

## Excellent Integrated System Limited

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[Powerex Inc.](#)  
[CM100TF-24H](#)

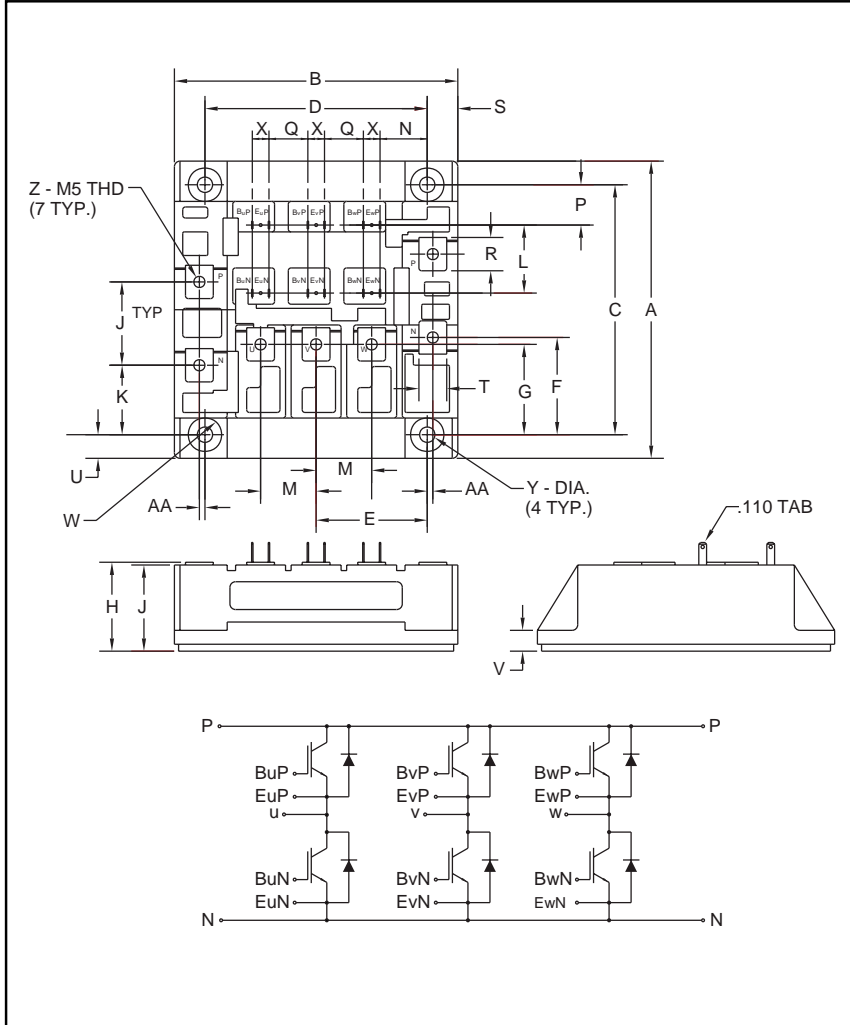
For any questions, you can email us directly:  
[sales@integrated-circuit.com](mailto:sales@integrated-circuit.com)



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

**CM100TF-24H**

**Six-IGBT IGBTMOD™  
H-Series Module  
100 Amperes/1200 Volts**



Outline Drawing and Circuit Diagram

Dimensions	Inches	Millimeters
A	4.21	107.0
B	4.02	102.0
C	3.543±0.01	90.0±0.25
D	3.15±0.01	80.0±0.25
E	1.57	40.0
F	1.38	35.0
G	1.28	32.5
H	1.26 Max.	32.0 Max
J	1.18	30.0
K	0.98	25.0
L	0.96	24.5
M	0.79	20.0
N	0.67	17.0

Dimensions	Inches	Millimeters
P	0.57	14.5
Q	0.55	14.0
R	0.47	12.0
S	0.43	11.0
T	0.39	10.0
U	0.33	8.5
V	0.30	7.5
W	0.24 Rad.	Rad. 6.0
X	0.24	6.0
Y	0.22	5.5
Z	M5 Metric	M5
AA	0.08	2.0



**Description:**

Powerex IGBTMOD™ Modules are designed for use in switching applications. Each module consists of six IGBT Transistors in a three phase 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 (135ns) Free-Wheel Diode
- High Frequency Operation (20-25kHz)
- 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 module number you desire from the table below -i.e. CM100TF-24H is a 1200V ( $V_{CES}$ ), 100 Ampere Six-IGBT IGBTMOD™ Power Module.

