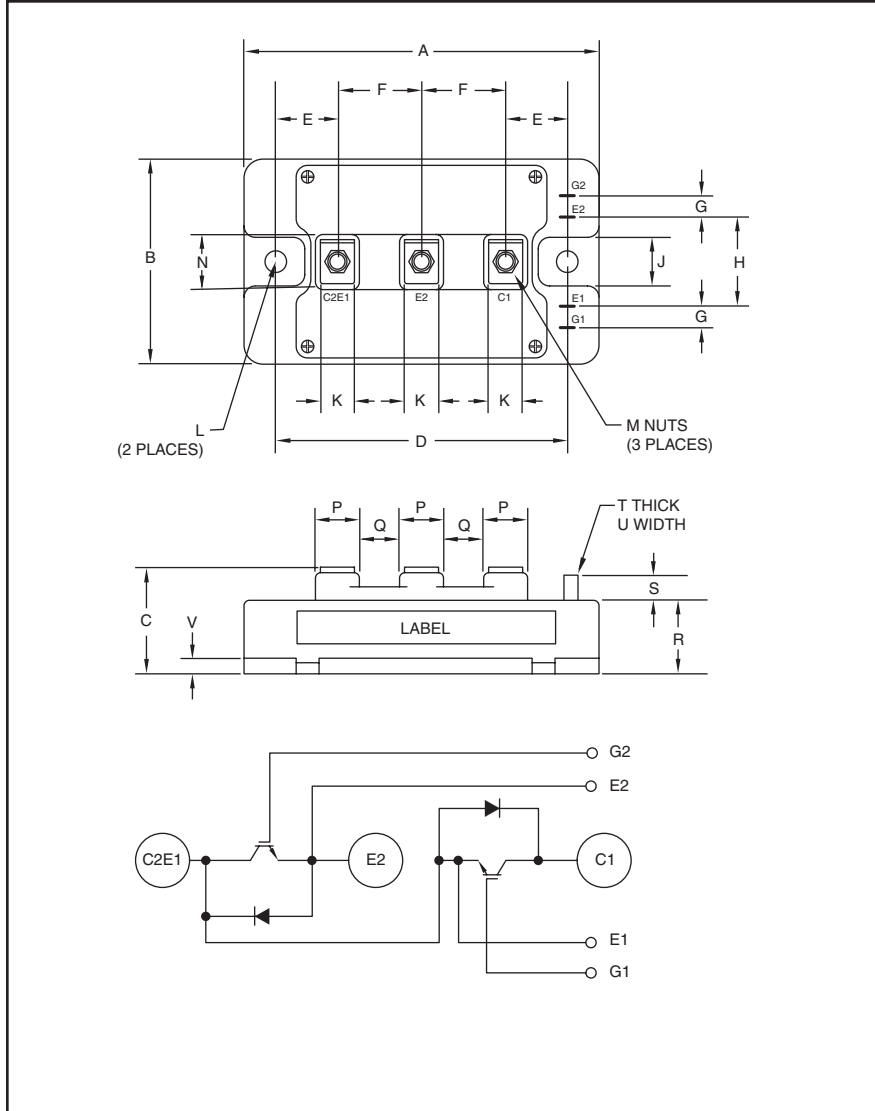


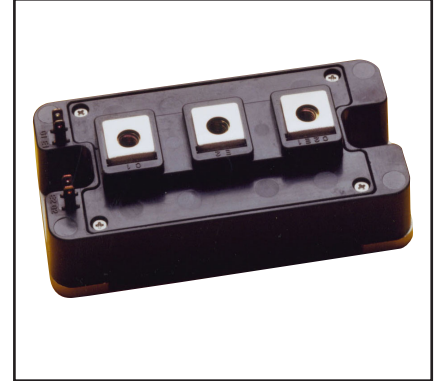
### Dual IGBTMOD™ A-Series Module 100 Amperes/1700 Volts



Outline Drawing and Circuit Diagram

Dimensions	Inches	Millimeters
A	3.70	94.0
B	1.89	48.0
C	1.14+0.04/-0.02	29.0+1.0/-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. CM100DY-34A is a 1700V ( $V_{CES}$ ), 100 Ampere Dual IGBTMOD™ Power Module.

