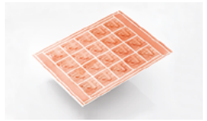
curamik®
ENABLING POWER EFFICIENCY

curamik®
ENDURANCE

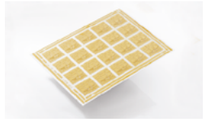
Product Information

ROGERS CORPORATION

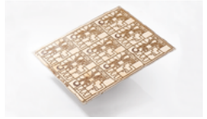
curamik® ENDURANCE DBC Portfolio



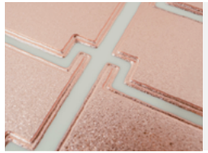
curamik®
Power
(Al_2O_3) DBC



curamik®
Power Plus
(HPS) DBC



curamik®
Thermal
(AlN) DBC



New

curamik®
Endurance
DBC

curamik® Endurance extends the field of applications for DBC.

curamik Endurance Substrates

// curamik Endurance (Al_2O_3)
// curamik Endurance Plus (HPS)
// curamik Endurance Thermal (AlN)

Main Applications

// xEV
// Industrial (high power)
// Renewable (high power)
// Vehicle electrification
// Mass transit

curamik® Endurance Substrates provide enhanced performance compared to material combinations of the same dimensions. This reliability improvement makes the new substrates well suitable for high power applications, such as in EV/HEV, Vehicle Electrification, Industrial, Renewable and Mass Transit.

curamik® ENDURANCE Reliability

Cycling Condition

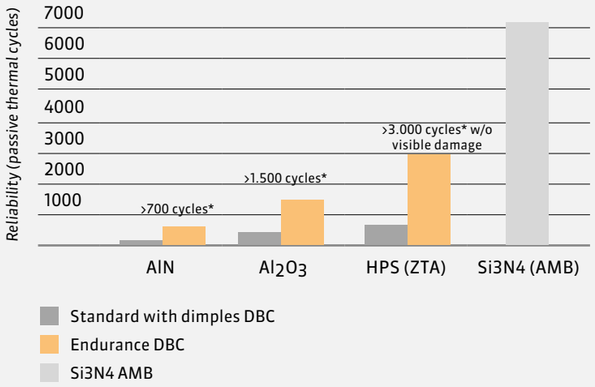
// -55°C to 150°C
// 15 min at each plateau

Reference Layout

// Rogers standard test layout
// 0.3 mm copper top & bottom
// 0.32 mm HPS (ZTA)/Al_2O_3/Si_3N_4 ceramic
// 0.63 mm AlN

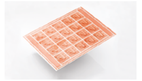
Thermal cycle tests show that curamik® Endurance substrates have an extraordinary increased lifetime compared to its alternative standard DBC substrates with dimples (AlN, Al_2O_3, HPS (ZTA)).

Enhanced reliability compared to material combinations of the same dimensions.

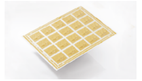


*Depending on customer layout

curamik® ENDURANCE DBC Portfolio



curamik®
Power
(Al_2O_3) DBC



curamik®
Power Plus
(HPS) DBC

curamik®
Thermal
(AlN) DBC

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curamik® ENDURANCE Our Solution – Endurance by Design

Properties

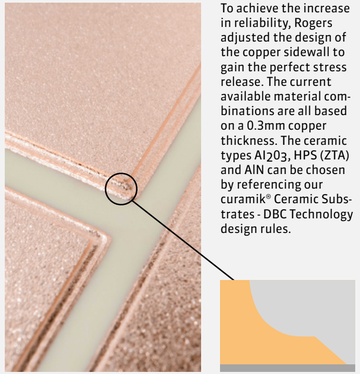
// Cu-Thickness: 0.3 mm
// Ceramic Types: Al_2O_3, HPS (ZTA), AlN
// Thermal conductivity: 24, 26, 170 W/mK
// Ceramic Thicknesses: acc. Std. Design Rules

Material

ceramik thickness (in mm)	Al_2O_3	HPS (ZTA)	AlN
0.25	✓	✓	
0.32	✓	✓	
0.38	✓		
0.5	✓		
0.63	✓		✓
1.00	✓		✓

Al_2O_3	other thicknesses on request
HPS (ZTA)	Zr02 toughened Al_2O_3 with 9% content
AlN	other thicknesses on request

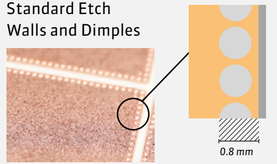
Known material and combinations for easy implementation.



