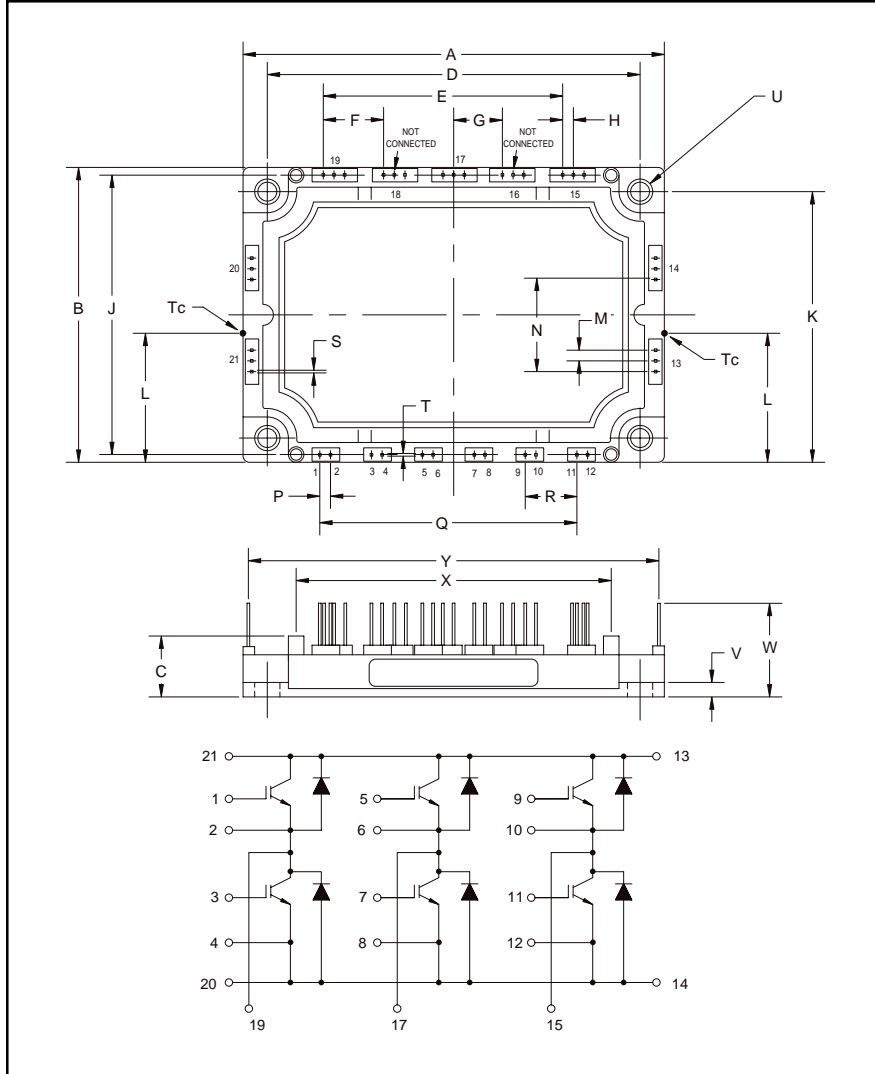


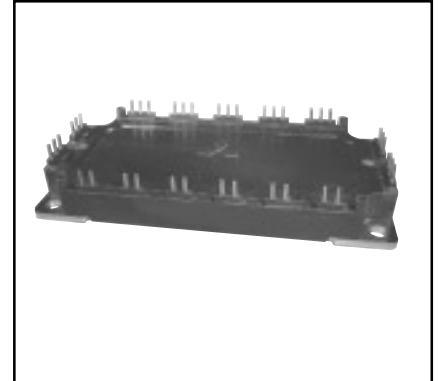
Trench Gate Design Six IGBTMOD™ 150 Amperes/600 Volts



