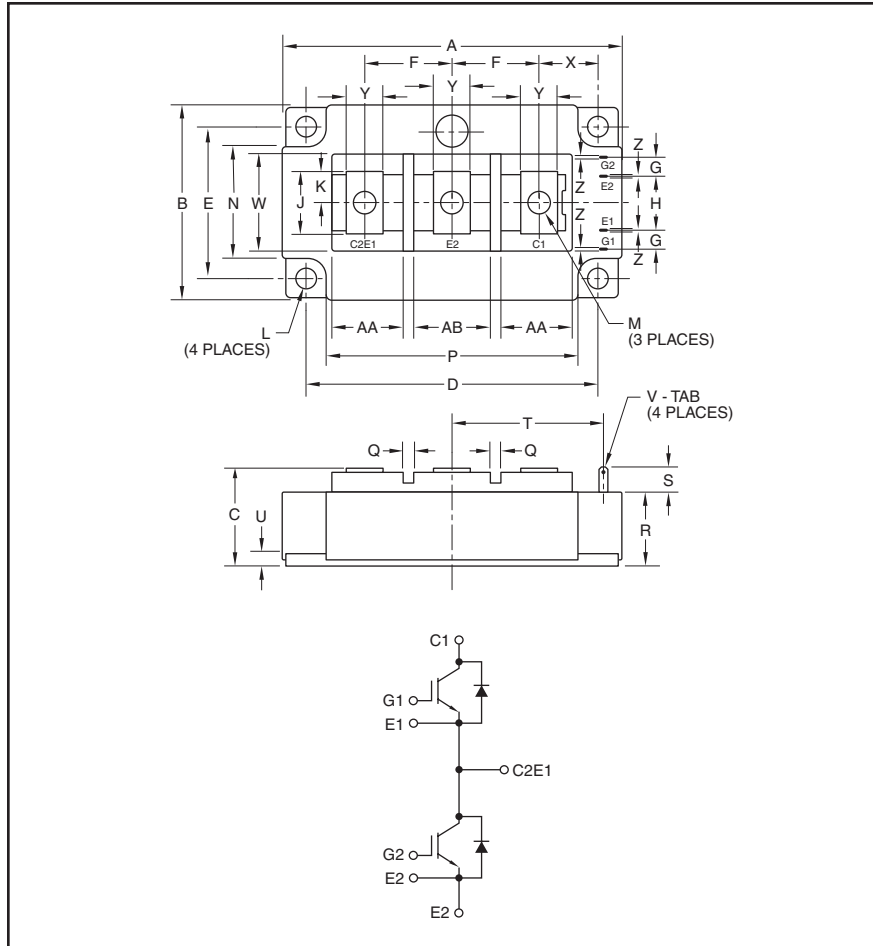


Dual IGBT NFM-Series Module 150 Amperes/1200 Volts



Outline Drawing and Circuit Diagram

Dim.	Inches	Millimeters
A	4.25	108.0
B	2.44	62.0
C	1.19+0.04/-0.02	30.4+1.0/-0.5
D	3.66±0.01	93.0±0.25
E	1.89±0.01	48.0±0.25
F	1.10	28.0
G	0.23	6.0
H	0.67	17.0
J	0.79	20.0
K	0.39	10.0
L	0.26 Dia.	6.5 Dia.
M	M6	M6
N	1.38	35.0

Dim.	Inches	Millimeters
P	3.15	80.0
Q	0.11	3.0
R	0.91	23.2
S	0.31	8.0
T	1.93	49.0
U	0.14	3.5
V	#110 Tab	
W	1.18	30.0
X	0.62	18.5
Y	0.47	12.0
Z	0.02	0.5
AA	0.88	22.5
AB	0.98	25.0



Description:

Powerex NFM IGBT Modules are designed for use in hard switching (15-30kHz) 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 $E_{SW(off)}$
- ☐ Discrete Super-Fast Recovery Free-Wheel Diode
- ☐ Isolated Baseplate for Easy Heat Sinking

Applications:

- ☐ Power Supplies
- ☐ UPS
- ☐ Battery Powered Supplies
- ☐ Induction Heating

Ordering Information:

Example: Select the complete part module number you desire from the table below -i.e. CM150DC-24NFM is a 1200V (V_{CES}), 150 Ampere Dual IGBT Power Module.

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

CM150DC-24NFM
Dual IGBT NFM-Series Module
 150 Amperes/1200 Volts

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

Ratings	Symbol	CM150DC-24NFM	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	I_C	150	Amperes
Peak Collector Current	I_{CM}	300*	Amperes
Emitter Current**	I_E	150	Amperes
Peak Emitter Current**	I_{EM}	300*	Amperes
Maximum Collector Dissipation*** ($T_C = 25^\circ\text{C}$)****	P_C	960	Watts
Mounting Torque, M6 Main Terminal	—	40	in-lb
Mounting Torque, M6 Mounting	—	40	in-lb
Weight	—	375	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}	$V_{CE} = V_{CES}, V_{GE} = 0V$	—	—	1.0	mA
Gate Leakage Current	I_{GES}	$V_{GE} = V_{GES}, V_{CE} = 0V$	—	—	0.5	μA
Gate-Emitter Threshold Voltage	$V_{GE(th)}$	$I_C = 15\text{mA}, V_{CE} = 10V$	4.5	6.0	7.5	Volts
Collector-Emitter Saturation Voltage*****	$V_{CE(sat)}$	$I_C = 150A, V_{GE} = 15V, T_j = 25^\circ\text{C}$	—	3.0	4.5	Volts
		$I_C = 150A, V_{GE} = 15V, T_j = 125^\circ\text{C}$	—	3.0	—	Volts
Total Gate Charge	Q_G	$V_{CC} = 600V, I_C = 150A, V_{GE} = 15V$	—	680	—	nC
Emitter-Collector Voltage**	V_{EC}	$I_E = 150A, V_{GE} = 0V$	—	2.3	3.3	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}	$V_{CE} = 10V, V_{GE} = 0V$	—	—	24	nF
Output Capacitance*****	C_{oes}		—	—	2.0	nF
Reverse Transfer Capacitance	C_{res}		—	—	0.45	nF
Inductive	Turn-on Delay Time	$V_{CC} = 600V, I_C = 150A,$ $V_{GE1} = V_{GE2} = 15V, R_G = 2.1\Omega,$ Inductive Load	—	—	150	ns
Load	Rise Time		—	—	80	ns
Switch	Turn-off Delay Time		—	—	400	ns
Time	Fall Time		—	60	200	ns
Diode Reverse Recovery Time**	t_{rr}	Switching Operation,	—	80	130	ns
Diode Reverse Recovery Charge**	Q_{rr}	$I_E = 150A$	—	7.0	—	μC

