

Preliminary Data Sheet

Hybrid Power Module

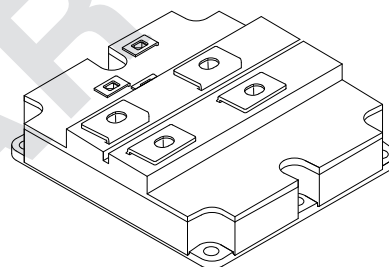
This module is designed for use in switching applications. Each module utilizes advanced insulated gate bipolar transistors (IGBT) in a single configuration with a reverse-connected free-wheeling diode. Applications include AC motor control, UPS, and motion/servo control.

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

MPM1A800A120C5

Motorola Preferred Device

**800 AMP, 1200 VOLT
HYBRID POWER MODULE**



**PLASTIC PACKAGE
PRELIMINARY**

MAXIMUM DEVICE RATINGS ($T_J = 25^\circ\text{C}$ 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	$^\circ\text{C}$
Free-Wheeling Diode Junction Temperature Range	T_J	- 40 to +125	$^\circ\text{C}$

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) ($T_J = 25^\circ\text{C}$ unless otherwise noted)

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

ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$ unless otherwise noted)

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

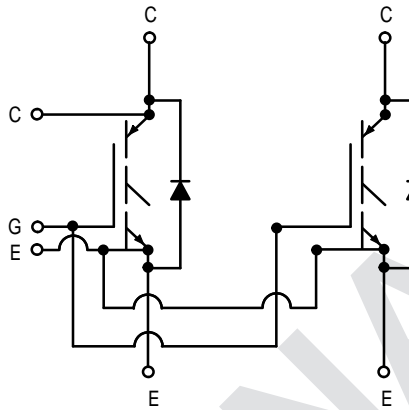
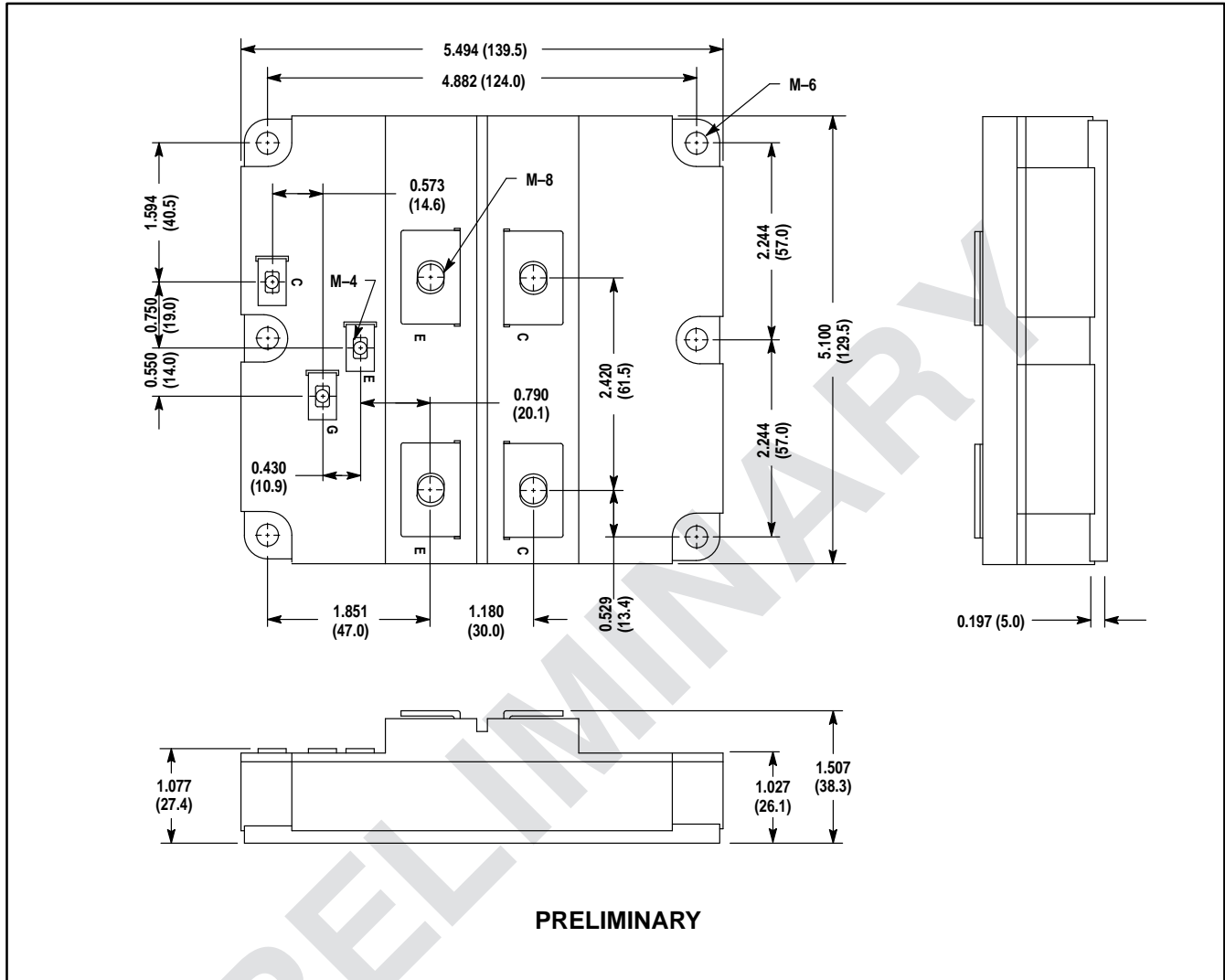



Figure 1.

PACKAGE DIMENSIONS



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