Outline Drawing and Circuit Diagram

| Dimensions | Inches | Millimeters |
|------------|-----------|-------------|
| A | 4.78 | 121.5 |
| B | 2.42 | 61.5 |
| C | 0.67 | 17.0 |
| D | 4.33±0.01 | 110.0±0.25 |
| E | 3.00 | 76.2 |
| F | 0.75 | 19.05 |
| G | 0.60 | 15.24 |
| H | 0.15 | 3.81 |
| J | 2.26 | 57.5 |
| K | 1.97±0.01 | 50.0±0.25 |
| L | 1.07 | 27.0 |

| Dimensions | Inches | Millimeters |
|------------|-----------|-------------|
| M | 0.15 | 3.81 |
| N | 0.75 | 19.05 |
| P | 0.15 | 3.81 |
| Q | 3.00 | 76.2 |
| R | 0.60 | 15.24 |
| S | 0.45 | 1.15 |
| T | 0.04 | 1.0 |
| U | 0.22 Dia. | 5.5 Dia. |
| V | 0.12 | 3.0 |
| W | 0.81 | 20.5 |
| X | 3.72 | 94.5 |
| Y | 4.62 | 118.11 |



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
- UPS
- Battery Powered Supplies

Ordering Information:

Example: Select the complete module number you desire from the table - i.e. CM150TJ-12F is a 600V (V_{CES}), 150 Ampere Six-IGBT IGBTMOD™ Power Module.

| Type | Current Rating Amperes | V_{CES} Volts (x 50) |
|------|------------------------|------------------------|
| CM | 150 | 12 |



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

CM150TJ-12F
Trench Gate Design Six IGBTMOD™
 150 Amperes/600 Volts

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

| Ratings | Symbol | CM150TJ-12F | 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} | 600 | Volts |
| Gate-Emitter Voltage (C-E SHORT) | V_{GES} | ± 20 | Volts |
| Collector Current ($T_c = 25^\circ\text{C}$) | I_C | 150 | Amperes |
| Peak Collector Current ($T_j \leq 150^\circ\text{C}$) | 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 ($T_j < 150^\circ\text{C}$) ($T_c = 25^\circ\text{C}$) | P_C | 403 | Watts |
| Mounting Torque, M5 Mounting | – | 31 | in-lb |
| Weight | – | 300 | Grams |
| Isolation Voltage (Main Terminal to Baseplate, AC 1 min.) | V_{iso} | 2500 | Volts |

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_{CES} | $V_{CE} = V_{CES}, V_{GE} = 0V$ | – | – | 1 | mA |
| Gate Leakage Current | I_{GES} | $V_{GE} = V_{GES}, V_{CE} = 0V$ | – | – | 20 | μA |
| Gate-Emitter Threshold Voltage | $V_{GE(th)}$ | $I_C = 15\text{mA}, V_{CE} = 10V$ | 5 | 6 | 7 | Volts |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C = 150\text{A}, V_{GE} = 15V, T_j = 25^\circ\text{C}$ | – | 1.6 | 2.2 | Volts |
| | | $I_C = 150\text{A}, V_{GE} = 15V, T_j = 125^\circ\text{C}$ | – | 1.6 | – | Volts |
| Total Gate Charge | Q_G | $V_{CC} = 300V, I_C = 150\text{A}, V_{GE} = 15V$ | – | 930 | – | nC |
| Emitter-Collector Voltage** | V_{EC} | $I_E = 150\text{A}, V_{GE} = 0V$ | – | – | 2.6 | Volts |

* Pulse width and repetition rate should be such that the 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).



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

CM150TJ-12F
Trench Gate Design Six IGBTMOD™
 150 Amperes/600 Volts

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

| Characteristics | Symbol | Test Conditions | Min. | Typ. | Max. | Units | |
|---------------------------------|---------------------|---------------------------------------|----------------------------|------|------|-------|---------|
| Input Capacitance | C_{ies} | | – | – | 41 | nf | |
| Output Capacitance | C_{oes} | $V_{CE} = 10V, V_{GE} = 0V, f = 1MHz$ | – | – | 2.7 | nf | |
| Reverse Transfer Capacitance | C_{res} | | – | – | 1.5 | nf | |
| Inductive | Turn-on Delay Time | $t_{d(on)}$ | $V_{CC} = 300V,$ | – | – | 120 | ns |
| Load | Rise Time | t_r | $I_C = 150A,$ | – | – | 100 | ns |
| Switch | Turn-off Delay Time | $t_{d(off)}$ | $V_{GE1} = V_{GE2} = 15V,$ | – | – | 350 | ns |
| Times | Fall Time | t_f | $R_G = 4.2\Omega,$ | – | – | 250 | ns |
| Diode Reverse Recovery Time** | t_{rr} | Inductive Load | | – | – | 150 | ns |
| Diode Reverse Recovery Charge** | Q_{rr} | Switching Operation | | – | 2.8 | – | μC |

