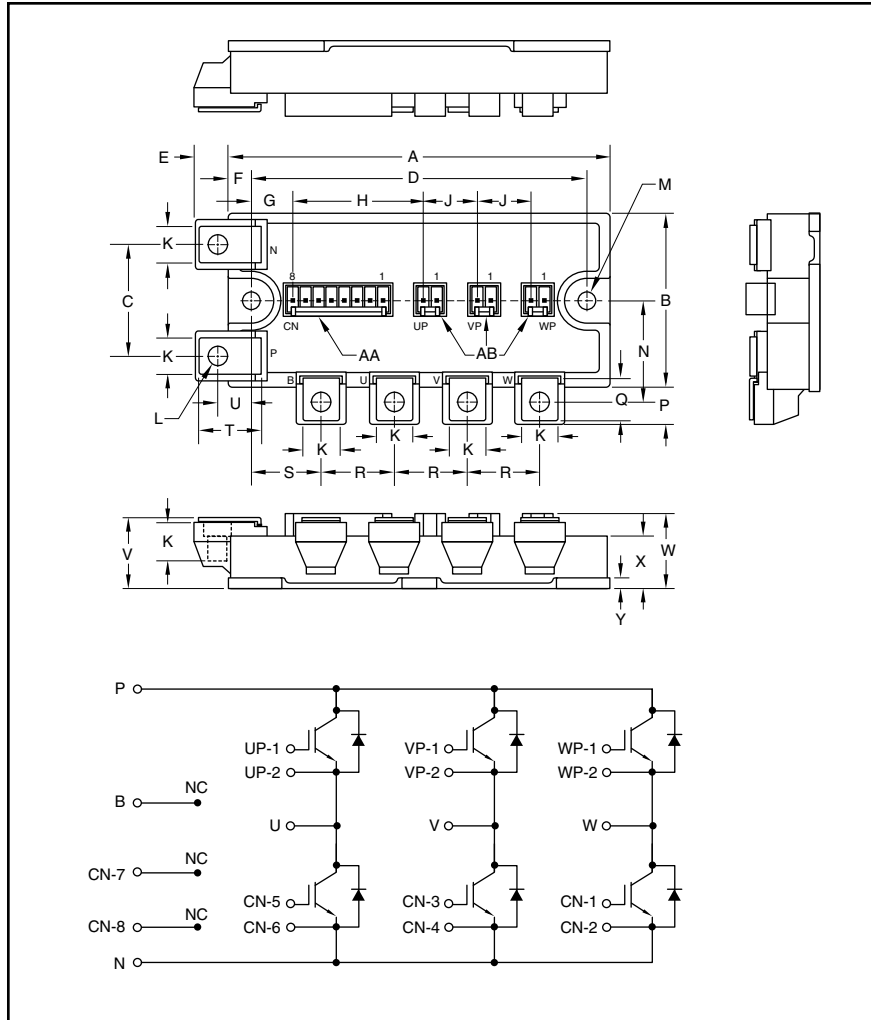


Six IGBTMOD™ NF-Series Module 100 Amperes/1200 Volts



Outline Drawing and Circuit Diagram

Dimensions	Inches	Millimeters
A	4.72	120.0
B	2.17	55.0
C	1.39	35.0
D	4.17±0.02	106.0±0.5
E	0.43	11.0
F	0.28	7.0
G	0.54	13.62
H	1.61	40.78
J	0.67	17.0
K	0.47	12.0
L	M5	M5
M	0.27 Dia.	Dia. 5.5

Dimensions	Inches	Millimeters
N	1.23	32.0
P	0.47	11.75
Q	0.53	13.5
R	0.91	23.0
S	0.87	22.0
T	0.76	19.75
U	0.42	10.75
V	0.87±0.04/-0.02	22.0±1.0/-0.5
W	0.91	23.2
X	0.63	16.0
Y	0.12	3.0

Housing Types (J.S.T. Mfg. Co. Ltd.)

