

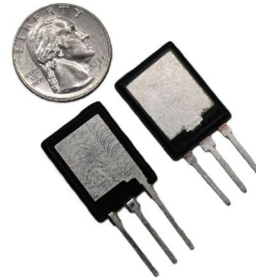
M3Q

1.6MW (1680A 800V) 3-Phase Power Stack
1200V SiC die; 16 per switch
0.03°C/W R_{TH} 2nH L_{par}

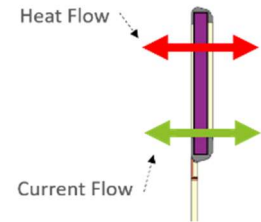
1.74 kg
0.55 L
207 x 47 x 80mm

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

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



2 patents issued
2 pending



The M3Q consists of eight Power Modules per phase, in a 3-phase configuration.

M3Q PARAMETER	VALUE	CONDITIONS
Continuous Drain Current	1680 A	$T_F = 65^\circ\text{C}$, 10L/min coolant flow
Thermal Resistance ($R_{TH,j-f}$)	< 0.03 °C/W	Junction to Fluid, 10L/min coolant flow
Inductance	<2nH	V- to V+
Static $R_{DS(on)}$ @ 25°C	1.0 mΩ	$V_{GS} = 15\text{V}$, $I_D = 960\text{A}$
Static $R_{DS(on)}$ @ 200°C	1.9 mΩ	$V_{GS} = 15\text{V}$, $I_D = 960\text{A}$
Turn-On Switching Energy (E_{ON})	16 mJ	$V_{DD} = 800\text{V}$, $I_D = 960\text{A}$
Turn-Off Switching Energy (E_{OFF})	10.8 mJ	$V_{DD} = 800\text{V}$, $I_D = 960\text{A}$
Reverse Recovery Time (t_{rr})	25 ns	$V_{DD} = 800\text{V}$, $I_D = 960\text{A}$
Reverse Diode V_F @ 480A	5.2 V	$V_{GS} = -5\text{V}$

*Values will vary depending on the die used.

APPLICATIONS

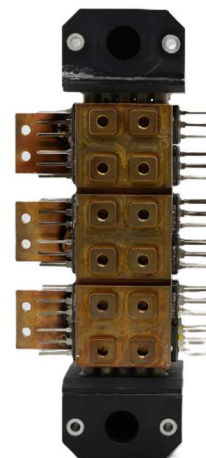
- Power Conversion across: Automotive, Industrial, Defense, Data Centers, Grid.

BENEFITS

- High-density 3-phase power stack capable of sustained 1600A operation at 800V.
- Fast, efficient switching, with industry-leading thermal performance (<0.03°C/W) and ultra-low inductance <2nH).
- Can use any supplier's SiC, IGBT, or both.
- Scalable - M3S (400kW) and M3D (800kW).

FEATURES

- Gate driver board available.
- Eval Kit available.
- 5.5uF close-coupled snubber caps per phase available.



6 patents issued
3 pending



OPTIONS TO LICENSE IP OR PURCHASE PRODUCT

MAREL POWER SOLUTIONS