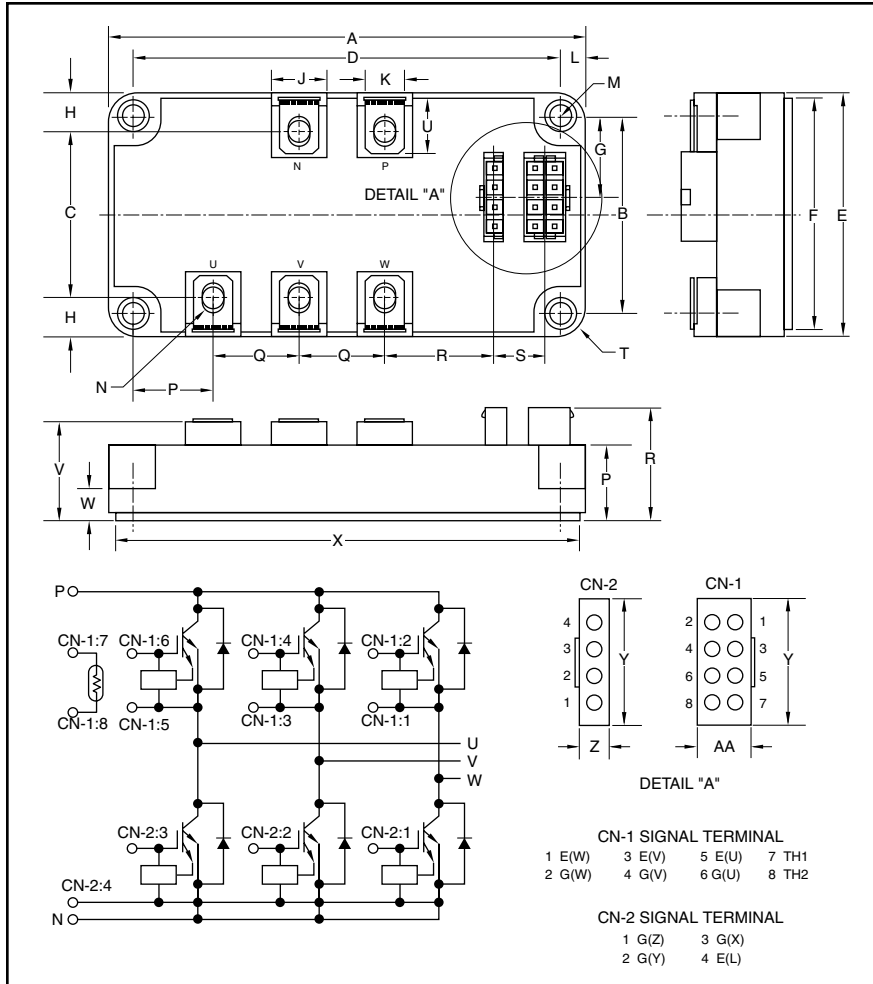


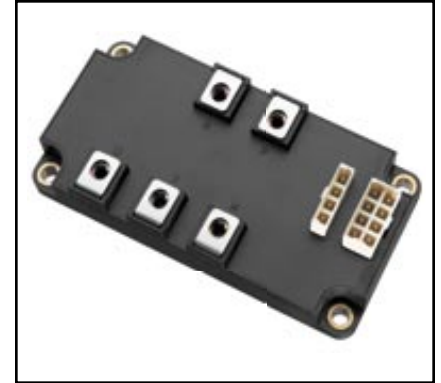
### Six IGBTMOD™ Compact IGBT Series Module 200 Amperes/600 Volts



#### 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



#### 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



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

**MG200J6ES61**  
**Six IGBTMOD™**  
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 200 Amperes/600 Volts

**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	$V_{GES}$	$\pm 20$	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
<b>IGBT Inverter Sector</b>						
Gate Leakage Current	$I_{GES}$	$V_{GE} = 20\text{V}$ , $V_{CE} = 0\text{V}$	—	—	$\pm 500$	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	$\mu\text{s}$
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	$\mu\text{s}$
			—	—	0.5	$\mu\text{s}$
Reverse Recovery Time	$t_{rr}$	—	—	—	0.3	$\mu\text{s}$
Emitter-Collector Voltage	$V_{EC}$	$I_E = 200\text{A}$	—	2.2	2.6	Volts

