



We are the link
between the real and
the digital world.

1200 V CoolSiC™ MOSFET Easy 1B/2B modules with AlN ceramic

Infineon's virtual show 2020



New ceramic material brings significant R_{thJH} improvement

Target applications



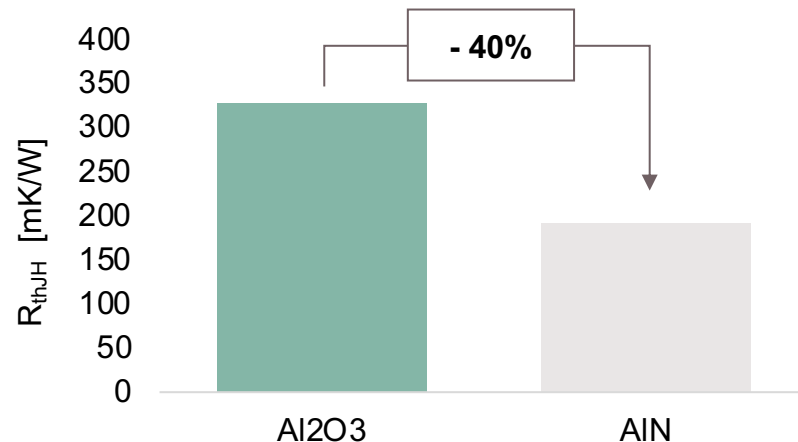
... and more

Lead types

$R_{DS(on)}$ [mOhm]	EasyDUAL™
11	FF11MR12W1M1_B70
6	FF6MR12W2M1_B70

- › Prototypes available
- › Data sheets available

R_{thJH} comparison



- › R_{thJH} improvement of 40% for ...
 - ... more output power
 - ... lower junction temperatures
 - ... longer lifetime
 - ... less cooling effort

New ceramic material brings significant R_{thJH} improvement for even more power

Advantages of using AlN ceramics

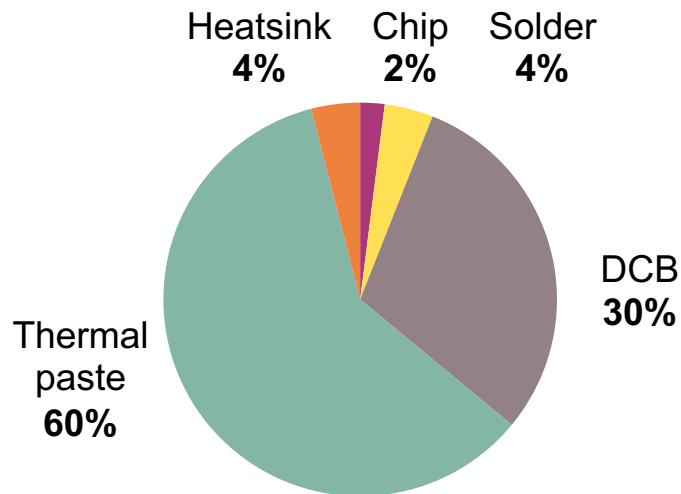
Thermal conductivity of DCB material:

- › Al₂O₃ λ_{th} : 24 W/mK
- › AlN λ_{th} : 170 W/mK

Thermal paste:

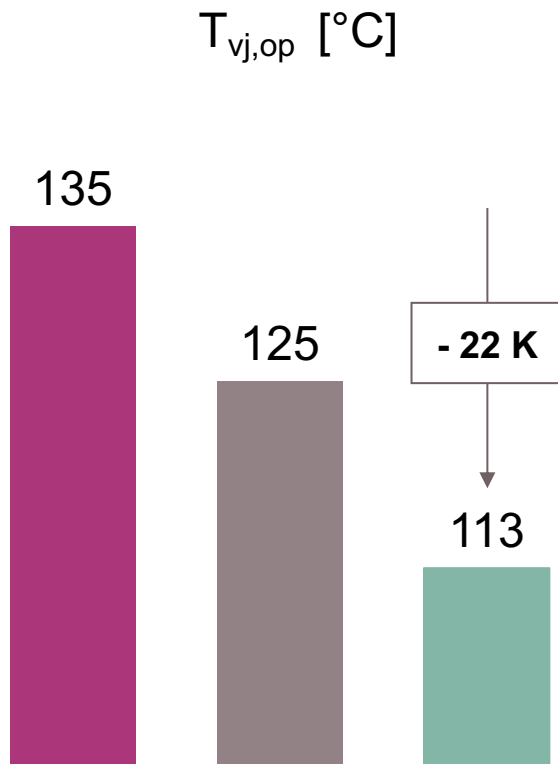
- › Minimization of the cavity between module and heatsink thanks to thicker AlN ceramic
- Reduction of the layer thickness of the thermal interface material

Typical R_{thJH} distribution



New ceramic material brings significant R_{thJH} improvement

Al2O3	
FF6MR12W2M1_B11	
R_{thJH}	0.328 K/W
Al2O3 + TIM	
FF6MR12W2M1P_B11	
R_{thJH}	0.266 K/W
AlN	
FF6MR12W2M1_B70	
R_{thJH}	0.192 K/W



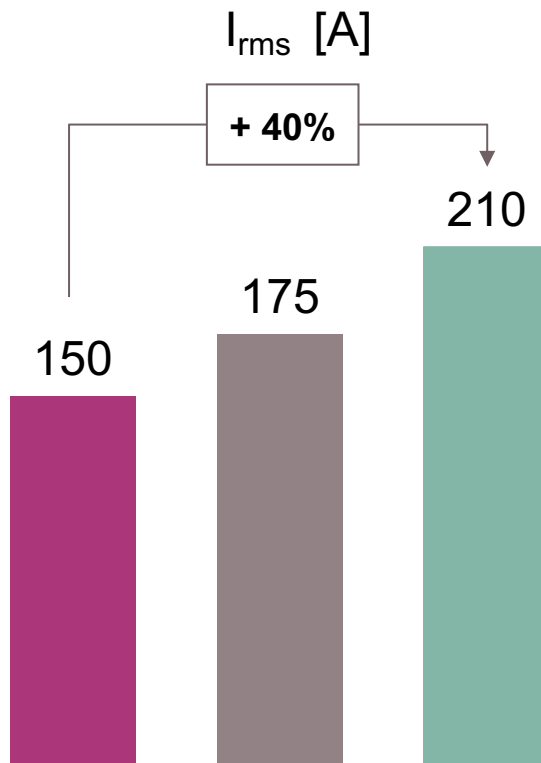
Conditions:

$I_{rms} = 130 \text{ A}$
 $f_{sw} = 34 \text{ kHz}$
 modulation = 1
 $\cos \phi = 0.85$
 $T_h = 90^{\circ}C$
 $V_{DC} = 720 \text{ V}$
 $V_{out} = 460 \text{ V}$

- FF6MR12W2M1_B11
- FF6MR12W2M1P_B11
- FF6MR12W2M1_B70

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FF6MR12W2M1P_B11	
R_{thJH}	0.266 K/W
AlN	
FF6MR12W2M1_B70	
R_{thJH}	0.192 K/W



Conditions:

$T_{vj,op} = 150^{\circ}\text{C}$

$f_{sw} = 34 \text{ kHz}$

modulation = 0.75

Power factor = 1

$T_h = 90^{\circ}\text{C}$

$V_{DC} = 720 \text{ V}$

$V_{out} = 460 \text{ V}$

■ FF6MR12W2M1_B11

■ FF6MR12W2M1P_B11

■ FF6MR12W2M1_B70



Part of your life. Part of tomorrow.