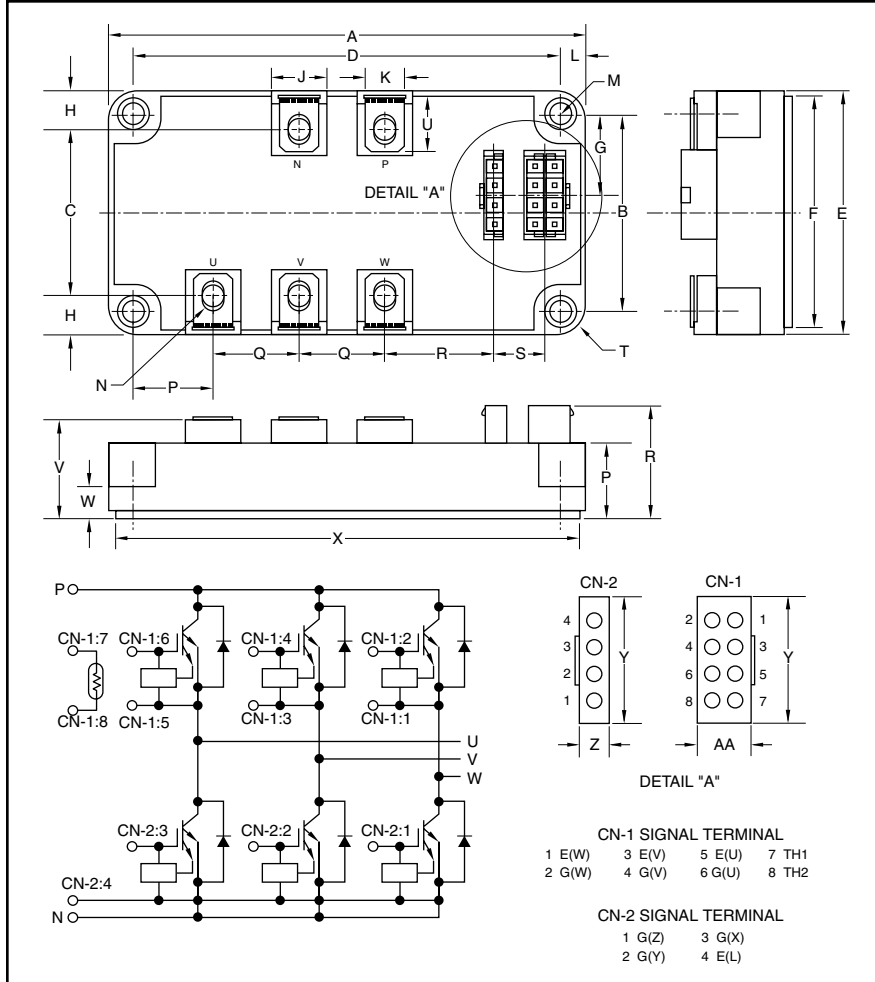


Six IGBTMOD™ Compact IGBT Series Module 200 Amperes/600 Volts



Description:

Powerex Six IGBTMOD™ Compact IGBT Series Modules are designed for use in switching applications. Each module consists of two IGBT Transistors in a half-bridge configuration, with each transistor having 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:

- Integrated Thermistor
- Low $V_{CE(sat)}$
- 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 number from the table below -i.e. MG200J6ES61 is a 600V (V_{CES}), 200 Ampere Six IGBTMOD™ Compact IGBT Series Module.

Type	Current Rating Amperes	V_{CES} Volts (x 10)
MG	200	60

Outline Drawing and Circuit Diagram

Dimensions	Inches	Millimeters
A	4.80±0.04	122.0±1.0
B	1.97±0.01	50.0±0.3
C	1.61±0.03	42.0±0.8
D	4.33±0.01	110.0±0.3
E	2.44±0.04	62.0±1.0
F	2.32±0.02	59.0±0.5
G	0.81±0.03	20.5±0.8
H	0.39±0.03	10.0±0.8
J	0.55	14.0
K	0.39	10.0
L	0.24	6.0
M	0.22 Dia.	5.5 Dia.
N	M5	M5

Dimensions	Inches	Millimeters
P	0.79±0.03	20.0±0.8
Q	0.86±0.03	22.0±0.8
R	1.12±0.03	28.5±0.8
S	0.55±0.03	13.9±0.8
T	0.24 Rad.	6.0 Rad.
U	0.53	13.6
V	1.02 -0.01/+0.04	26.0-0.3/+1.0
W	0.32	8.2
X	4.69±0.02	119.0±0.5
Y	0.88	22.5
Z	0.21	5.35
AA	0.42	10.7



