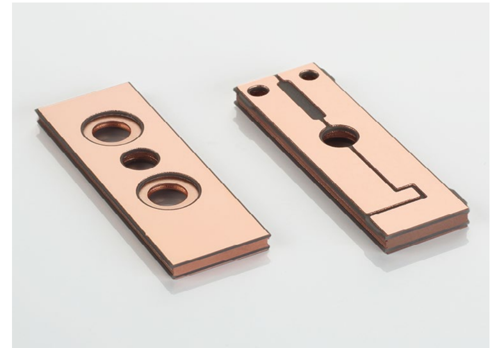
curamik®
ENABLING POWER EFFICIENCY

curamik® CoolPerformance Plus

Technical data sheet – Isolated Laser Diode Cooler

Geometric properties

Length	± 0.1 mm
Width	± 0.1 mm
Thickness one-sided diamond-turned	± 0.075 mm
Thickness two-sided diamond-turned	± 0.05 mm
Top copper thickness	± 0.05 mm
Symmetry	0.15 mm
Edge quality	- 30 µm
Edge roughness	$R_a \le 2$ µm
Flatness laser diode area @ 10 x 5 mm²	≤ 1 µm
Flatness complete @ 30 x 15 mm²	≤ 5 µm
Surface roughness Ni/Au top side	$R_a \le 1$ µm
Surface roughness Cu top side	$R_a \le 0.1$ µm
Layer offset	≤ 0.15 mm
Etching tolerances @ 0.2 mm Cu	± 0.15 mm
Through holes	± 0.05 mm
Machined holes	on request

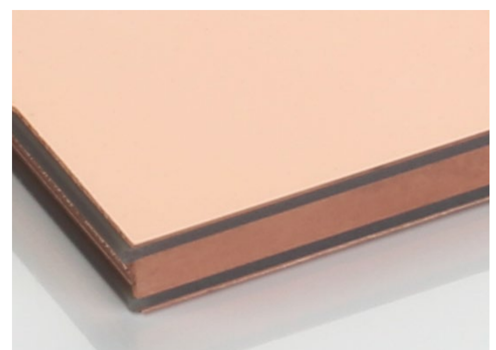


Materials and properties

Material conductor	OFHC copper
Material isolator	AlN (170 W / mK)
Total CTE @ 25-300°C	5 - 6. 5 ppm / K (according total material thickness)
Plating all over	electroless Ni / Au (Ni 3 - 7 µm; Au 0.05 - 0.15 µm)
Data Matrix Code	available
Possible designs	closed version (for horizontal stack) / open version (no vias)

Cooling water

Liquid flow per cooler	typ. 1 l / min.
Inlet temperature	25°C
Particle size	≤50 µm
Water quality	tap water



