEFI) has developed a proprietary technique to enable the sputter deposition of gold-tin solder with wt% of 80/20 while maintaining tolerances tighter than $\pm 2\%$ wt and control of film thickness to $\pm 1.0\ \mu\text{m}$.

This capability allows deposition of customer AuSn patterns that can be used to fine-tune assembly processes to meet the most demanding requirements; the tight composition tolerance eliminates the need to adjust reflow process parameters to compensate for variations in solder composition.

Gold-Tin Composition and Thickness

For best performance, Vishay recommends using the 80/20 alloy when possible; gold-tin with an 80/20 composition is deposited exactly at the eutectic point, allowing reflow at minimum temperature. However, in cases where the backside metal on die being soldered includes a relatively thick layer of gold, alloy modification is required to ensure proper assembly.

During reflow, gold on the backside of the die dissolves into the solder resulting in gold enrichment of the alloy; this enrichment of the solder has the unwanted effect of dramatically increasing the reflow temperature. To eliminate the unwanted increase in reflow temperature, the wt% of gold in the solder can be reduced to create a tin-rich solder. During reflow, the resultant is the desired 80/20 alloy.

The gold-tin deposition process allows films with thickness ranging between $4.5\ \mu\text{m}$ and $7\ \mu\text{m}$ with a tolerance of $\pm 1.0\ \mu\text{m}$.