AA – B8P-VH-FB-B
AB – B2P-VH-FB-B



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 Free-Wheel Diode
- ☐ Isolated Baseplate for Easy Heat Sinking

Applications:

- ☐ AC Motor Control
- ☐ Motion/Servo Control
- ☐ UPS
- ☐ Photovoltaic/Fuel Cell

Ordering Information:

Example: Select the complete module number you desire from the table below -i.e. CM100TL-24NF is a 1200V (V_{CES}), 100 Ampere Six-IGBTMOD™ Power Module.

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

CM100TL-24NF
Six IGBTMOD™ NF-Series Module
 100 Amperes/1200 Volts

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

Characteristics	Symbol	CM100TL-24NF	Units
Power Device 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 ($T_C = 80^\circ\text{C}$)*	I_C	100	Amperes
Peak Collector Current ($T_j \leq 150^\circ\text{C}$)	I_{CM}	200**	Amperes
Emitter Current***	I_E	100	Amperes
Peak Emitter Current***	I_{EM}	200**	Amperes
Maximum Collector Dissipation ($T_C = 25^\circ\text{C}$, $T_j < 150^\circ\text{C}$)	P_C	620	Watts
Mounting Torque, M5 Mounting Screws	—	31	in-lb
Mounting Torque, M5 Main Terminal Screws	—	31	in-lb
Module Weight (Typical)	—	350	Grams
Isolation Voltage, AC 1 minute, 60Hz Sinusoidal	V_{ISO}	2500	Volts

Electrical and Mechanical 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-Emitter Threshold Voltage	$V_{\text{GE(th)}}$	$I_C = 10\text{mA}$, $V_{\text{CE}} = 10\text{V}$	6	7	8	Volts
Gate Leakage Current	I_{GES}	$V_{\text{GE}} = V_{\text{GES}}$, $V_{\text{CE}} = 0\text{V}$	—	—	0.5	μA
Collector-Emitter Saturation Voltage	$V_{\text{CE(sat)}}$	$I_C = 100\text{A}$, $V_{\text{GE}} = 15\text{V}$, $T_j = 25^\circ\text{C}$	—	2.1	3.0	Volts
		$I_C = 100\text{A}$, $V_{\text{GE}} = 15\text{V}$, $T_j = 125^\circ\text{C}$	—	2.4	—	Volts
Input Capacitance	C_{ies}	$V_{\text{CE}} = 10\text{V}$, $V_{\text{GE}} = 0\text{V}$	—	—	17.5	nF
Output Capacitance	C_{oes}		—	—	1.5	nF
Reverse Transfer Capacitance	C_{res}		—	—	0.34	nF
Total Gate Charge	Q_G	$V_{\text{CC}} = 600\text{V}$, $I_C = 100\text{A}$, $V_{\text{GE}} = 15\text{V}$	—	500	—	nC
Inductive	Turn-on Delay Time	$t_{\text{d(on)}}$	—	—	100	ns
Load	Turn-on Rise Time	t_r	—	—	70	ns
Switch	Turn-off Delay Time	$t_{\text{d(off)}}$	—	—	300	ns
Time	Turn-off Fall Time	t_f	—	—	350	ns
Reverse Recovery Time***	t_{rr}	Inductive Load Switching Operation	—	—	150	ns
Reverse Recovery Charge***	Q_{rr}		—	4.8	—	μC
Emitter-Collector Voltage***	V_{EC}	$I_E = 100\text{A}$, $V_{\text{GE}} = 0\text{V}$	—	—	3.8	Volts

* 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.

