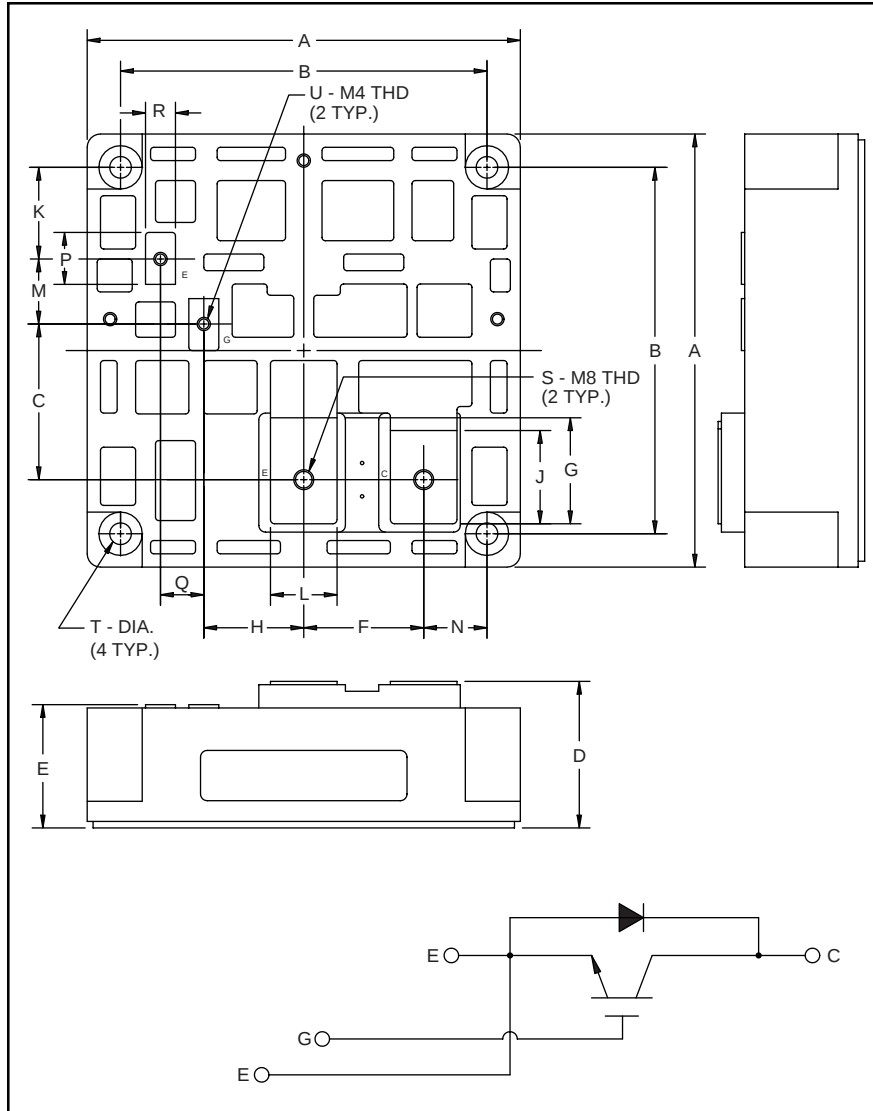


Single IGBTMOD™ H-Series Module 1200 Amperes/1200 Volts



Outline Drawing and Circuit Diagram

Dimensions	Inches	Millimeters
A	5.12	130.0
B	4.33±0.01	110.0±0.25
C	1.840	46.75
D	1.73±0.04/0.02	44.0±1.0/0.5
E	1.46±0.04/0.02	37.0±1.0/0.5
F	1.42	36.0
G	1.25	31.8
H	1.18	30.0
J	1.10	28.0
K	1.08	27.5

Dimensions	Inches	Millimeters
L	0.79	20.0
M	0.77	19.5
N	0.75	19.0
P	0.61	15.6
Q	0.51	13.0
R	0.35	9.0
S	M8 Metric	M8
T	0.26 Dia.	Dia. 6.5
U	M4 Metric	M4



Description:

Powerex IGBTMOD™ Modules are designed for use in switching applications. Each module consists of one IGBT Transistor in a single configuration with a reverse-connected super-fast recovery free-wheel diode. All components and interconnects are isolated from the heat sinking baseplate, offering simplified system assembly and thermal management.