Type	Current Rating Amperes	$V_{CES}$ Volts (x 50)
CM	100	34



Powerex, Inc., 173 Pavilion Lane, Youngwood, Pennsylvania 15697 (724) 925-7272 www.pwr.com

**CM100DY-34A**  
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**Absolute Maximum Ratings,  $T_j = 25^\circ\text{C}$  unless otherwise specified**

Ratings	Symbol	CM100DY-34A	Units
Junction Temperature	$T_j$	-40 to 150	$^\circ\text{C}$
Storage Temperature	$T_{\text{stg}}$	-40 to 125	$^\circ\text{C}$
Collector-Emitter Voltage (G-E Short)	$V_{\text{CES}}$	1700	Volts
Gate-Emitter Voltage (C-E Short)	$V_{\text{GES}}$	$\pm 20$	Volts
Collector Current (DC, $T_C = 108^\circ\text{C}$ )*4	$I_C$	100	Amperes
Peak Collector Current (Pulse Repetition)*2	$I_{\text{CM}}$	200	Amperes
Maximum Collector Dissipation ( $T_C = 25^\circ\text{C}$ , $T_j \leq 150^\circ\text{C}$ )*2,*4	$P_C$	960	Watts
Emitter Current ( $T_C = 25^\circ\text{C}$ )	$I_E^{*1}$	100	Amperes
Peak Emitter Current (Pulse Repetition)*2	$I_{\text{EM}}^{*1}$	200	Amperes
Mounting Torque, M5 Main Terminal	—	30	in-lb
Mounting Torque, M6 Mounting	—	40	in-lb
Weight	—	310	Grams
Isolation Voltage (Main Terminal to Baseplate, $f = 60\text{Hz}$ , AC 1 min.)	$V_{\text{ISO}}$	3500	Volts

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

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Collector-Cutoff Current	$I_{\text{CES}}$	$V_{\text{CE}} = V_{\text{CES}}$ , $V_{\text{GE}} = 0\text{V}$	—	—	1.0	mA
Gate Leakage Current	$I_{\text{GES}}$	$V_{\text{GE}} = V_{\text{GES}}$ , $V_{\text{CE}} = 0\text{V}$	—	—	2.0	$\mu\text{A}$
Gate-Emitter Threshold Voltage	$V_{\text{GE(th)}}$	$I_C = 10\text{mA}$ , $V_{\text{CE}} = 10\text{V}$	5.5	7.0	8.5	Volts
Collector-Emitter Saturation Voltage	$V_{\text{CE(sat)}}$	$I_C = 100\text{A}$ , $V_{\text{GE}} = 15\text{V}$ , $T_j = 25^\circ\text{C}^{*3}$	—	2.2	2.8	Volts
		$I_C = 100\text{A}$ , $V_{\text{GE}} = 15\text{V}$ , $T_j = 125^\circ\text{C}^{*3}$	—	2.45	—	Volts
Total Gate Charge	$Q_G$	$V_{\text{CC}} = 1000\text{V}$ , $I_C = 100\text{A}$ , $V_{\text{GE}} = 15\text{V}$	—	670	—	nC
Emitter-Collector Voltage	$V_{\text{EC}}^{*1}$	$I_E = 100\text{A}$ , $V_{\text{GE}} = 0\text{V}^{*3}$	—	—	3.0	Volts

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

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Input Capacitance	$C_{\text{ies}}$		—	—	24.7	nf
Output Capacitance	$C_{\text{oes}}$	$V_{\text{CE}} = 10\text{V}$ , $V_{\text{GE}} = 0\text{V}$	—	—	2.8	nf
Reverse Transfer Capacitance	$C_{\text{res}}$		—	—	0.53	nf
Inductive	Turn-on Delay Time	$t_{\text{d(on)}}$	—	—	200	ns
	Rise Time	$t_r$	—	—	150	ns
Switch	Turn-off Delay Time	$t_{\text{d(off)}}$	—	—	550	ns
	Fall Time	$t_f$	—	—	350	ns
Diode Reverse Recovery Time	$t_{\text{rr}}^{*1}$	Switching Operation,	—	—	300	ns
Diode Reverse Recovery Charge	$Q_{\text{rr}}^{*1}$	$I_E = 100\text{A}$	—	10	—	$\mu\text{C}$

\*1 Represents characteristics of the anti-parallel, emitter-to-collector free-wheel diode (FWDI).

\*2 Pulse width and repetition rate should be such that device junction temperature ( $T_j$ ) does not exceed  $T_{j(\text{max})}$  rating.

\*3 Pulse width and repetition rate should be such as to cause negligible temperature rise.

\*4 Case temperature ( $T_C$ ), and heatsink temperature ( $T_f$ ) measured point is just under the chips.