Type	Current Rating Amperes	$V_{CES}$ Volts (x 50)
CM	100	24



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

Ratings	Symbol	CM100TF-24H	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)	$V_{\text{CES}}$	1200	Volts
Gate-Emitter Voltage	$V_{\text{GES}}$	$\pm 20$	Volts
Collector Current	$I_C$	100	Amperes
Peak Collector Current	$I_{\text{CM}}$	200*	Amperes
Diode Forward Current	$I_F$	100	Amperes
Diode Forward Surge Current	$I_{\text{FM}}$	200*	Amperes
Power Dissipation	$P_d$	780	Watts
Max. Mounting Torque M5 Terminal Screws	-	17	in-lb
Max. Mounting Torque M5 Mounting Screws	-	17	in-lb
Module Weight (Typical)	-	830	Grams
V Isolation	$V_{\text{RMS}}$	2500	Volts

\* Pulse width and repetition rate should be such that device junction temperature does not exceed the device rating.

### Static Electrical Characteristics, $T_j = 25\text{ }^\circ\text{C}$ 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	$I_{\text{GES}}$	$V_{\text{GE}} = V_{\text{GES}}, V_{\text{CE}} = 0\text{V}$	-	-	0.5	$\mu\text{A}$
Gate-Emitter Threshold Voltage	$V_{\text{GE(th)}}$	$I_C = 10\text{mA}, V_{\text{CE}} = 10\text{V}$	4.5	6.0	7.5	Volts
Collector-Emitter Saturation Voltage	$V_{\text{CE(sat)}}$	$I_C = 100\text{A}, V_{\text{GE}} = 15\text{V}$	-	2.5	3.4**	Volts
		$I_C = 100\text{A}, V_{\text{GE}} = 15\text{V}, T_j = 150\text{ }^\circ\text{C}$	-	2.25	-	Volts
Total Gate Charge	$Q_G$	$V_{\text{CC}} = 600\text{V}, I_C = 100\text{A}, V_{\text{GS}} = 15\text{V}$	-	500	-	nC
Diode Forward Voltage	$V_{\text{FM}}$	$I_E = 100\text{A}, V_{\text{GS}} = 0\text{V}$	-	-	3.4	Volts

\*\* Pulse width and repetition rate should be such that device junction temperature rise is negligible.

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

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Input Capacitance	$C_{\text{ies}}$		-	-	20	nF
Output Capacitance	$C_{\text{oes}}$	$V_{\text{GE}} = 0\text{V}, V_{\text{CE}} = 10\text{V}, f = 1\text{MHz}$	-	-	7	nF
Reverse Transfer Capacitance	$C_{\text{res}}$		-	-	4	nF
Resistive	Turn-on Delay Time	$t_{\text{d(on)}}$	-	-	250	ns
Load	Rise Time	$t_r$	-	-	350	ns
Switch	Turn-off Delay Time	$t_{\text{d(off)}}$	-	-	300	ns
Times	Fall Time	$t_f$	-	-	350	ns
Diode Reverse Recovery Time	$t_{\text{rr}}$	$I_E = 100\text{A}, di_E/dt = -200\text{A}/\mu\text{s}$	-	-	250	ns
Diode Reverse Recovery Charge	$Q_{\text{rr}}$	$I_E = 100\text{A}, di_E/dt = -200\text{A}/\mu\text{s}$	-	0.74	-	$\mu\text{C}$