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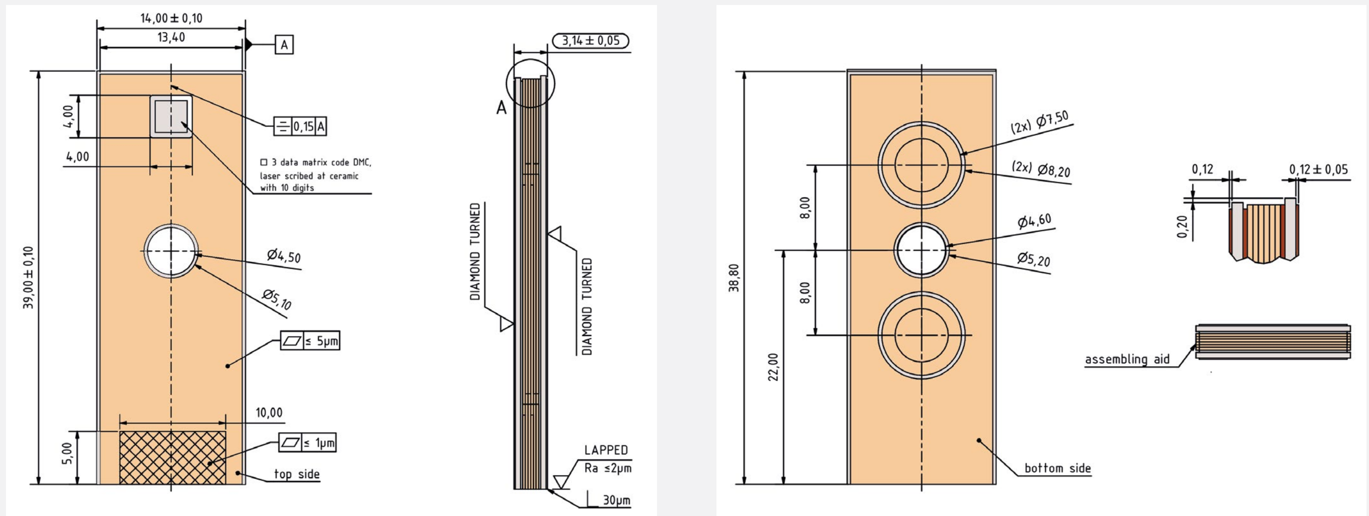
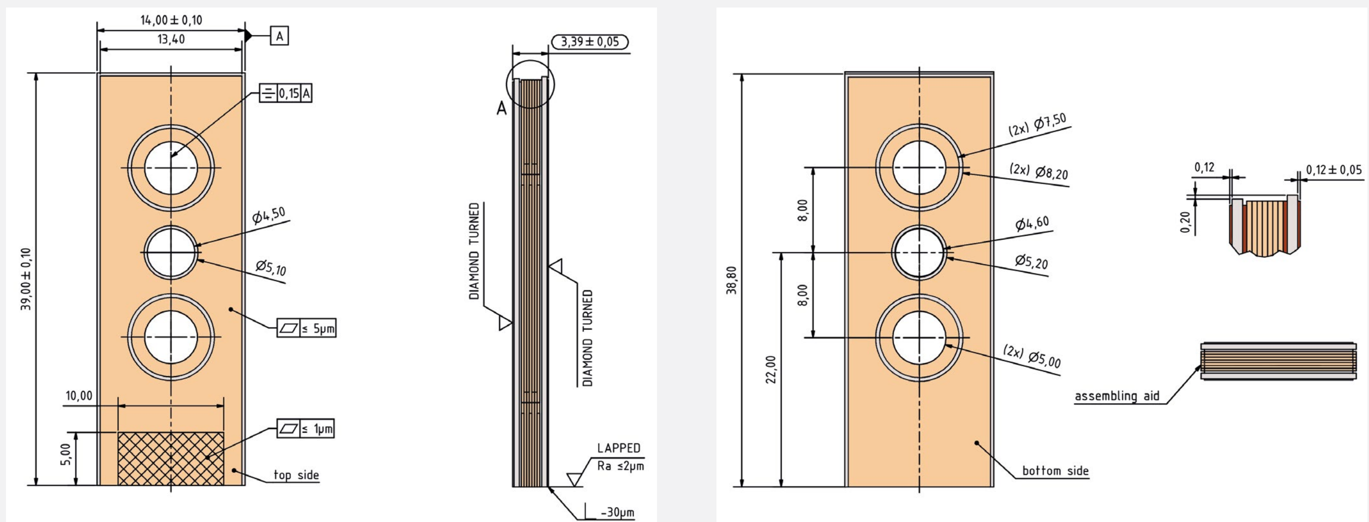
Recommended layer stack-up horizontal

- // Top DBC (0.2 mm Cu / 0.5 mm AlN / 0.2 mm Cu) Top copper down to 150 µm after diamond turning
- // Three inner copper layers 0.3 mm thickness
- // Sealing layer (O-ring seat pocket) 0.3 mm thickness
- // Bottom DBC (0.2 mm Cu / 0.5 mm AlN / 0.2 mm Cu) bottom down to 150 µm copper diamond turning



Recommended layer stack-up vertical without vias

- // Top DBC (0.2 mm Cu / 0.5 mm AlN / 0.2 mm Cu) Top copper down to 150 µm after diamond turning
- // Sealing layer (O-ring seat pocket) 0.3 mm thickness
- // Three inner copper layers 0.3 mm thickness
- // Sealing layer (O-ring seat pocket) 0.3 mm thickness
- // Bottom DBC (0.2 mm Cu / 0.5 mm AlN / 0.2 mm Cu) bottom down to 150 µm copper diamond turning



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