M3D

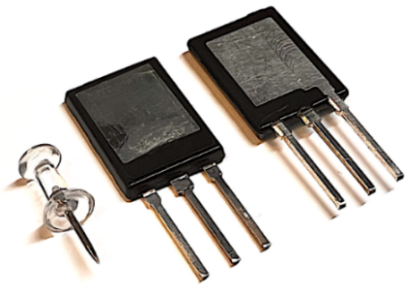
800kW (840A 800V) 3-Phase Power Stack
1200V SiC die; 8 per switch
0.05°C/W R_{TH} 2nH L_{par}

1.1 kg
0.34 L
188 x 44 x 57mm

Each switch consists of two non-isolated Power Modules, with both sides (Drain & Source) electrically live.

2 patents issued
2 pending

POWER MODULE PARAMETER	VALUE
Number of SiC die	Up to 4
Thermal Resistance ($R_{th,j-c}$)	< 0.02 °C/W
Inductance (L_{par})	< 1nH
Continuous Current (Max)	420 A
Static $R_{DS(on)}$ @ 25°C	4.0 mΩ
Static $R_{DS(on)}$ @ 200°C	7.5 mΩ



The M3D consists of four Power Modules per phase, in a 3-phase configuration.

M3D POWER STACK PARAMETER	VALUE	CONDITIONS
Continuous Drain Current (Max)	840 A	T_F = 65°C; 10L/min coolant flow
Thermal Resistance ($R_{TH,j-f}$)	< 0.05 °C/W	Junction to Fluid; 10L/min coolant flow
Inductance (L_{par})	<2nH	V- to V+
Static $R_{DS(on)}$ @ 25°C	2.00 mΩ	V_{GS} = 18V, I_D = 480A
Static $R_{DS(on)}$ @ 200°C	3.75 mΩ	V_{GS} = 18V, I_D = 480A
Turn-On Switching Energy (E_{ON})	8.0 mJ	V_{DD} = 800V, I_D = 60A
Turn-Off Switching Energy (E_{OFF})	5.4 mJ	V_{DD} = 800V, I_D = 60A
Reverse Recovery Time (t_{rr})	25 ns	V_{DD} = 800V, I_D = 480A
Reverse Diode V_F @ 480A	5.2 V	V_{GS} = -5V

*Values will vary depending on the die used.

APPLICATIONS

- Power Conversion across Automotive, Industrial, Defense, Data Centers, Renewable, Grid, etc.

3 patents issued
5 pending

BENEFITS

- Ultra-compact, high-density 3-phase power stack.
- Fast switching, with industry-leading thermal performance. (<0.05°C/W) and ultra-low parasitic inductance (<2nH).
- Can use any supplier's SiC, IGBT, or both.
- 75% smaller 50% lighter converter with 30% fewer dies.
- Scalable - M3S (400kW) and M3Q (1600kW) in development.

FEATURES

- Gate driver board available.
- Eval Kit available (with 800V 320uF bulk cap)
- 5.5uF close-coupled snubber caps per phase available.

OPTIONS TO LICENSE IP OR PURCHASE PRODUCT

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