

# Liquid Cold Plate for Infineon HybridKIT™ DSC



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Designed to cool Infineon's innovative Double Sided Cooling HybridPack™ DSC Automotive IGBT modules, this Double Sided Cooling (DSC) Liquid Cold Plate is included in Infineon's HybridKIT™ DSC for electric and hybrid vehicles.

The unique design utilizes a single inlet and single outlet with optimized internal geometry to evenly cool both sides of up to three HybridPack™ DSC IGBT packages.

In the HybridKIT™ DSC, the cold plate comes fully assembled with three HybridPack™ DSC IGBT modules with pre-applied thermal interface material (TIM). A gate driver and logic board and DC-link capacitor are also already included in the HybridKIT™ DSC so customers can immediately start with lab evaluations.

## ORDERING INFORMATION

Contact your Aavid or Infineon representative for more information or contact us at [www.boydcorp.com/boyd-contact](http://www.boydcorp.com/boyd-contact)

Aavid offers a wide range of cold plate technologies including fully customized inlet/outlet designs, mounting, and flow paths to accommodate cooling requirements for cost effective, high volume applications.



## FEATURES & BENEFITS

### Features and Benefits

*Reduced solution size and weight with increased internal surface area for more turbulent flow and high heat transfer.*

*Optimized internal channel geometry maintains low pressure drop, improves system flow, and reduces pump costs.*

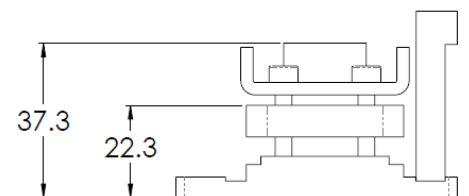
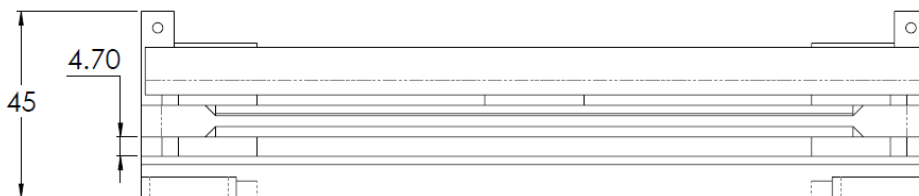
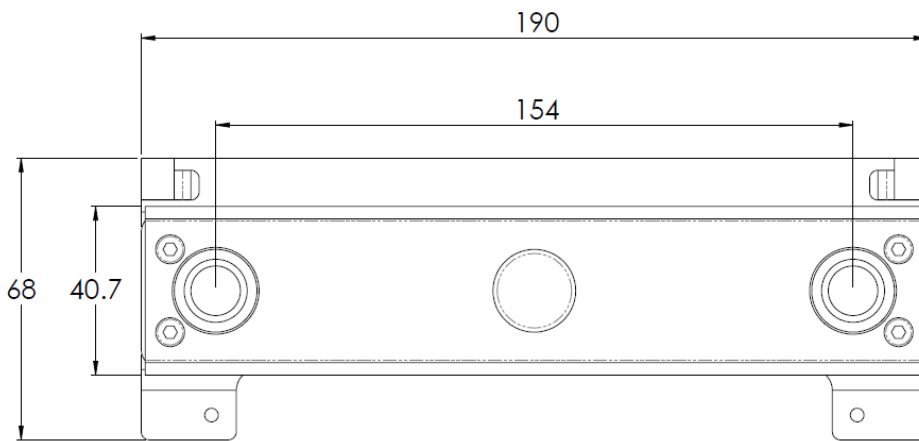
*Designed to Infineon requirements for optimized performance.*

*Easy to use, pre-assembled, and ready for testing and evaluation with Infineon's HybridPack™ DSC Modules.*

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## MECHANICAL

Drawing dimensions are shown in mm



# Liquid Cold Plate for Infineon HybridKIT™ DSC

## PERFORMANCE

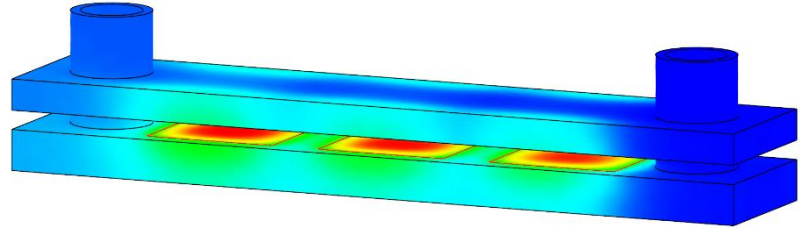
### Example Test Conditions

#### Device Settings:

Power Modules: 3 x HybridPACK™ DSC S1  
Voltage: 413 Vdc  
Switching Frequency: 8 kHz  
MI/PF: 0.9/0.9

