

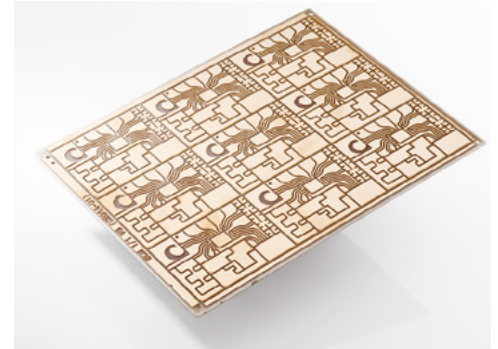
# curamik® CERAMIC SUBSTRATES

## Technical data sheet

### Available materials

Al <sub>2</sub> O <sub>3</sub>	Alumina	curamik® Power
HPS*	Alumina (9% ZrO <sub>2</sub> doped)	curamik® Power Plus
Si <sub>3</sub> N <sub>4</sub>	Silicon Nitride	curamik® Performance
AlN	Aluminum Nitride	curamik® Thermal

\* The HPS products are subject to patent restrictions in some countries.



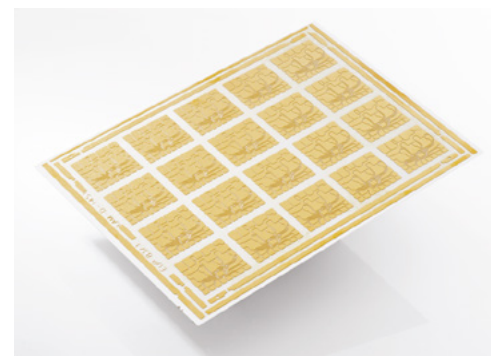
### Thermal conductivity

Al <sub>2</sub> O <sub>3</sub>	24 W/mK @ 20°C
HPS	26 W/mK @ 20°C
Si <sub>3</sub> N <sub>4</sub>	90 W/mK @ 20°C
AlN	170 W/mK @ 20°C



### Available thickness combinations DBC

		copper thicknesses mm					
		0.127	0.2	0.25	0.3	0.4	0.5
ceramic thicknesses mm	0.25		HPS	HPS	HPS		
	0.32	Al <sub>2</sub> O <sub>3</sub>	Al <sub>2</sub> O <sub>3</sub> HPS	Al <sub>2</sub> O <sub>3</sub> HPS	Al <sub>2</sub> O <sub>3</sub> HPS	HPS	HPS
	0.38	Al <sub>2</sub> O <sub>3</sub>	Al <sub>2</sub> O <sub>3</sub>	Al <sub>2</sub> O <sub>3</sub>	Al <sub>2</sub> O <sub>3</sub>		
	0.5	Al <sub>2</sub> O <sub>3</sub>	Al <sub>2</sub> O <sub>3</sub>	Al <sub>2</sub> O <sub>3</sub>	Al <sub>2</sub> O <sub>3</sub>	Al <sub>2</sub> O <sub>3</sub>	
	0.63	Al <sub>2</sub> O <sub>3</sub> AlN	Al <sub>2</sub> O <sub>3</sub> AlN	Al <sub>2</sub> O <sub>3</sub> AlN	Al <sub>2</sub> O <sub>3</sub> AlN		
	1.00	Al <sub>2</sub> O <sub>3</sub> AlN	Al <sub>2</sub> O <sub>3</sub> AlN	Al <sub>2</sub> O <sub>3</sub> AlN	Al <sub>2</sub> O <sub>3</sub> AlN		



### Available thickness combinations AMB

		copper thicknesses mm		
		0.3	0.5	0.8
ceramic thicknesses mm	0.25	Si <sub>3</sub> N <sub>4</sub>	Si <sub>3</sub> N <sub>4</sub>	Si <sub>3</sub> N <sub>4</sub>
	0.32	Si <sub>3</sub> N <sub>4</sub>	Si <sub>3</sub> N <sub>4</sub>	Si <sub>3</sub> N <sub>4</sub>

**Note** other copper thicknesses on request.

## Coefficient of linear thermal expansion (CTE)

<b>Al<sub>2</sub>O<sub>3</sub></b>	6.8 ppm/K @ 20°C - 300°C
<b>HPS</b>	7.1 ppm/K @ 20°C - 300°C
<b>Si<sub>3</sub>N<sub>4</sub></b>	2.5 ppm/K @ 20°C - 300°C
<b>AlN</b>	4.7 ppm/K @ 20°C - 300°C

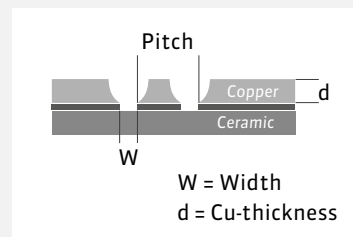
with copper plating 5% to 60% higher (dependent on copper thickness)

## General dimensions

<b>Total dimensions master card</b>	138 mm x 190.5 mm ± 1.5%
<b>Max. useable area</b>	127 mm x 178 mm ± 0.05%
<b>Copper peeling strength</b>	≥ 4.0 N/mm @ 50 mm/min for DBC with 0.3 mm Cu-thickness ≥ 10.0 N/mm @ 50 mm/min for AMB with 0.5 mm Cu-thickness

## Typ. width of / spacing between conductors

Cu-thickness	width DBC	width AMB
0.127 mm	≥ 0.35 mm	n/a
0.2 mm	≥ 0.4 mm	n/a
0.25 mm	≥ 0.45 mm	n/a
0.3 mm	≥ 0.5 mm	0.6 mm
0.4 mm	≥ 0.6 mm	n/a
0.5 mm	≥ 0.7 mm	1.0 mm
0.6 mm	≥ 0.8 mm	n/a
0.8 mm	n/a	1.2 mm



## Surface options

<b>Platings</b>	Electroless Ni: 3 μm – 7 μm (8% ± 2% P) all-over Electroless Ag: 0.1 μm – 0.6 μm all-over Electroless Au Class A: 0.01 - 0.05 μm all-over on Ni Electroless Au Class B: 0.03 - 0.13 μm all-over on Ni
<b>Roughness (DCB)*</b>	R <sub>a</sub> ≤ 3 μm; R <sub>z</sub> ≤ 16 μm; R <sub>max</sub> = 50 μm
<b>Roughness (AMB)*</b>	R <sub>a</sub> ≤ 1.5 μm; R <sub>z</sub> ≤ 10 μm; R <sub>max</sub> = 50 μm

\* Lower roughness on request

Rogers Corporation

www.rogerscorp.com/pes  
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