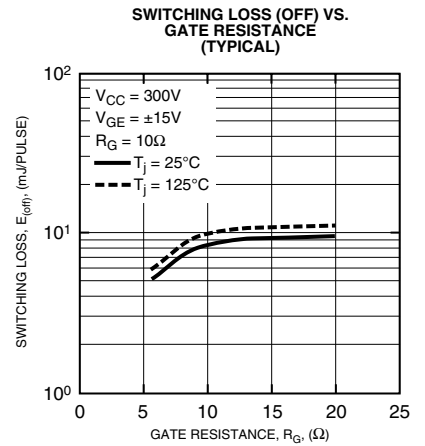
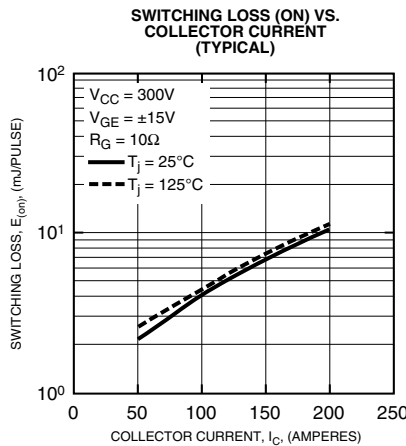
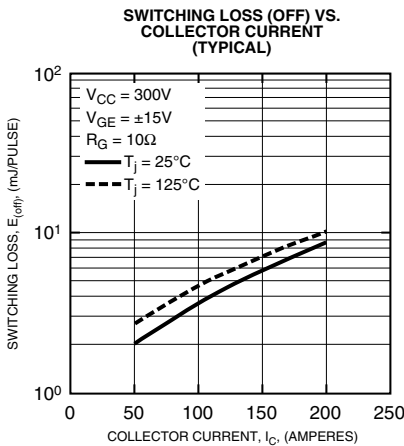
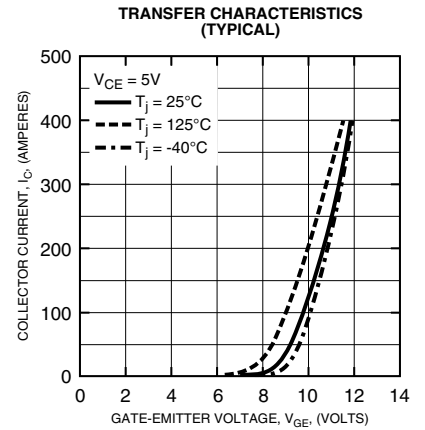
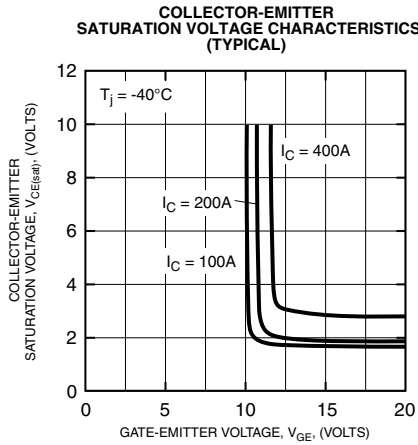
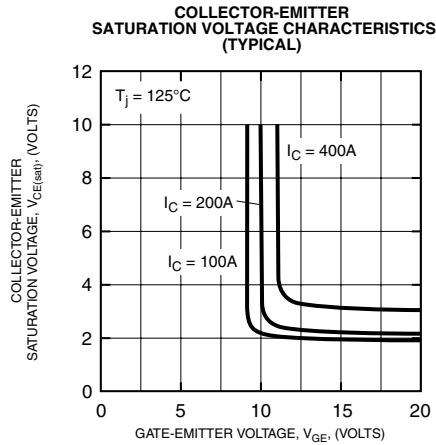
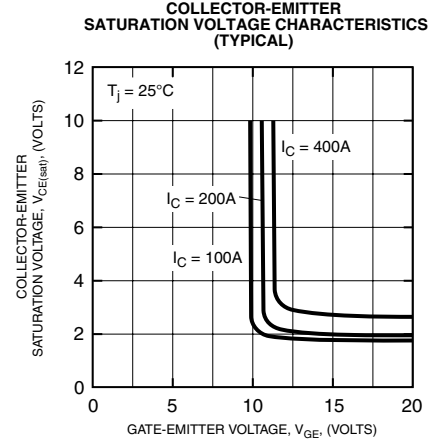
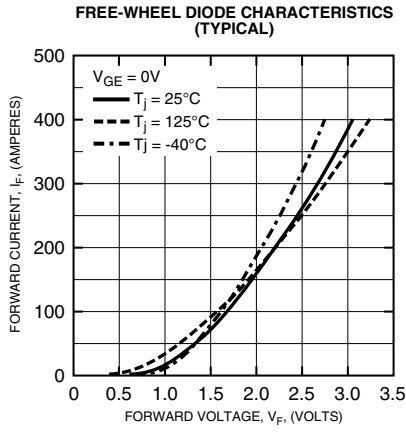
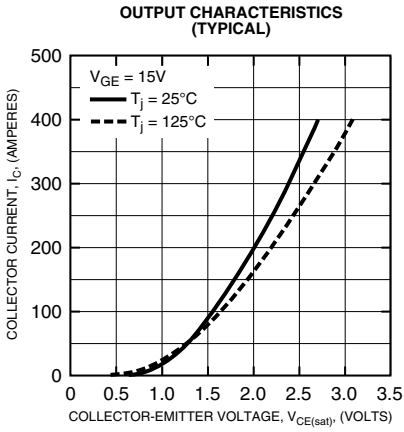
**Thermal Characteristics**

Characteristic	Symbol	Condition	Min.	Typ.	Max.	Units
Zero Power Resistance	R25	$I_{TM} = 0.2\text{mA}$	—	100	—	k $\Omega$
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	$\leq 400$	Volts
Gate Voltage	$V_{GE}$	—	13.5 ~ 16.5	Volts
Switching Frequency	$f_C$	—	0 ~ 20	kHz

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