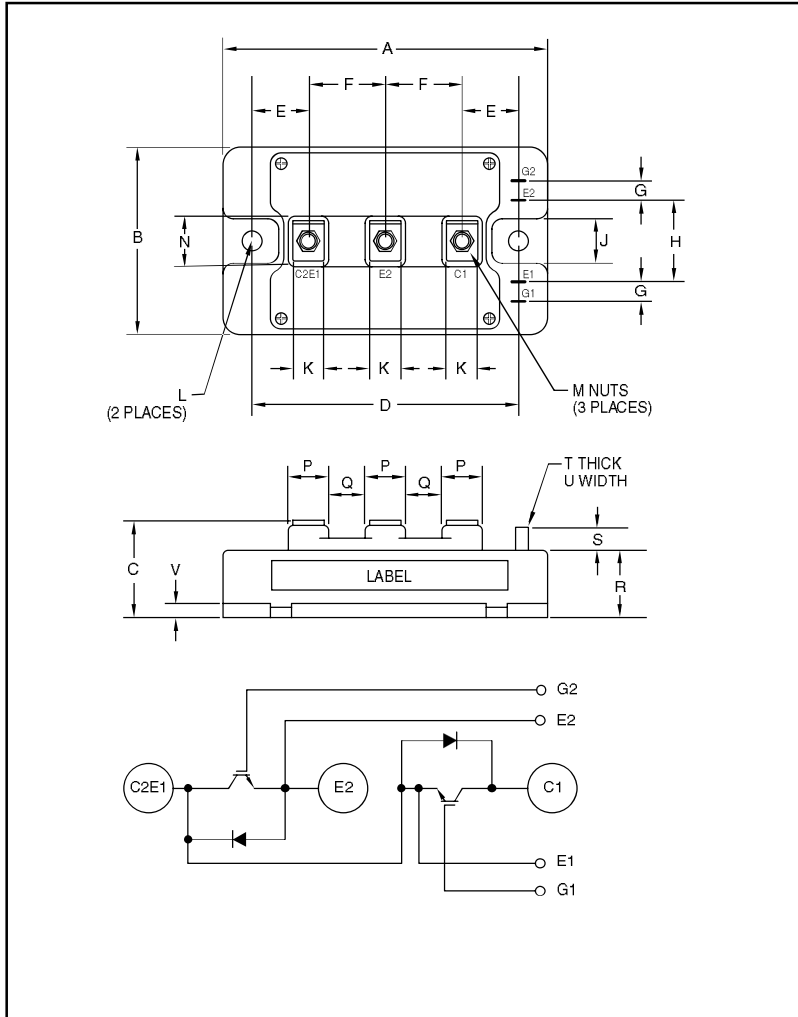




Powerex, Inc., 200 E. Hillis Street, Youngwood, Pennsylvania 15697-1800 (724) 925-7272

CM150DY-24A

Dual IGBTMOD™ A-Series Module 150 Amperes/1200 Volts



Outline Drawing and Circuit Diagram

Dimensions	Inches	Millimeters
A	3.70	94.0
B	1.89	48.0
C	1.14+0.004/-0.02	29.0+0.1/-0.5
D	3.15±0.01	80.0±0.25
E	0.67	17.0
F	0.91	23.0
G	0.16	4.0
H	0.71	18.0
J	0.51	13.0
K	0.47	12.0

Dimensions	Inches	Millimeters
L	0.26 Dia.	Dia. 6.5
M	M5 Metric	M5
N	0.79	20.0
P	0.63	16.0
Q	0.28	7.0
R	0.83	21.2
S	0.30	7.5
T	0.02	0.5
U	0.110	2.8
V	0.16	4.0



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
- ☐ UPS
- ☐ Battery Powered Supplies

Ordering Information:

Example: Select the complete part module number you desire from the table below -i.e. CM150DY-24A is a 1200V (V_{CES}), 150 Ampere Dual IGBTMOD™ Power Module.

Type	Current Rating Amperes	V_{CES} Volts (x 50)
CM	150	24



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

Ratings	Symbol	CM150DY-24A	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 (DC, $T_C = 83^\circ\text{C}^*$)	I_C	150	Amperes
Peak Collector Current	I_{CM}	300**	Amperes
Emitter Current*** ($T_C = 25^\circ\text{C}$)	I_E	150	Amperes
Peak Emitter Current***	I_{EM}	300**	Amperes
Maximum Collector Dissipation ($T_C = 25^\circ\text{C}^*$, $T_j \leq 150^\circ\text{C}$)	P_C	960	Watts
Mounting Torque, M5 Main Terminal	—	30	in-lb
Mounting Torque, M6 Mounting	—	40	in-lb
Weight	—	310	Grams
Isolation Voltage (Main Terminal to Baseplate, 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}	$V_{\text{CE}} = V_{\text{CES}}$, $V_{\text{GE}} = 0\text{V}$	—	—	1.0	mA
Gate Leakage Current	I_{GES}	$V_{\text{GE}} = V_{\text{GES}}$, $V_{\text{CE}} = 0\text{V}$	—	—	0.5	μA
Gate-Emitter Threshold Voltage	$V_{\text{GE(th)}}$	$I_C = 15\text{mA}$, $V_{\text{CE}} = 10\text{V}$	6.0	7.0	8.0	Volts
Collector-Emitter Saturation Voltage	$V_{\text{CE(sat)}}$	$I_C = 150\text{A}$, $V_{\text{GE}} = 15\text{V}$, $T_j = 25^\circ\text{C}$	—	2.1	3.0	Volts
		$I_C = 150\text{A}$, $V_{\text{GE}} = 15\text{V}$, $T_j = 125^\circ\text{C}$	—	2.4	—	Volts
Total Gate Charge	Q_G	$V_{\text{CC}} = 600\text{V}$, $I_C = 150\text{A}$, $V_{\text{GE}} = 15\text{V}$	—	675	—	nC
Emitter-Collector Voltage**	V_{EC}	$I_E = 150\text{A}$, $V_{\text{GE}} = 0\text{V}$	—	—	3.8	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}	$V_{\text{CE}} = 10\text{V}$, $V_{\text{GE}} = 0\text{V}$	—	—	23	nf
Output Capacitance	C_{oes}		—	—	2	nf
Reverse Transfer Capacitance	C_{res}		—	—	0.45	nf
Inductive	Turn-on Delay Time	$t_{\text{d(on)}}$	—	—	130	ns
Load	Rise Time	t_r	—	—	100	ns
Switch	Turn-off Delay Time	$t_{\text{d(off)}}$	—	—	450	ns
Time	Fall Time	t_f	—	—	350	ns
Diode Reverse Recovery Time***	t_{rr}	Switching Operation,	—	—	150	ns
Diode Reverse Recovery Charge***	Q_{rr}	$I_E = 150\text{A}$	—	6.0	—	μC