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

Characteristics	Symbol	MG200J6ES61	Units
Power Device Junction Temperature	T_j	-20 to 150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-40 to 125	$^\circ\text{C}$
Mounting Torque, M5 Mounting Screws	—	31	in-lb
Mounting Torque, M5 Main Terminal Screws	—	31	in-lb
Module Weight (Typical)	—	375	Grams
Isolation Voltage, AC 1 minute, 60Hz Sinusoidal	V_{ISO}	2500	Volts

IGBT Inverter Sector

Collector-Emitter Voltage ($V_D = 15\text{V}$, $V_{CIN} = 15\text{V}$)	V_{CES}	600	Volts
Gate-Emitter Voltage	V_{GES}	± 20	Volts
Collector Current ($T_C = 25^\circ\text{C}$)	I_C	200	Amperes
Peak Collector Current ($T_C = 25^\circ\text{C}$)	I_{CP}	400	Amperes
Emitter Current ($T_C = 25^\circ\text{C}$)	I_E	200	Amperes
Peak Emitter Current ($T_C = 25^\circ\text{C}$)	I_{EM}	400	Amperes
Collector Dissipation ($T_C = 25^\circ\text{C}$)	P_C	1000	Watts

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

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
IGBT Inverter Sector						
Gate Leakage Current	I_{GES}	$V_{GE} = 20\text{V}$, $V_{CE} = 0\text{V}$	—	—	± 500	nA
Collector-Emitter Cutoff Current	I_{CES}	$V_{GE} = 0\text{V}$, $V_{CE} = 600\text{V}$	—	—	1.0	mA
Gate-Emitter Cutoff Voltage	$V_{GE(off)}$	$V_{CE} = 5\text{V}$, $I_C = 200\text{mA}$	5.0	6.5	8.0	Volts
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$V_{GE} = 15\text{V}$, $I_C = 200\text{A}$, $T_j = 25^\circ\text{C}$	—	2.0	2.4	Volts
		$V_{GE} = 15\text{V}$, $I_C = 200\text{A}$, $T_j = 125^\circ\text{C}$	—	—	2.6	Volts
Input Capacitance	C_{ies}	$V_{CE} = 10\text{V}$, $V_{GE} = 0\text{V}$, $f = 1\text{MHz}$	—	40,000	—	pF
Inductive Load	$t_{d(on)}$	—	—	—	1.0	μs
Switching Times	t_{off}	$V_{CC} = 300\text{V}$, $I_C = 200\text{A}$, $V_{GE} = \pm 15\text{V}$, $R_G = 10\Omega$	—	—	1.2	μs
			—	—	0.5	μs
Reverse Recovery Time	t_{rr}	—	—	0.3	μs	
Emitter-Collector Voltage	V_{EC}	$I_E = 200\text{A}$	—	2.2	2.6	Volts