Features:

- ☐ Low Drive Power
- ☐ Low $V_{CE(sat)}$
- ☐ Discrete Super-Fast Recovery Free-Wheel Diode
- ☐ Isolated Baseplate for Easy Heat Sinking

Applications:

- ☐ AC Motor Control
- ☐ Motion/Servo Control
- ☐ UPS
- ☐ Welding Power Supplies
- ☐ Laser Power Supplies

Ordering Information:

Example: Select the complete part module number you desire from the table below -i.e. CM1200HA-24J is a 1200V (V_{CES}), 1200 Ampere Single IGBTMOD™ Power Module.

Type	Current Rating Amperes	V_{CES} Volts (x 50)
CM	1200	24



Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (724) 925-7272

CM1200HA-24J
Single IGBTMOD™ H-Series Module
1200 Amperes/1200 Volts

Absolute Maximum Ratings, $T_j = 25^\circ\text{C}$ unless otherwise specified

Ratings	Symbol	CM1200HA-24J	Units
Junction Temperature	T_j	-40 to +150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-40 to +125	$^\circ\text{C}$
Collector-Emitter Voltage (G-E SHORT)	V_{CES}	1200	Volts
Gate-Emitter Voltage (C-E SHORT)	V_{GES}	± 20	Volts
Collector Current ($T_c = 25^\circ\text{C}$)	I_C	1200	Amperes
Peak Collector Current ($T_j \leq 150^\circ\text{C}$)	I_{CM}	2400*	Amperes
Emitter Current** ($T_c = 25^\circ\text{C}$)	I_E	1200	Amperes
Peak Emitter Current** ($T_j \leq 150^\circ\text{C}$)	I_{EM}	2400*	Amperes
Maximum Collector Dissipation ($T_c = 25^\circ\text{C}$) ($T_j < 150^\circ\text{C}$)	P_c	5800	Watts
Max. Mounting Torque M8 Terminal Screws	—	95	in-lb
Max. Mounting Torque M6 Mounting Screws	—	40	in-lb
Mounting Torque G(E) Terminal M4	—	15	in-lb
Module Weight (Typical)	—	1600	Grams
Isolation Voltage, Main Terminal to Base Plate, AC 1 Min.	V_{iso}	2500	Volts

Static Electrical Characteristics, $T_j = 25^\circ\text{C}$ unless otherwise specified

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Collector-Cutoff Current	I_{CES}	$V_{\text{CE}} = V_{\text{CES}}, V_{\text{GE}} = 0\text{V}$	—	—	6	mA
Gate Leakage Current	I_{GES}	$V_{\text{GE}} = V_{\text{CES}}, V_{\text{CE}} = 0\text{V}$	—	—	0.5	μA
Gate-Emitter Threshold Voltage	$V_{\text{GE(th)}}$	$I_C = 120\text{mA}, V_{\text{CE}} = 10\text{V}$	4.5	6.0	7.5	Volts
Collector-Emitter Saturation Voltage	$V_{\text{CE(sat)}}$	$I_C = 1200\text{A}, V_{\text{GE}} = 15\text{V}, T_j = 25^\circ\text{C}$	—	2.4	3.1	Volts
		$I_C = 1200\text{A}, V_{\text{GE}} = 15\text{V}, T_j = 125^\circ\text{C}$	—	2.5	—	Volts
Total Gate Charge	Q_G	$V_{\text{CC}} = 600\text{V}, I_C = 1200\text{A}, V_{\text{GE}} = 15\text{V}$	—	5000	—	nC
Emitter Current Voltage**	V_{EC}	$I_E = 1200\text{A}, V_{\text{GE}} = 0\text{V}$	—	—	3.7	Volts

