

FACT SHEET

ICT-TCC-ALN

formerly
ICT-ALN



ICT-TCC-ALN-200 is a aluminiumnitrid-based ceramic material and the high-performance solution when it comes to efficient cooling for high-power electronic power. ALN ceramic is distinguished by its particularly high strength and very high thermal conductivity.



8 TECHNICAL CERAMICS

DESCRIPTION

ICT-TCC-ALN-200 - truly an optimal solution when it comes to efficient cooling for high-power electronic power.

Maximum performance combined with high packing density (leading to minimal space) automatically leads electric components to develop high temperatures. To protect the components, the use of the TIM that matches the needs of the application the most, has to be used because the heat released in the process must be reliably dissipated. At this point the ICT-Südwerk comes into play: with our high performance suppliers in matters of aluminiumnitrid ceramic we can supply the ICT-TCC-ALN-200; a product with outstanding isolating characteristics and a very high thermal conductivity (≥ 180 W/mK).

Ceramic discs are typically used from 0,5 to 2,0mm or more thicker depending on the user specification.

Despite the high thermal conductivity there is a general problem. For optimum connection of the power component to the heat sink, either a metallization is required or a TIM in the form of heat conducting paste or heat conducting adhesive. Because the optimal thermal path, i.e. the heat transfer, is only guaranteed if the thermal barriers are reduced.

Our Tipp: Use pure phase-change materials without substrate carriers.

ICT product variants that are ideally suited for this case:

- › ICT-Xp45-4W-14R | series
- or the **TC-Fill-up-STICK** product variants
- › **ICT-BAR-In-** (oder Ac) -19G / 001 oder
- › **ICT-PEN-In-** (oder Ac) -19G / 001

FEATURES

Other features:

- › Very good electrical insulation (15kV/mm)
- › Medium to extremely high mechanical strength (300 to 630 MPa)
- › Very high compressive strength (2000 to 4000 MPa)
- › Very high hardness
- › High thermal conductivity (up to 180 W/mK)
- › Specific Heat J/kg \cdot k = 738 ± 20
- › High corrosion and wear resistance
- › Good gliding properties
- › Low Density (3.30 | 3.35 g/cm³)
- › Operating temperature without mechanical load 1000 to 1500 °C

Thermal expansion coefficient

- › RT - 100° C $10^{-6}K^{-1} = 3,6$ | RT - 300° C $10^{-6}K^{-1} = 4,6$
- › RT - 500° C $10^{-6}K^{-1} = 5,2$ | T - 1000° C $10^{-6}K^{-1} = 5,6$

TYPICAL PROPERTIES

Operating temperature	from to 1,000 °C
Thermally conductive	Yes
Thermal conductivity	180 W/m ² K
Thermal resistance (inch ² / 645,16mm ²)	0.12 K/W
Density	3.3 g/cm ³
Color	Translucent Medium Gray
Material	Aluminium-Nitrid Aufbau
Dielectric strength	16 kV (AC)
Electrically conductive	No
Hardness	9 Härte (nach MOHS) (Elastizitätsmodul)

DELIVERY FORMS / APPLICATIONS

- All dimensions available for standard semiconductor enclosure
- In dimensions according to customer specification
- Also available in plate dimensions: 115 x 115/ 165 x 115/ 190 x 138 mm
- Thickness: 0,50 - 2.0 mm (+/- 10%)
- Additional material thickness can be requested

ICT4TIM Partners



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