#### Fluid:

System Fluid: 50/50 Water Glycol  
Inlet Temperature: 65°C  
Flow Rate: 10 LPM

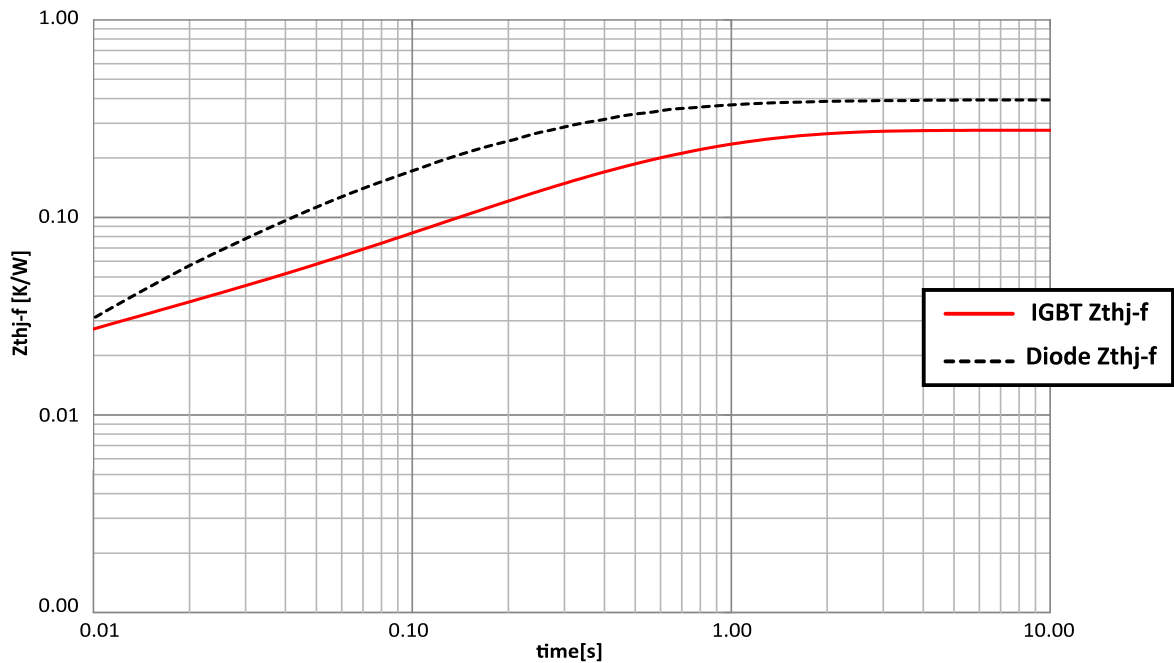


Typical Heat Distribution for 3 DSC IGBT Modules

#### Performance Summary:

$R_{th, Overall}$ : 0.026 °C/W  
 $R_{th, Single Module}$ : 0.08 °C/W  
Maximum Pressure Drop: 125 mbar

## HybridKIT™ DSC IGBT & Diode Thermal Impedance



IGBT				
i	1	2	3	4
r [K/w]	0.007204	1.49E-02	0.045359	0.20852
Tau[s]	1.00E-05	5.82E-03	9.31E-02	5.99E-01

Diode				
i	1	2	3	4
r [K/w]	0.024417	1.15E-03	0.367064	0.000582
Tau[s]	1.65E-03	1.00E+02	2.15E-01	1.00E+02

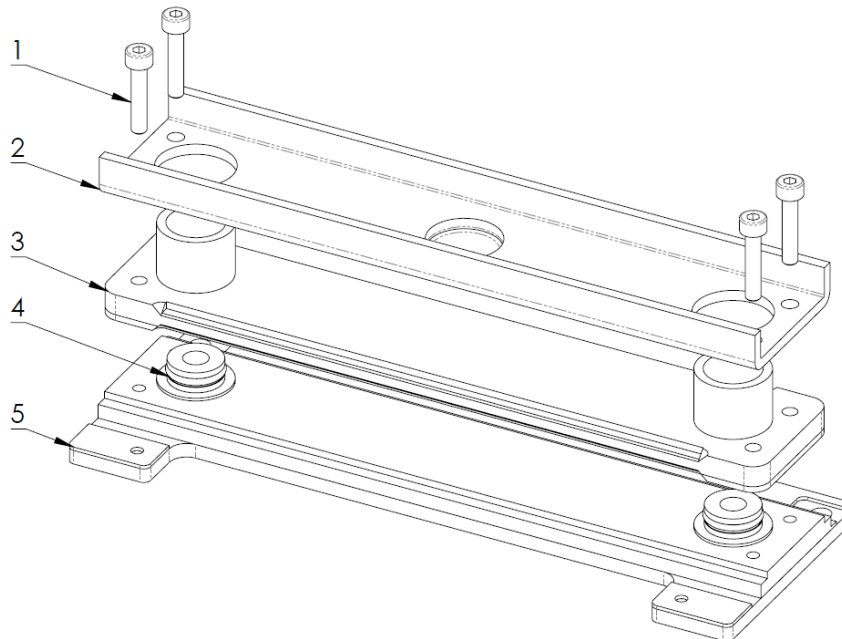
# Liquid Cold Plate for Infineon HybridKIT™ DSC

