

DIRECT BOND COPPER SUBSTRATES

Prototype to Medium Volume Solutions

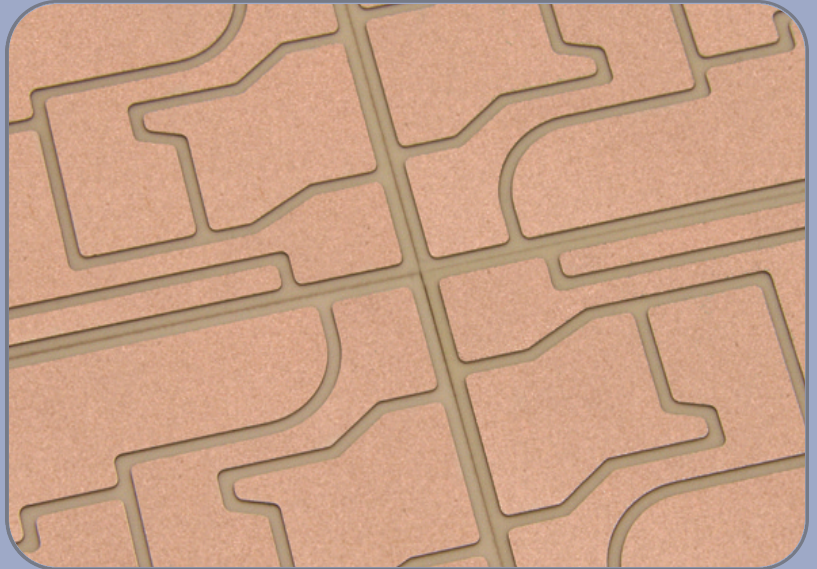
Remtec now offers cost effective and fast turnaround Direct Bond Copper (DBC) products on Alumina and Aluminum Nitride. DBC is a widely acceptable and a time-proven technology for power electronic products due to its high thermal conductivity, high current capacity and heat dissipation of the high-purity copper on ceramic. By varying copper and ceramic thickness and ceramic type one can affect a resulting CTE value of total system to avoid a CTE mismatch with different semiconductor devices. The addition of optional dimple features incorporated into your design greatly increases thermal cycling reliability by reducing thermally induced stress and effectively increasing reliability after thermal cycling.

To meet the growing demands of today's competitive marketplace Remtec utilizes the well-known quality of **Curamik®** DBC ceramics coupled with high quality **Remtec®** plating typical for its **PCTF®** technology. A combination of both results in a unique, quick turnaround solution fulfilling a need for prototypes to medium volume DBC substrates.

In addition, versatile copper finish options ensure an excellent solderability and capability to withstand multiple soldering and brazing operations in a wide temperature range of 180 to 800°C, without any degradation in product integrity and reliability. Ni-Au and Pd plating finish enable a broad range of economical assembly techniques: SMT soldering, low and high temperature die attach, Al and gold wire and ribbon bonding.

Our LVM (low volume manufacturing) DBC program will be available for orders that may not meet the minimum requirements for a normal production run with other manufacturers. LVM orders may be limited to select material configurations and quantities; please contact your sales representative for more information.

Technical data is shown on the reverse side.



		Copper Thickness		
		.005"	.008"	.012"
Alumina (Al ₂ O ₃)	.010"	•	•	
	.015"	•	•	•
	.025"	•	•	•
	.040"	•	•	•
Aluminum Nitride (AlN)	.015"	•	•	
	.025"	•	•	•
	.040"	•	•	•

Advantages of DBC

- Excellent metallization adhesion: initial and after thermal cycling
- Good mechanical strength and stability
- High electrical isolation
- High thermal conductivity
- High current handling capacity
- High power dissipation
- Low thermal resistance

TECHNICAL DATA

Master Card Size
7.5" x 5.5"; Usable Cu Area: 7.008 x 5.000"

Front-to-Back Registration
 ± 0.005 "

Ceramic Perimeter Tolerance
 $+ 0.008$ " / $- 0.002$ "

Thickness Tolerance
 $+7\%$ / -10% Ceramic/Copper

Minimum Cu Pullback from Ceramic Edge
 0.020 " ± 0.008 "

Copper Surface Finish
Ni - 100μ " typ. , Au - $2-30 \mu$ "

Lines & Spaces

Copper Thickness \leq	Line	Space	Pitch
.005" Nominal .005" Minimum	.012" .010"	.012" .010"	.024" .020"
.008" Nominal .008" Minimum	.020" .016"	.020" .016"	.040" .032"
.010" Nominal .010" Minimum	.028" .020"	.028" .020"	.056" .040"
.012" Nominal .012" Minimum	.028" .020"	.028" .020"	.056" .040"

Cu Etching Tolerances

Copper Thickness \leq	Line	Space
.005"	± 0.005 "	± 0.004 "
.008"	± 0.006 "	± 0.004 "
.010"	± 0.008 "	± 0.006 "
.012"	± 0.008 "	± 0.006 "

Solderability

Excellent with Pb-Sn, Sn-Ag-Cu, Au-Sn, Au-Ge, CuSiI and others.

Wire Bondability

Excellent with .003"-.020" Al wire and .0007-.002" gold wire and ribbon.

Metallization Adhesion
5,000 PSI (vertical pull test)

Operation Temperature
 -55°C to $+850^{\circ}\text{C}$ (consult factory for details)

Optional
Selective gold plating, Pd - 12μ " and patterned solder mask are available.

Remtec's sales and application engineering staff provides fast response, quick turnaround and rapid solutions to satisfy the needs of a diverse customer base. Remtec®, a RoHS compliant and ISO 9001:2000 registered company, supplies Alumina and Aluminum Nitride substrates in prototype to low volume for a variety of DC power electronics applications. In addition to DBC products, we provide PCTF® (Plated Copper on Thick/Thin Films) substrates and packages for RF / microwave applications as well as for laser diode submounts, on alumina, BeO, AlN and Barium Titanate ceramic materials.

The information contained herein is based on data believed to be reliable, but Remtec, Inc. makes no warranties, expressed or implied as to its accuracy, and assumes no liability arising out of its use by others.

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