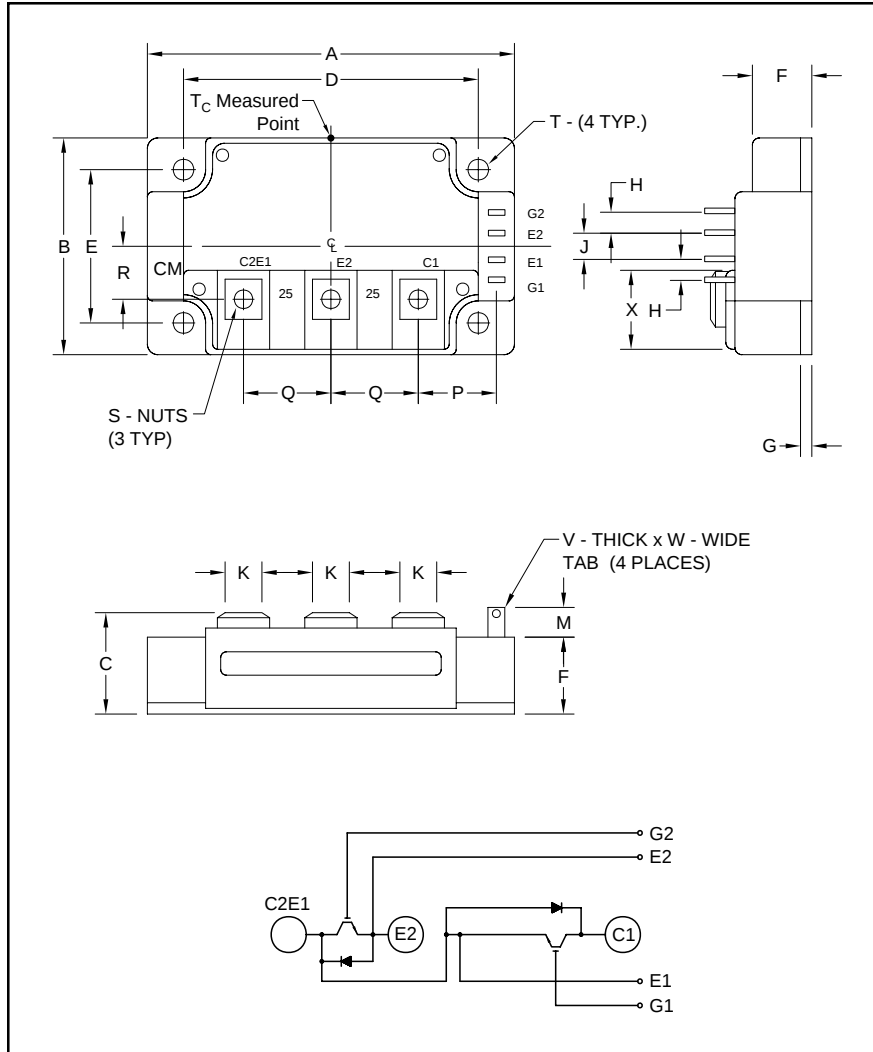


Dual IGBTMOD™ K-Series Module 200 Amperes/1700 Volts



Outline Drawing and Circuit Diagram

Dimensions	Inches	Millimeters
A	4.33	110.0
B	3.15	80.0
C	1.14 +0.04/-0.02	29.0 +1.0/-0.5
D	3.66±0.01	93.0±0.25
E	2.44±0.01	62.0±0.25
F	0.83	21.0
G	0.16	4.0
H	0.24	6.0
J	0.59	15.0
K	0.55	14.0

Dimensions	Inches	Millimeters
M	0.33	8.5
P	0.94	24.0
Q	0.98	25.0
R	0.86	21.75
S	M6	M6
T	0.26	6.5
V	0.02	0.5
W	0.110	2.79
X	1.08	27.35



Description:

Powerex IGBTMOD™ 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:

- ☐ 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 module number you desire from the table - i.e. CM200DU-34K is a 1700V (V_{CES}), 200 Ampere Dual IGBTMOD™ Power Module.