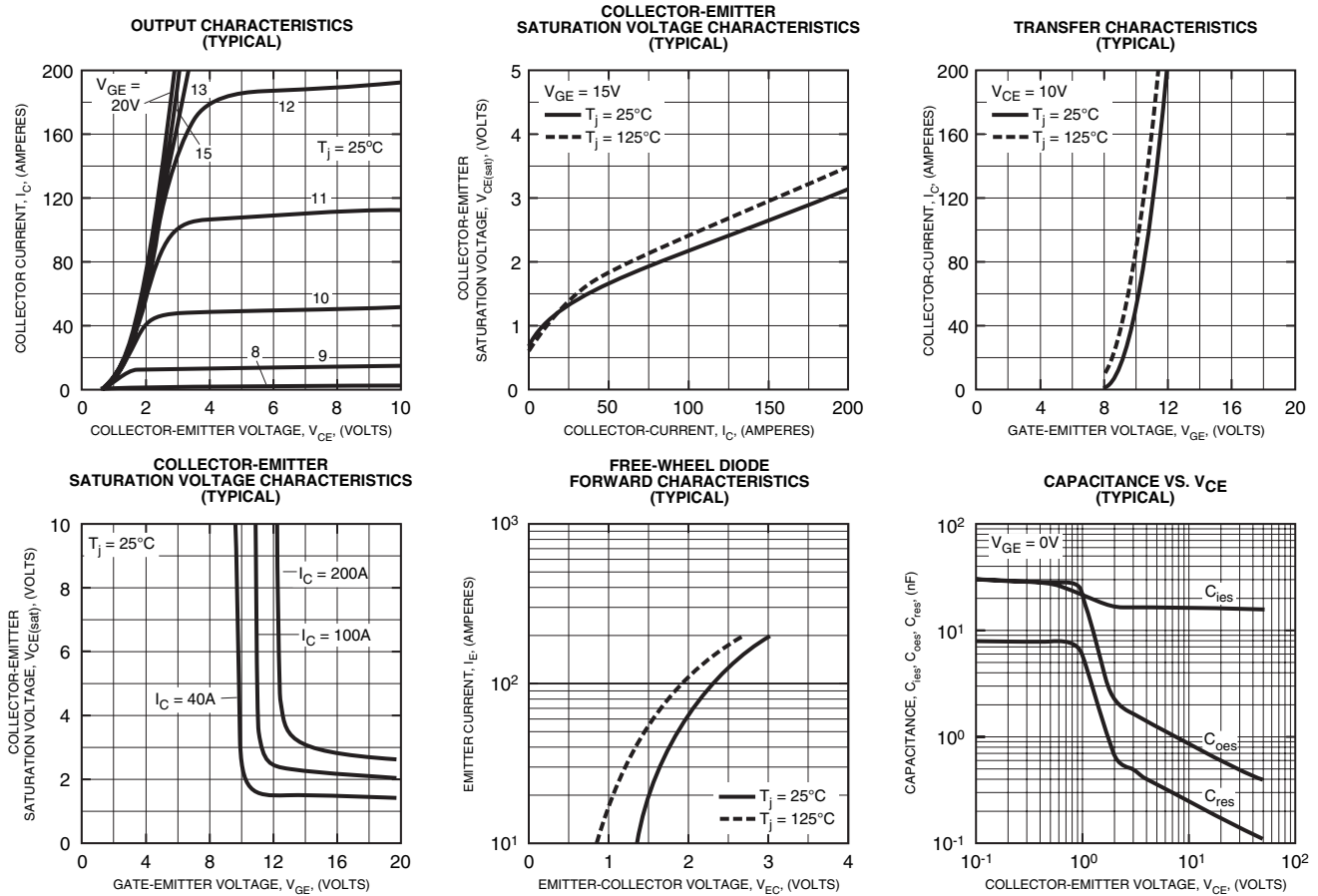
**CM100DY-34A**  
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**Thermal and Mechanical Characteristics,  $T_j = 25^\circ\text{C}$  unless otherwise specified**

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal Resistance, Junction to Case	$R_{th(j-c)Q}$	Per IGBT*4	—	—	0.13	$^\circ\text{C/W}$
Thermal Resistance, Junction to Case	$R_{th(j-c)D}$	Per FWDi*4	—	—	0.21	$^\circ\text{C/W}$
Contact Thermal Resistance	$R_{th(c-f)}$	Thermal Grease Applied*4,*5	—	—	—	$^\circ\text{C/W}$
External Gate Resistance	$R_G$		4.8	—	48	$\Omega$

\*4 Case temperature ( $T_C$ ), and heatsink temperature ( $T_f$ ) measured point is just under the chips.

\*5 Typical value is measured by using thermally conductive grease of  $\lambda = 0.9$  [W/(m • K)].





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