## ASSEMBLY INSTRUCTIONS

The HybridKIT™ DSC includes Aavid's DSC Liquid Cold Plate fully assembled with three HybridPack™ DSC IGBT modules installed. The assembly also includes pre-applied thermal interface material (TIM) optimized for automotive and electric vehicle use.

You may need to disassemble the HybridKIT™ DSC Liquid Cold Plate during testing, follow these steps for reassembly:

1. Clean aluminum surfaces with alcohol where the TIM was applied on parts #3 and #5 in the diagram below.
2. Apply new TIM to the mounting surfaces on both plates where DSC modules will be installed. Contact Aavid for TIM recommendations if needed.
3. Put the O-rings (#3) in the O-ring grooves on the bottom cold plate (#5)
4. Place the HybridPack™ DSC IGBT Modules on the bottom plate. See next page for positioning guidelines.
5. Assemble the top plate (#3) on top of the modules, aligning the ports with the bottom cold plate (#5).
6. Add the clamp (#2) over the ports of the top plate (#3).
7. Install the screws with the washers (#1) at a maximum torque of 1.7 N·m.



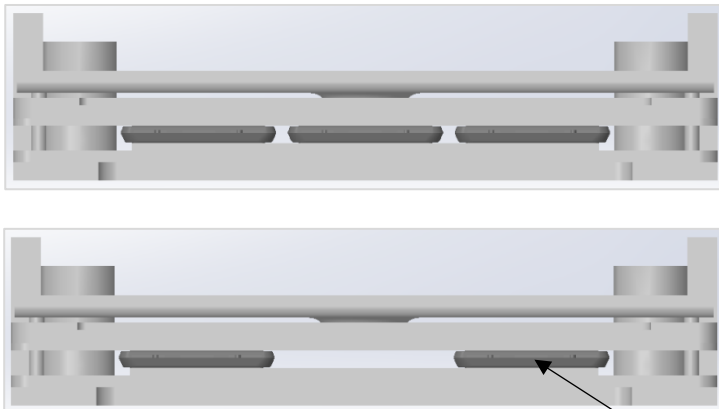
Number	Description	Qty.
1	M4 x 0.7 Screw and Washer	4
2	Clamp	1
3	DSC Liquid Cold Plate, Top	1
4	O-Ring	2
5	DSC Liquid Cold Plate, Bottom	1

# Liquid Cold Plate for Infineon HybridKIT™ DSC

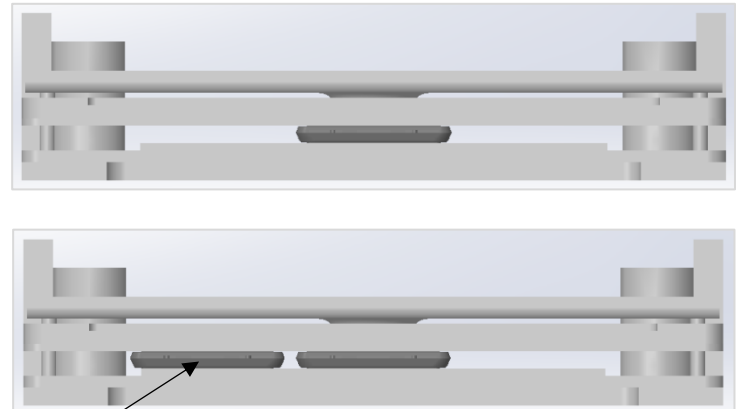
## ASSEMBLY GUIDELINES

1. Refrain from torquing the M4 screws higher than 1.7 N·m to prevent damage to the M4 holes.
  - a. Frequent assembly and disassembly may naturally wear the M4 threads.
2. If O-rings are damaged, discard and replace. Damaged O-rings will not properly seal the system and may lead to leakage.
3. Take care when placing the HybridPack™ DSC IGBT modules on the Liquid Cold Plate prior to assembly. Correct positioning of the modules is required to properly distribute clamping force and prevent possible deflection or deformation of the parts.
  - a. See below diagrams for appropriate module placement.
    - i. Modules must be placed symmetrically.
    - ii. More than one module must be installed, even if only one is in use.

### Correct Positioning Examples



### Incorrect Positioning Examples



DSC Module

Information contained in this datasheet is subject to change based on Infineon requirements and may change without written notice.