Type	Current Rating Amperes	V_{CES} Volts (x 50)
CM	200	34

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

Ratings	Symbol	CM200DU-34K	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}	1700	Volts
Gate-Emitter Voltage (C-E SHORT)	V_{GES}	± 20	Volts
Collector Current ($T_c = 25^\circ\text{C}$)	I_c	200	Amperes
Peak Collector Current	I_{CM}	400*	Amperes
Emitter Current** ($T_c = 25^\circ\text{C}$)	I_E	200	Amperes
Peak Emitter Current**	I_{EM}	400*	Amperes
Maximum Collector Dissipation ($T_c = 25^\circ\text{C}$, $T_j \leq 150^\circ\text{C}$)	P_c	1100	Watts
Mounting Torque, M6 Main Terminal	—	40	in-lb
Mounting Torque, M6 Mounting	—	40	in-lb
Weight	—	580	Grams
Isolation Voltage (Main Terminal to Baseplate, AC 1 min.)	V_{ISO}	2500	Volts

* Pulse width and repetition rate should be such that the 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).

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}	$V_{\text{CE}} = V_{\text{CES}}$, $V_{\text{GE}} = 0\text{V}$	—	—	1	mA
Gate Leakage Voltage	I_{GES}	$V_{\text{GE}} = V_{\text{CES}}$, $V_{\text{CE}} = 0\text{V}$	—	—	0.5	μA
Gate-Emitter Threshold Voltage	$V_{\text{GE(th)}}$	$I_c = 20\text{mA}$, $V_{\text{CE}} = 10\text{V}$	4.0	5.5	7.0	Volts
Collector-Emitter Saturation Voltage	$V_{\text{CE(sat)}}$	$I_c = 200\text{A}$, $V_{\text{GE}} = 15\text{V}$, $T_j = 25^\circ\text{C}$	—	3.2	4.0	Volts
		$I_c = 200\text{A}$, $V_{\text{GE}} = 15\text{V}$, $T_j = 125^\circ\text{C}$	—	3.8	—	Volts
Total Gate Charge	Q_G	$V_{\text{CC}} = 1000\text{V}$, $I_c = 200\text{A}$, $V_{\text{GE}} = 15\text{V}$	—	900	—	nC
Emitter-Collector Voltage**	V_{EC}	$I_E = 200\text{A}$, $V_{\text{GE}} = 0\text{V}$	—	—	2.8	Volts

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

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

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Input Capacitance	C_{ies}	$V_{\text{CE}} = 10\text{V}$, $V_{\text{GE}} = 0\text{V}$	—	—	29.0	nF
Output Capacitance	C_{oes}		—	—	4.8	nF
Reverse Transfer Capacitance	C_{res}		—	—	1.5	nF
Resistive	Turn-on Delay Time	$V_{\text{CC}} = 1000\text{V}$, $I_c = 200\text{A}$, $V_{\text{GE1}} = V_{\text{GE2}} = 15\text{V}$, $R_G = 4.3\Omega$,	—	—	600	ns
Load	Rise Time		—	—	200	ns
Switch	Turn-off Delay Time	Inductive Load	—	—	700	ns
Times	Fall Time		—	—	800	ns
Diode Reverse Recovery Time**	t_{rr}	Switching Operation	—	—	1500	ns
Diode Reverse Recovery Charge**	Q_{rr}	$I_E = 200\text{A}$	—	31.9	—	μC