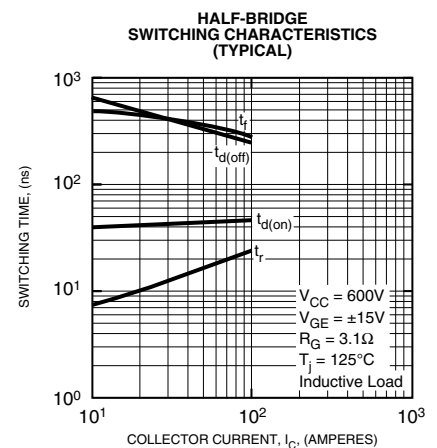
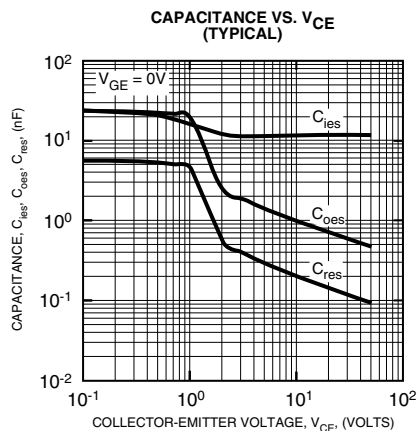
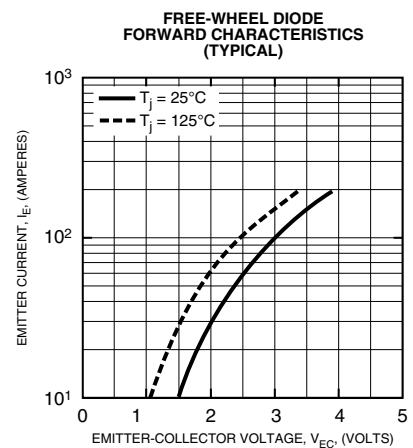
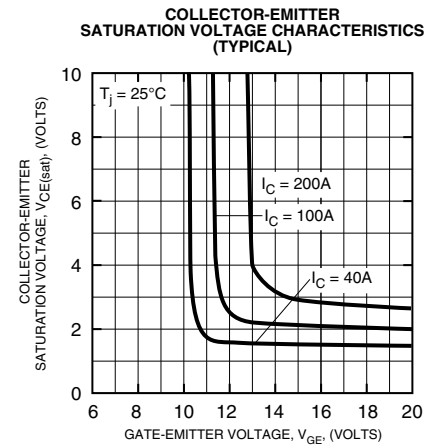
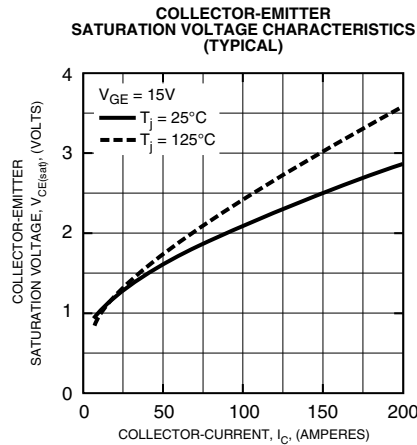
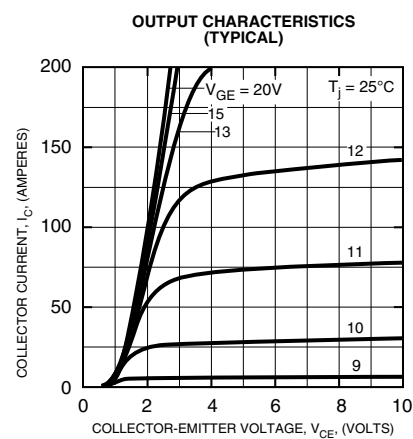
***Represents characteristics of the anti-parallel, emitter-to-collector free-wheel diode (FWDi).

CM100TL-24NF
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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 1/6 Module	—	—	0.20	$^\circ\text{C/W}$
Thermal Resistance, Junction to Case*	$R_{th(j-c)}D$	Per FWDi 1/6 Module	—	—	0.28	$^\circ\text{C/W}$
Contact Thermal Resistance	$R_{th(c-f)}$	Per 1/6 Module, Thermal Grease Applied	—	0.085	—	$^\circ\text{C/W}$
External Gate Resistance	R_G		3.1	—	42	Ω

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



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