Dynamic Electrical Characteristics, $T_j = 25^\circ\text{C}$ unless otherwise specified

Characteristics		Symbol	Test Conditions	Min.	Typ.	Max.	Units
Input Capacitance		C _{ies}	V _{GE} = 0V, V _{CE} = 10V	—	—	200	nF
Output Capacitance		C _{oes}		—	—	70	nF
Reverse Transfer Capacitance		C _{res}		—	—	40	nF
Resistive	Turn-on Delay Time	t _{d(on)}	V _{CC} = 600V, I _C = 1200A,	—	—	600	ns
Load	Rise Time	t _r	V _{GE1} = V _{GE2} = 15V,	—	—	1800	ns
Switching	Turn-off Delay Time	t _{d(off)}	R _G = 3.3Ω, Resistive	—	—	1200	ns
Time	Fall Time	t _f	Load Switching Operation	—	—	1500	ns
Diode Reverse Recovery Time**		t _{rr}	I _E = 1200A, di _E /dt = −2400A/μs	—	—	300	ns
Diode Reverse Recovery Charge**		Q _{rr}	I _E = 1200A, di _E /dt = −2400A/μs	—	9.0	—	μC

Thermal and Mechanical Characteristics, $T_j = 25^\circ\text{C}$ unless otherwise specified

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal Resistance, Junction to Case**	$R_{\text{th(j-c)Q}}$	Per IGBT	—	—	0.022	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction to Case**	$R_{\text{th(j-c)R}}$	Per FWDi	—	—	0.050	$^\circ\text{C}/\text{W}$
Contact Thermal Resistance	$R_{\text{th(c-f)}}$	Per Module, Thermal Grease Applied	—	—	0.018	$^\circ\text{C}/\text{W}$

