

LASER AND PHOTO DIODE SUBMOUNTS

Remtec's Plated Copper on Thick & Thin Film Metallization (PCTF®) Meets the Challenges of High Performance Laser & Photo Diodes in Demanding Optoelectronic Applications.

Remtec manufactures high performance metallized laser and photo diode submounts, accessory circuits, and spacers to customer specification.

Remtec's submounts are produced on BeO and AlN. For less thermally demanding applications, alumina based materials are available.

Remtec's PCTF® (Plated Copper on Thick Film) metallization with edge-wraps and plugged vias is well suited to provide cost effective solutions for optoelectronics circuits.

Remtec's new high performance laser diode submounts offer 25-75 micron thick copper metallization with a unique **Zero Pullback™** from a burr-free ceramic edge for various demanding optoelectronic applications. A **Zero Pullback** metallization with a burr-free edge greatly enhances performance characteristics of edge emitting diodes.

PCTF® technology combines elements of thick and thin films with plated copper and nickel/gold finish. Remtec offers a range of customer driven metallization schemes with excellent and reliable adhesion.

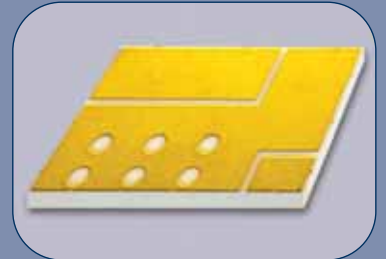
Remtec's laser diode submounts are compatible with all standard interconnect assembly techniques used for laser diodes and photodiodes. Low upfront tooling costs and fast turnaround time permit designers to bring their systems into production faster and with lower engineering costs.

Technical data is shown on the reverse side.

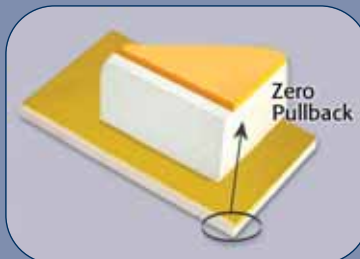
LASER DIODE SUBMOUNTS



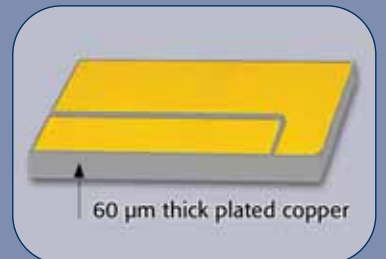
BeO Submount with plated copper and solder dams to prevent gold tin spreading. PCTF metallization exhibits consistent adhesion, whereas solder dams control die positioning.



BeO Edge-emitting Diode submount with PCTF and Ni-Au finish provides a cost effective solution for high volume applications. The total thickness tolerance $\pm 20 \mu\text{m}$.

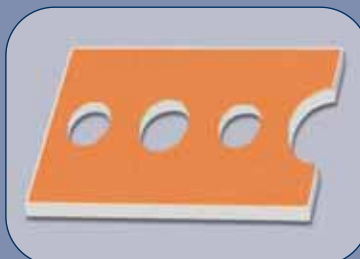


Plated copper metallization with **Zero Pullback™** for elevated power levels of edge emitting diodes.



Aluminum Nitride Submount for high power VCSEL lasers minimizes CTE mismatch.

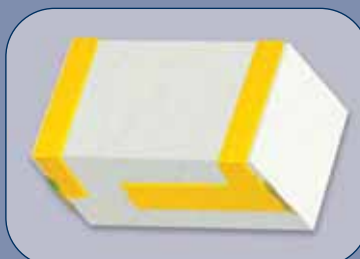
PHOTO DIODE SUBMOUNTS



Cost effective PCTF alumina spacer with $50 \mu\text{m}$ copper metallization for low dc resistance. Ni-Au finish not shown.



More conventional Al₂O₃ Photo Diode Submount with side metallization. Thick film gold for wire bonding and palladium silver for soldering.



Two-sided PCTF Photo Diode Submount. Selective gold plating for wire bonding and soldering ensures ease of assembly and enhanced reliability.



Three-sided PCTF ceramic submount with plated copper and nickel-gold finish. Excellent adhesion, solderability, wire bondability, zero solder leaching.

TECHNICAL DATA

Remtec's Cost Effective Ceramic Packaging Solutions Ensure Optimum Performance for Laser & Photo Diode Submounts.

PCTF® technology combines elements of thick and thin films with plated copper and nickel/gold finish. Therefore, substrates are available with multiple metallization techniques and selective plating options permitting both silver thick film and TiW thin film seed layers of various thicknesses, plated copper from 5 to 75 micron and Ni-Au finish with gold thickness from .1 to 4.0 micron. This selective plating capability ensures excellent wettability of GaAs die by gold tin soldering.

Ceramic and copper surface finish can be held to less than 1 µm. Overall submount thickness tolerances can be held to +/- 13 µm, flatness to 1 µm and surface roughness to less than Ra .05 µm.

Remtec and its team of technical experts are ready to assist you with your metallized ceramics requirements. We provide you a complete solution from prototypes design and fabrication to a high volume production.

Please send your electronic files in DXF and/or DWG formats to sales@remtec.com. More detailed design guidelines are available upon request.

Remtec, a RoHS compliant and ISO 9001:2000 registered company, provides ceramic packaging solutions for optoelectronics, microwave/RF components and modules and power electronics. Applications include high performance laser and photo diodes submounts, optoelectronic circuits, spacers, power modules as well as RF power amplifiers and TC modules. Additional data is available at www.remtec.com

Ceramic Substrates

Material	Thermal Conductivity, W/m°C	TCE, ppm/°C	Dielectric Constant
Beryllia	280 to 325	7.0	6.4
Aluminum Nitride	170 to 230	4.5	8.9
Alumina	25	7.2	9.4

Typical Mechanical Tolerances

Flatness	< 1µm
Roughness	.05 Ra µm
Submount Thickness	± 13 µm

Typical Metallization Schemes for Submounts

- **Thick Films:** Au, PtAg, PdAg
- **Plated Copper on Thick Films:** Ag-Cu-Ni-Au
- **Plated Copper and Thick Films:** Ag-Cu-Ni-Au + thick film gold
- **Plated Copper on Thin Films:** TiW-Cu-Ni-Au
- **Additional Features:** Plated Through Holes and Solid Plugged Via Fills

Metallization Options

- Thick or Thin films with 25-50 µm Plated Copper
- Selective Copper and Gold Plating
- Finish: Ni/Au Plating
- Zero Pullback™ Metallization of 25-50 µm Plated Copper
- Three-sided Metallization
- Suitable for Au/Sn Soldering
- Au/Sn Metallization optional
- Wire Bondable and Solderable