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

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

***Junction temperature (T_j) should not increase beyond 150°C .

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

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

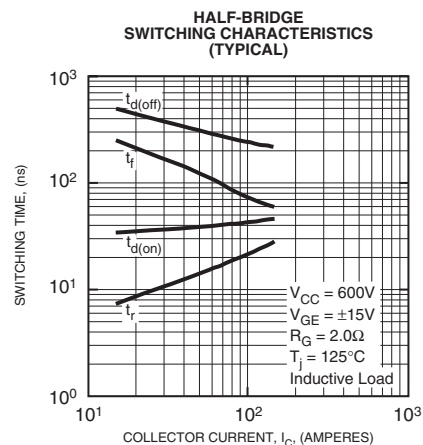
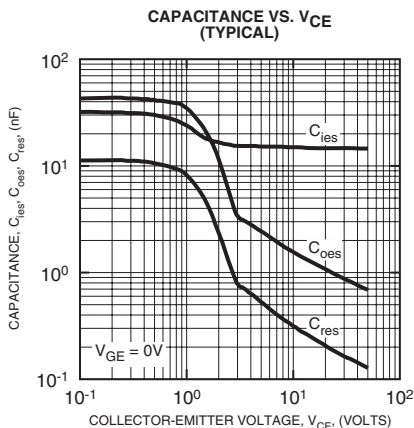
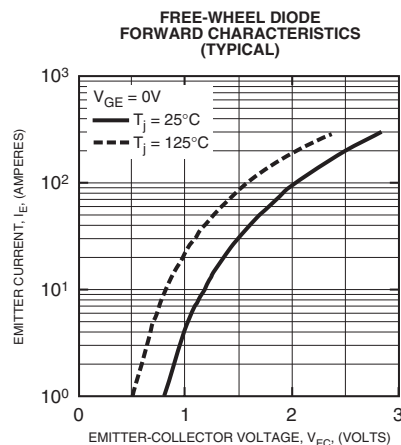
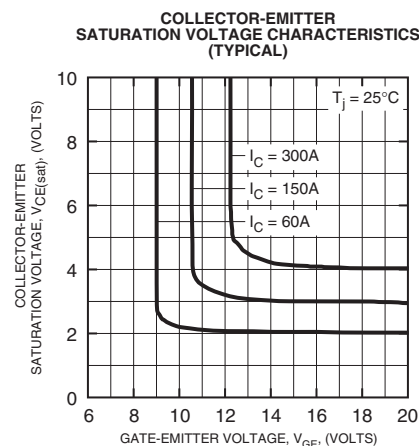
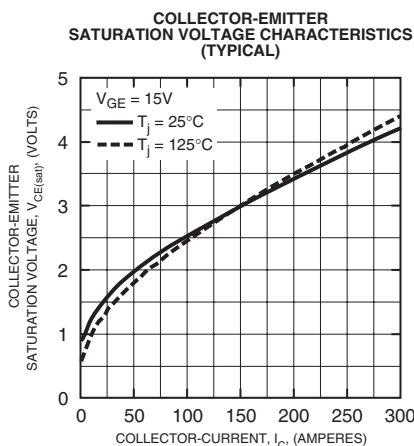
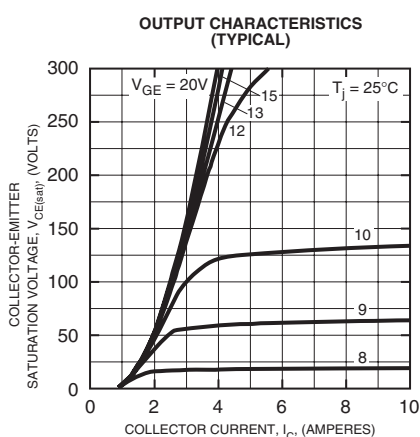
CM150DC-24NFM

Dual IGBT NFM-Series Module

150 Amperes/1200 Volts

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, T_C Measured Point Just Under Chips	—	—	0.13	$^\circ\text{C/W}$
Thermal Resistance, Junction to Case	$R_{th(j-c)D}$	Per FWDi 1/2 Module, T_C Measured Point Just Under Chips	—	—	0.28	$^\circ\text{C/W}$
Contact Thermal Resistance, Case to Fin	$R_{th(c-f)}$	Per 1/2 Module, Thermal Grease Applied	—	0.02	—	$^\circ\text{C/W}$
External Gate Resistance	R_G		2.1	—	21	Ω



CM150DC-24NFM
Dual IGBT NFM-Series Module
 150 Amperes/1200 Volts