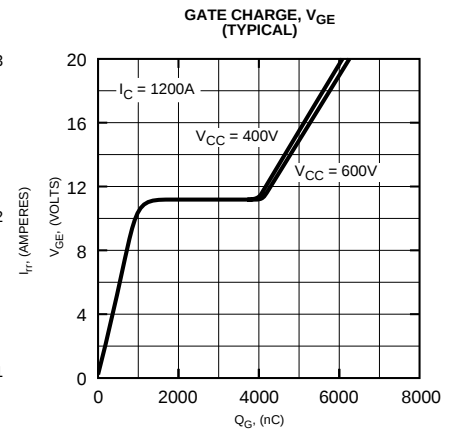
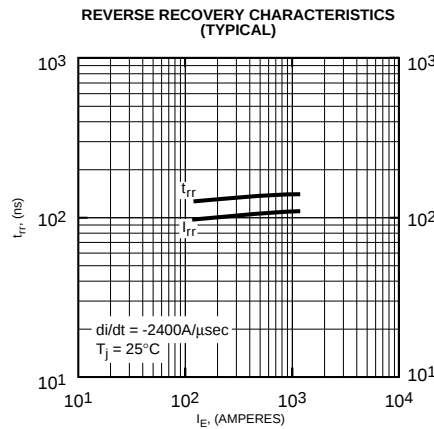
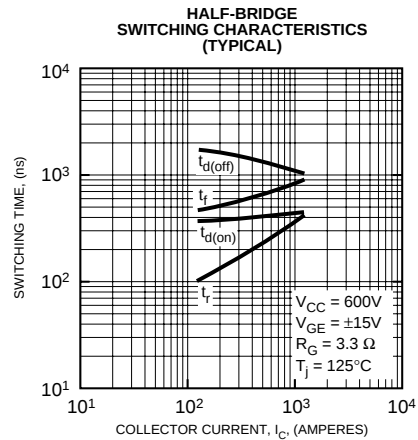
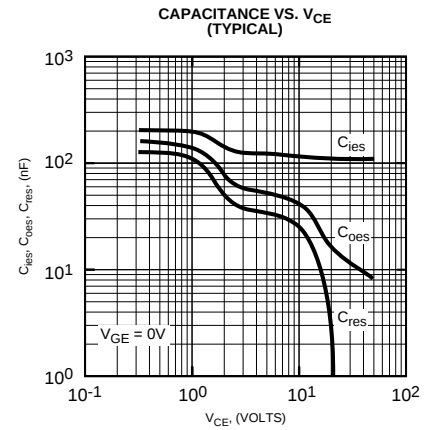
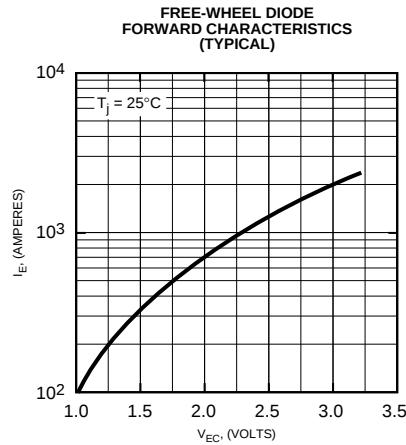
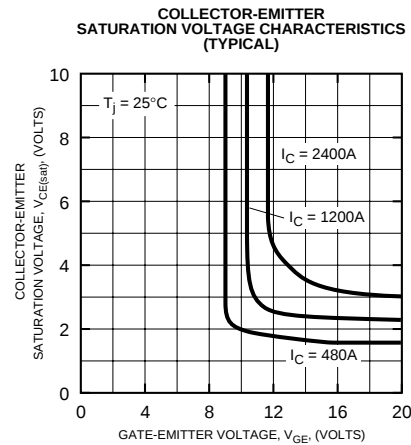
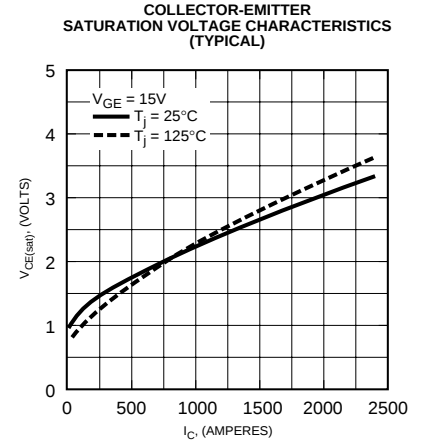
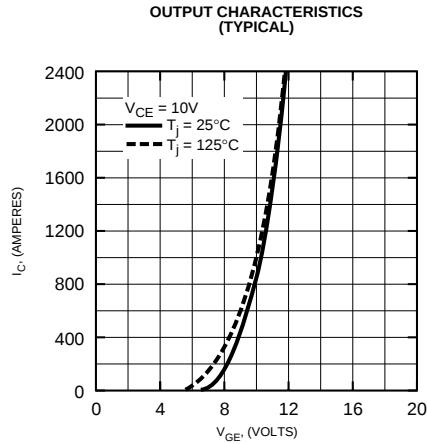
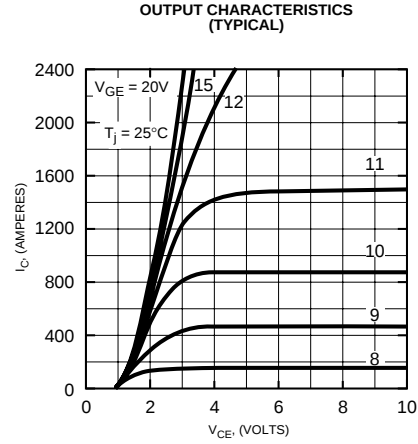
* Pulse width and repetition rate should be such that device junction temperature (T_j) does not exceed $T_{j(\text{max})}$ rating.

**Represents characteristics of the anti-parallel, emitter-to-collector free-wheel diode (FWDi).

CM1200HA-24J

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