* T_C , T_f measured point is just under the chips.

**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).



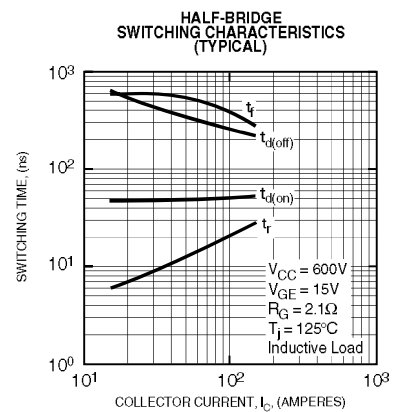
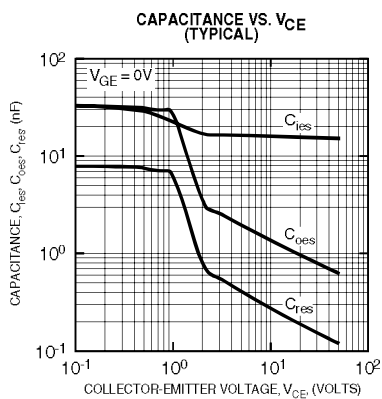
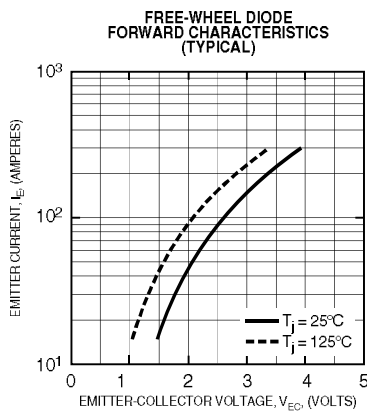
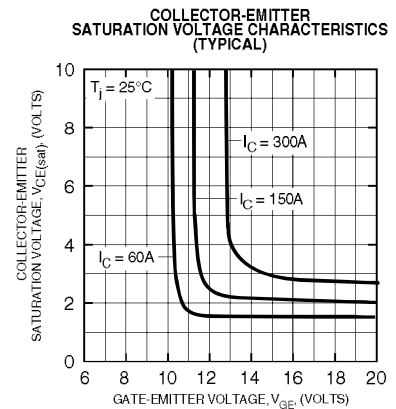
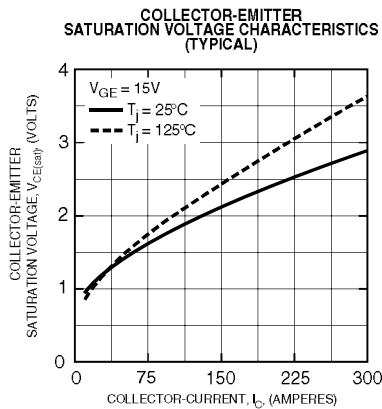
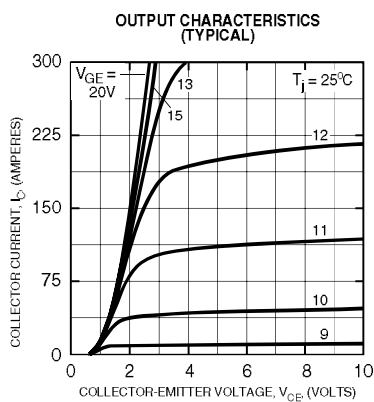
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Thermal and Mechanical Characteristics, $T_j = 25^\circ\text{C}$ unless otherwise specified

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal Resistance, Junction to Case*	$R_{th(j-c)Q}$	Per IGBT 1/2 Module	—	—	0.13	$^\circ\text{C/W}$
Thermal Resistance, Junction to Case*	$R_{th(j-c)D}$	Per FWDi 1/2 Module	—	—	0.23	$^\circ\text{C/W}$
Contact Thermal Resistance	$R_{th(c-f)}$	Per 1/2 Module, Thermal Grease Applied	—	0.022	—	$^\circ\text{C/W}$
External Gate Resistance	R_G		2.1	—	31	Ω

* T_C , T_f measured point is just under the chips.





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