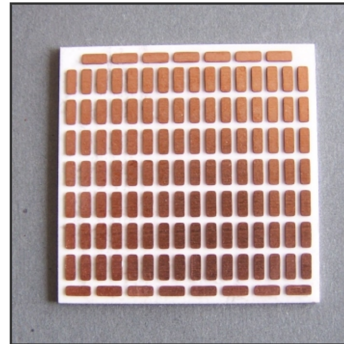
CLEC

5) DBC ceramic substrates

DBC (Direct Bond Copper) Substrate are used a special process in which the copper foil and the Al_2O_3 (one or both sides) are directly bonded under appropriate high temperature, which applications are power semiconductor modules, thermoelectric cooling modules, electronic heating devices, power control circuits, power hybrid circuit.



Benefits

- High mechanical strength, mechanically stable shape.
- Better thermal cycling capabilities, high reliability.
- Environmentally friendly.

MAIN TECHNICAL PARAMETERS OF DBC CERAMIC SUBSTRATES

PARAMETERS	UNITS	VALUE
MAX. SPECIFICATIONS (CERAMIC PLATE)	mm	138*188
THICKNESSES (CERAMIC PLATE)	mm	0.25 0.38 0.5 0.63 0.76 1.0 0.63± 0.07(STANDARD)
THICKNESSES (COPPER FOIL)	mm	0.1~0.6 0.3± 0.015(STANDARD)
Au THICKNESSES	μm	0.075~0.1
Ni THICKNESSES	μm	1.0~7.0
THERMAL CONDUCTIVITY (COPPER FOIL)	W/mK	385
SURFACE ROUGHNESS	μm	Rp≤7 Rt≤30 Ra≤3
HILLOCK HEIGHT	μm	≤30
Cu BONDING STREWNGTH	N/mm	≥6
MAX.COMPRESSION STRENGTH	N/cm²	7000~8000
THERMAL CONDUCTIVITY	W/(mK)	24~28
THERMAL EXPANSION COEFFICIENT	ppm/K	7.4 (AT 50~200℃)
WARPING		≤150μm/50mm (UNPATTERNED SUBSTRATE)
APPLICATION TEMPERATURE	℃	-50~850 (INERT ATMOSPHERE)
HYDROGEN EMBRITTLEMENT	℃	UP TO 400
WIDTH OF COPPER PATTERN	mm	≥1.2±0.2
SPACING BETWEEN COPPER PATTERNS	mm	≥0.7 ±0.2
SPACING BETWEEN Cu PATTERN AND CERAMIC EDGE	mm	≥0.5