MPM1A800A120C5

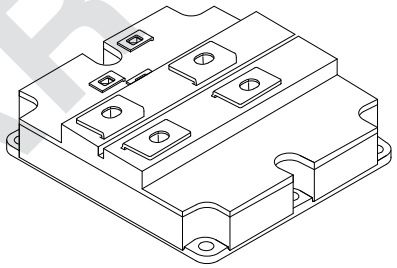
Motorola Preferred Device

Preliminary Data Sheet
Hybrid Power Module

800 AMP, 1200 VOLT
HYBRID POWER MODULE

This module is designed for use in switching applications. Each module utilizes advanced insulated gate bipolar transistors (IGBT) in a single configuration with a reverse–connected free–wheeling diode. Applications include AC motor control, UPS, and motion/servo control.

- 800 Amp, 1200 Volt IGBT Switch
- Low Inductance Package
- Convenient Package Outline
- Isolated Baseplate for Easy Heat Sinking
- Low $V_{CE(sat)}$



PLASTIC PACKAGE
PRELIMINARY

MAXIMUM DEVICE RATINGS (T_J = 25°C unless otherwise noted)

Rating	Symbol	Value	Unit
MAXIMUM RATED VALUES			
IGBT Reverse Voltage	V_{CES}	1200	V
Gate-Emitter Voltage	V_{GES}	± 20	V
Continuous IGBT Collector Current	I_C	800	A
Peak IGBT Collector Current	$I_{C(pk)}$	1600	A
Continuous Free-Wheeling Diode Current	I_F	800	A
Peak Free-Wheeling Diode Current	$I_{F(pk)}$	1600	A
Total Power Dissipation	P_{tot}	6300	W
IGBT Junction Temperature Range	T_J	– 40 to +150	°C
Free-Wheeling Diode Junction Temperature Range	T_J	– 40 to +125	°C

This document contains information on a product under development. Motorola reserves the right to change or discontinue this product without notice.

Preferred devices are Motorola recommended choices for future use and best overall value.

REV 1

MAXIMUM DEVICE RATINGS (continued) (T_J = 25°C unless otherwise noted)

Rating		Symbol	Value	Unit
TOTAL MODULE				
Isolation Voltage		V_{ISO}	3500	VAC
Maximum Junction Temperature		T_{jmax}	150	°C
Operating Temperature Range	Transistor Diode	T_{opr} T_{opr}	– 40 to + 150 – 40 to + 125	°C °C
Storage Temperature Range		T_{stg}	– 40 to + 125	°C
Mounting Torque		–	3.0	Nm
Terminal Mounting Torque		–	8 – 10	Nm

ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
OUTPUT INVERTER					
Gate-Emitter Leakage Current (V_{CE} = 0 V, V_{GE} = ± 20 V)	I_{GES}	–	40	400	nA
Collector-Emitter Leakage Current (V_{CE} = 1200 V, V_{GE} = 0 V) T_J = 25°C T_J = 125°C	I_{CES}	 – –	 5 20	 25 –	 mA mA
Gate-Emitter Threshold Voltage (V_{CE} = V_{GE}, I_C = 80 mA)	$V_{GE(th)}$	4.5	5.5	6.5	V
Collector-Emitter Breakdown Voltage (I_C = 100 μA, V_{GE} = 0)	$V_{(BR)CES}$	1200	1300	–	V
Collector-Emitter Saturation Voltage (I_C = 1200 A, V_{GE} = 15 V) T_J = 25°C T_J = 125°C	$V_{CE(SAT)}$	 – –	 3.0 3.8	 – –	 V V
Input Capacitance (V_{GE} = 0 V, V_{CE} = 25 V, f = 1.0 MHz)	Cies	–	160	–	nF
Fall Time – Inductive Load (V_{CE} = 600 V, I_C = 1.2 kA)	t_{fi}	 –	 0.3	 –	 μs
Diode Forward Voltage (I_F = 1200 A, V_{GE} = 0 V)	V_F	–	2.7	–	V
Thermal Resistance – IGBT (Each Die)	$R_{\theta JC}$	–	–	0.02	°C/W
Thermal Resistance – Free-Wheeling Diode (Each Die)	$R_{\theta JC}$	–	–	0.03	°C/W