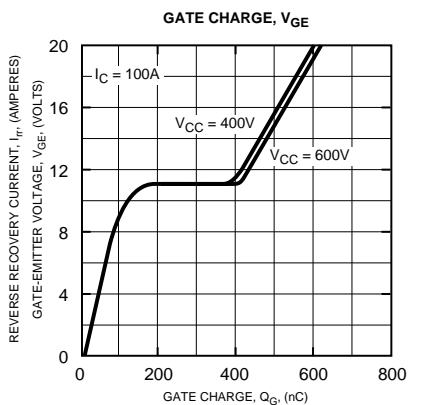
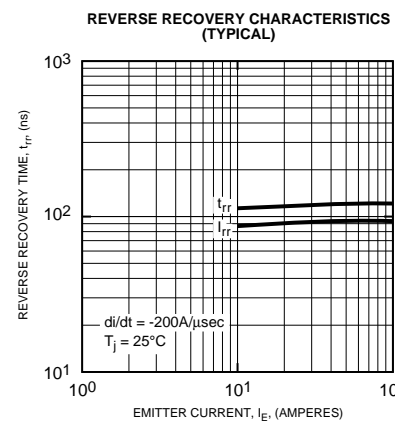
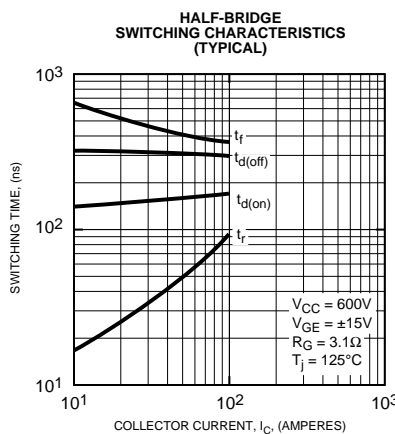
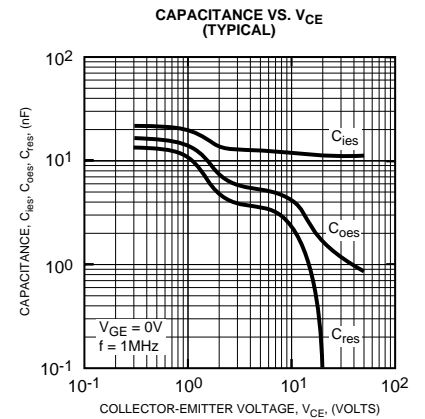
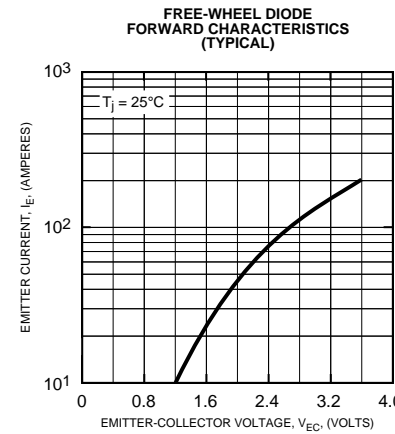
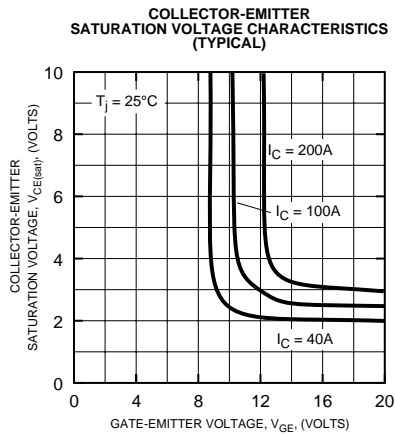
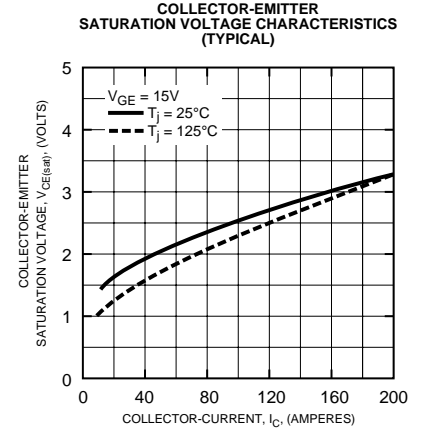
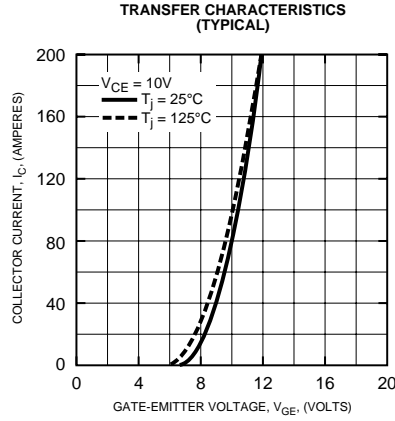
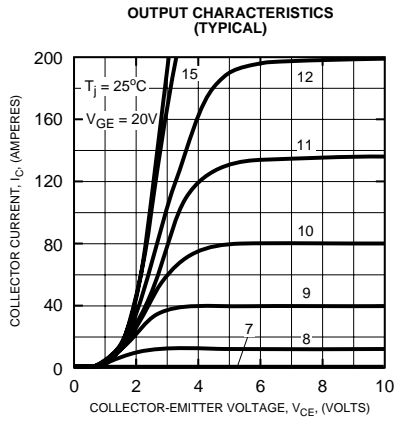
### Thermal and Mechanical Characteristics, $T_j = 25\text{ }^\circ\text{C}$ unless otherwise specified

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal Resistance, Junction to Case	$R_{\text{th(j-c)}}$	Per IGBT	-	-	0.16	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction to Case	$R_{\text{th(j-c)}}$	Per FWDi	-	-	0.35	$^\circ\text{C}/\text{W}$
Contact Thermal Resistance	$R_{\text{th(c-f)}}$	Per Module, Thermal Grease Applied	-	-	0.025	$^\circ\text{C}/\text{W}$



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