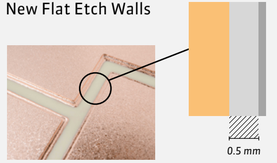
To achieve the increase in reliability, Rogers adjusted the design of the copper sidewall to gain the perfect stress release. The current available material combinations are all based on a 0.3mm copper thickness. The ceramic types Al_2O_3, HPS (ZTA) and AlN can be chosen by referencing our curamik® Ceramic Substrates - DBC Technology design rules.

Flat walls consume ~40% less surface than dimples.

Standard Etch
Walls and Dimples



New Flat Etch Walls



Milestones

Samples – available
Design Rules – available
SOP – Q4

Better Price and Performance Ratio

More Usable Area

Higher Reliability

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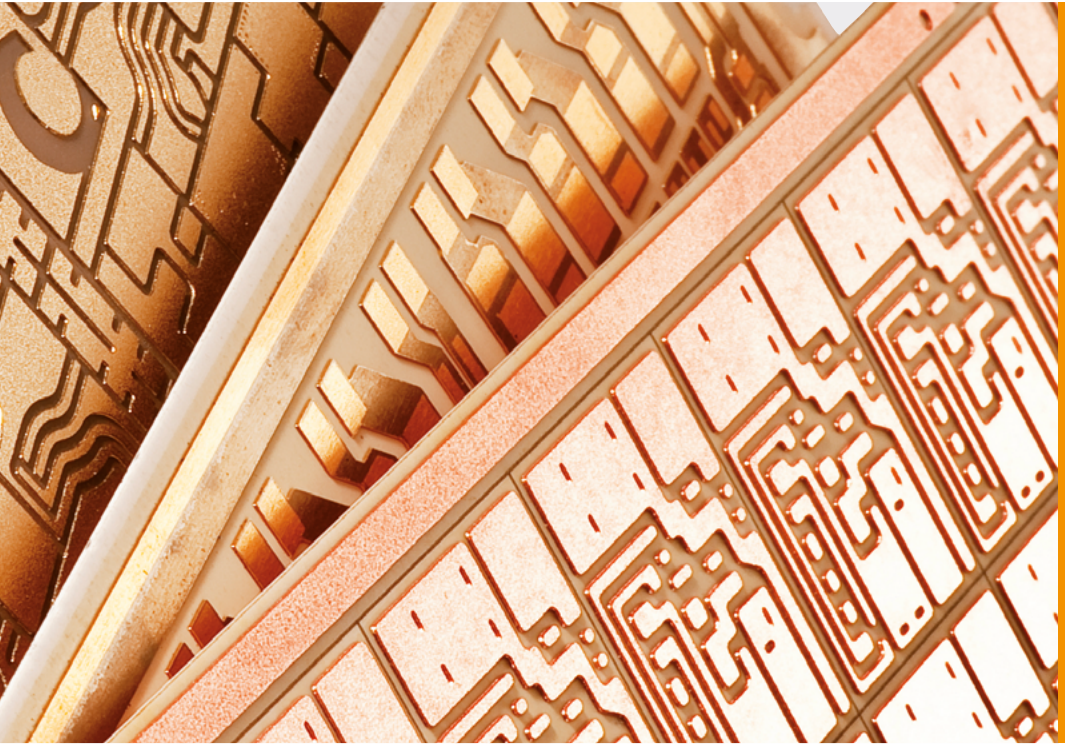

Rogers Corporation
www.rogerscorp.com
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