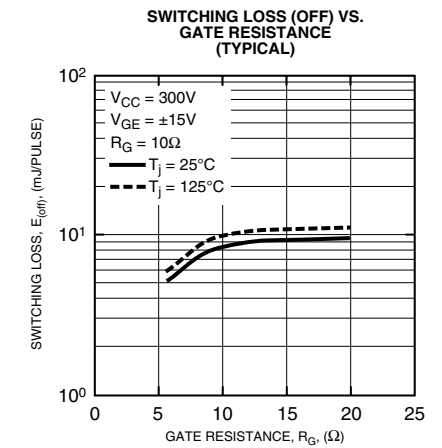
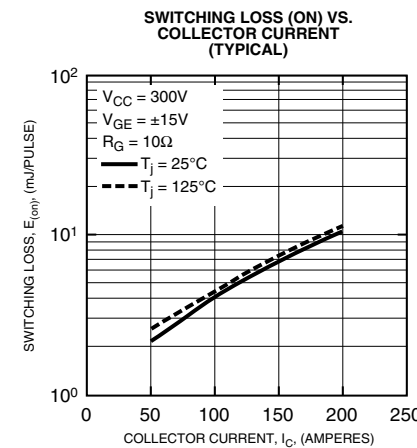
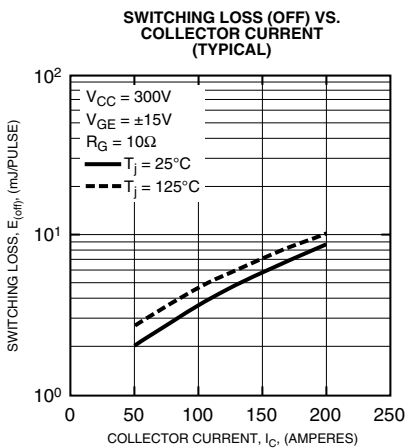
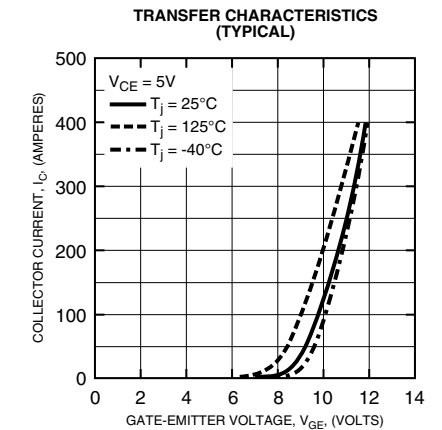
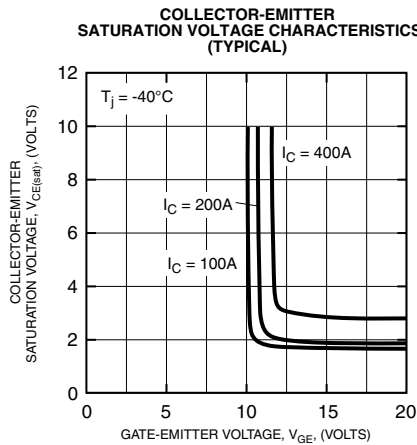
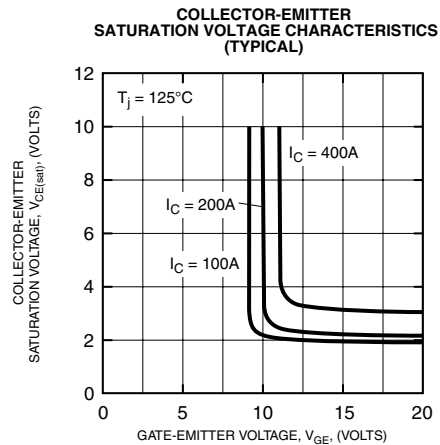
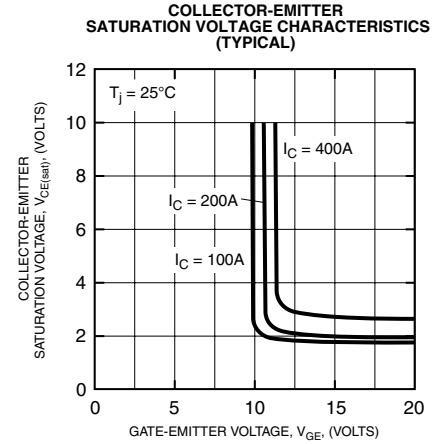
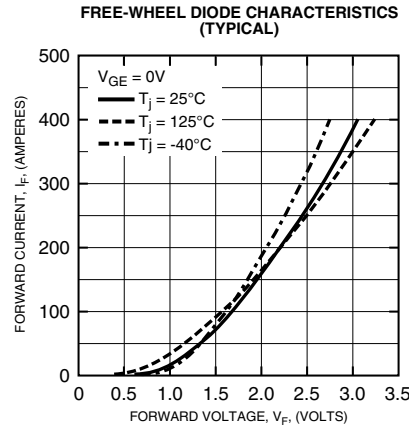
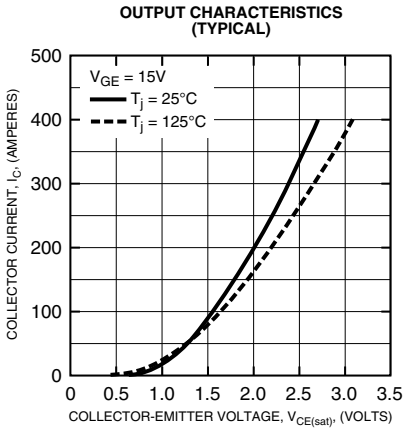
Thermal Characteristics

Characteristic	Symbol	Condition	Min.	Typ.	Max.	Units
Zero Power Resistance	R25	$I_{TM} = 0.2\text{mA}$	—	100	—	k Ω
B Value	B25/85	$T_C = 25^\circ\text{C}/T_C = 85^\circ\text{C}$	—	4390	—	K
Junction to Case Thermal Resistance	$R_{th(j-c)Q}$	IGBT (Per 1/6 Module)	—	—	0.125	$^\circ\text{C}/\text{Watt}$
		FWDi (Per 1/6 Module)	—	—	0.195	$^\circ\text{C}/\text{Watt}$
Contact Thermal Resistance	$R_{th(c-f)}$	—	—	0.05	—	$^\circ\text{C}/\text{Watt}$

Recommended Conditions for Use

Characteristic	Symbol	Condition	Value	Units
Supply Voltage	V_{CC}	Applied across P-N Terminals	≤ 400	Volts
Gate Voltage	V_{GE}	—	13.5 ~ 16.5	Volts
Switching Frequency	f_C	—	0 ~ 20	kHz

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