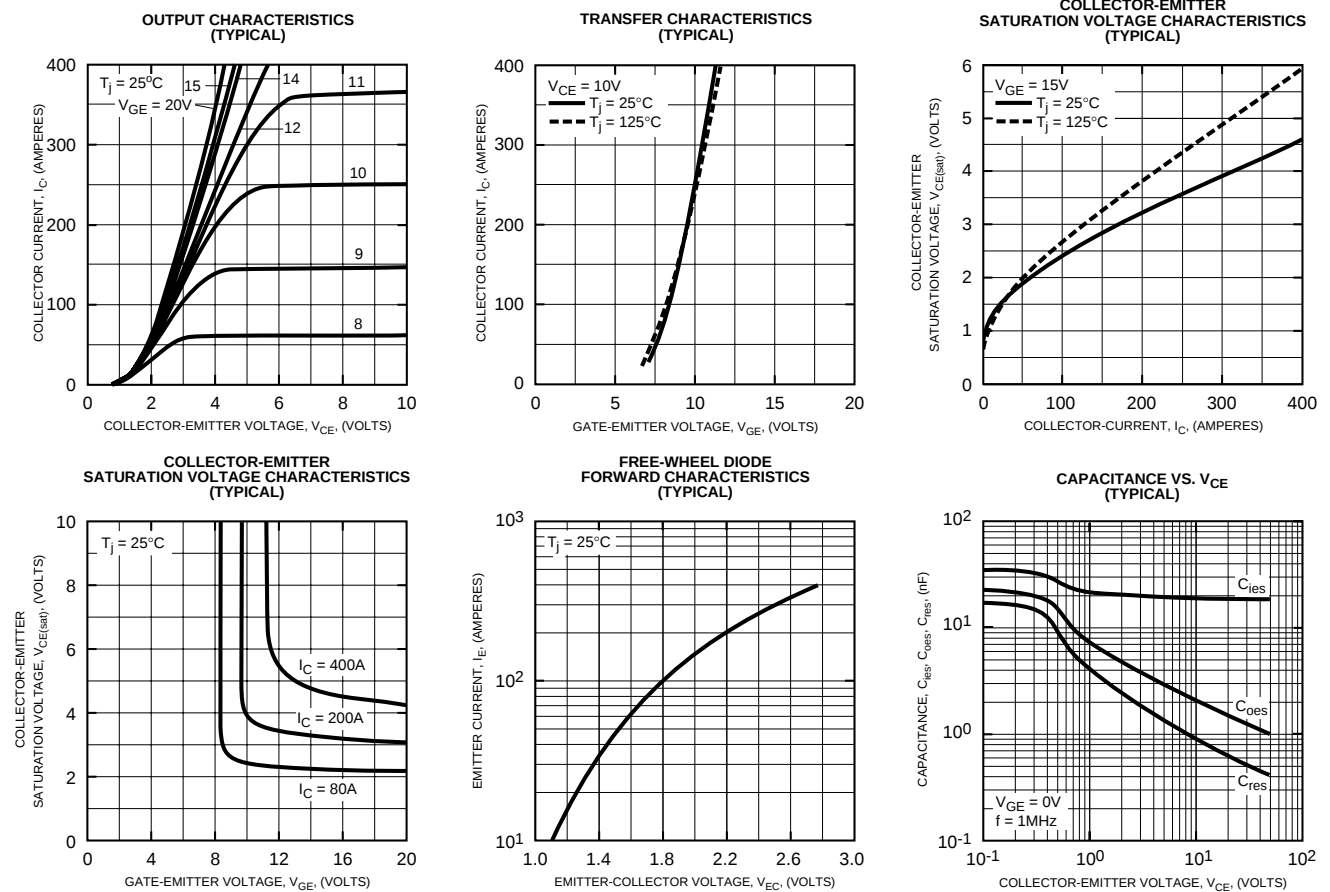
**Represents characteristics of the anti-parallel, emitter-to-collector free-wheel diode (FWDi).

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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	$R_{th(j-c)Q}$	Per IGBT 1/2 Module	—	—	0.11	$^\circ\text{C/W}$
Thermal Resistance, Junction to Case	$R_{th(j-c)R}$	Per FWDi 1/2 Module	—	—	0.18	$^\circ\text{C/W}$
Contact Thermal Resistance	$R_{th(c-f)}$	Per Module, Thermal Grease Applied	—	0.020	—	$^\circ\text{C/W}$
Thermal Resistance	$R_{th(j-c)Q}$	T_c Measured Point (Under Chips - IGBT Part)	—	—	0.05*	$^\circ\text{C/W}$

* If you use this value, $R_{th(f-a)}$ should be measured just under the chips.



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