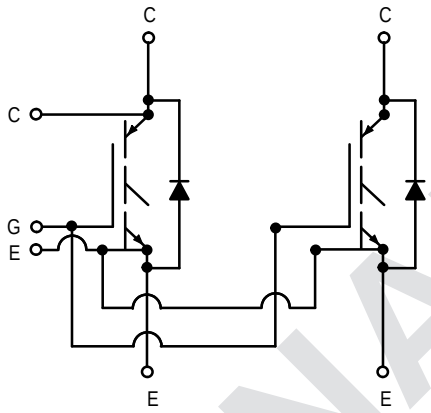
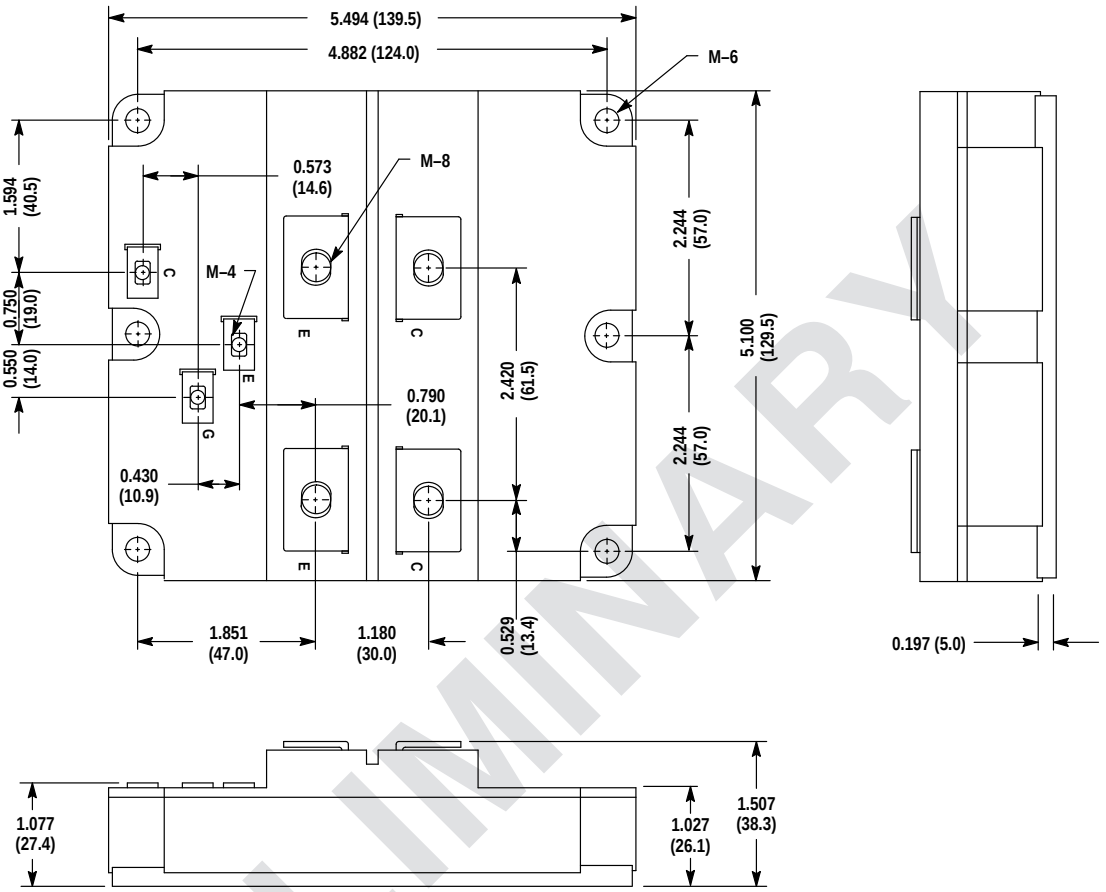


Figure 1.

PACKAGE DIMENSIONS



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