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

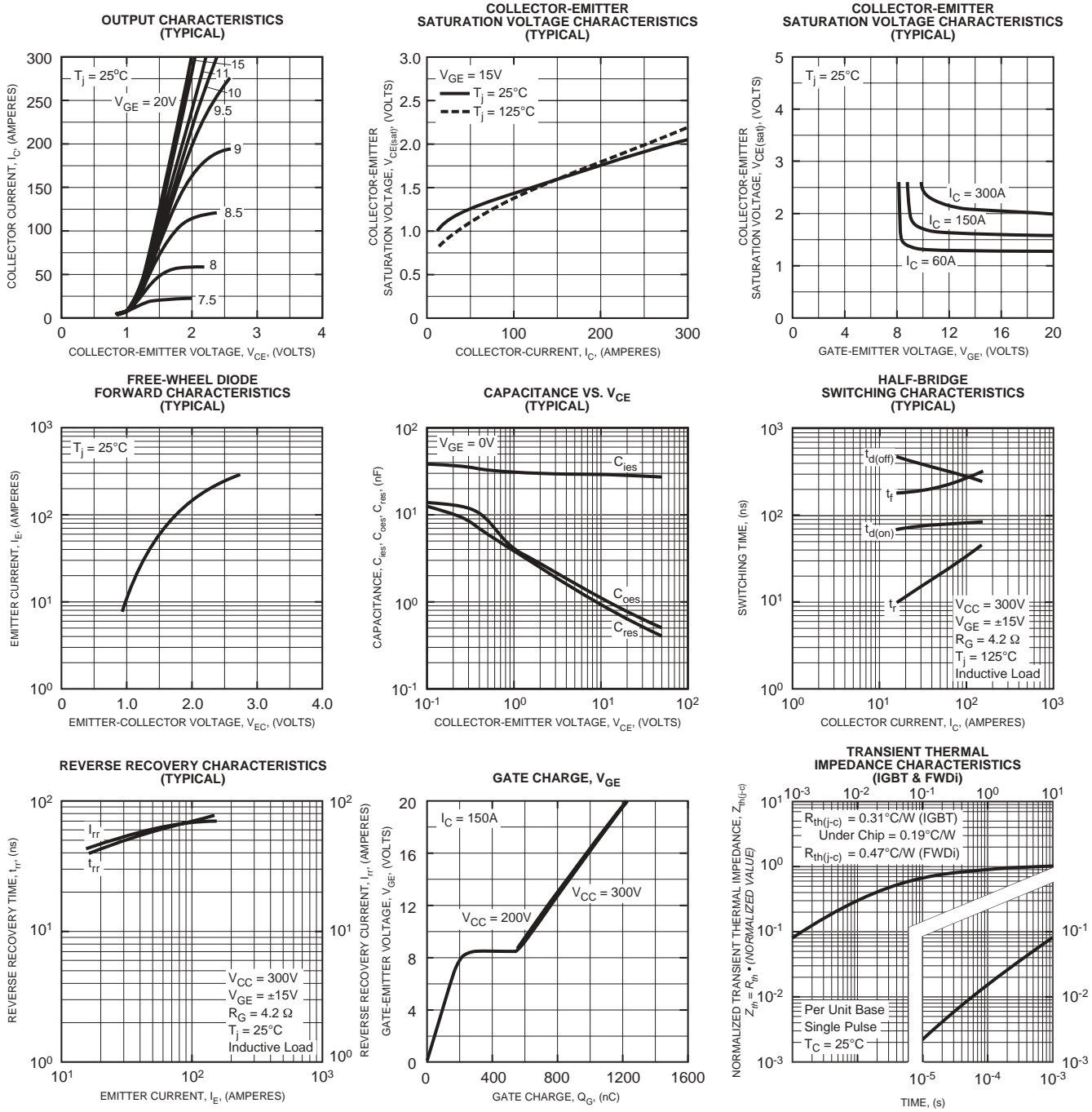
| Characteristics | Symbol | Test Conditions | Min. | Typ. | Max. | Units |
|--------------------------------------|-----------------|--|------|------|------|--------------------|
| Thermal Resistance, Junction to Case | $R_{th(j-c)Q}$ | Per IGBT 1/6 Module, T_C Reference Point per Outline Drawing | – | – | 0.31 | $^\circ\text{C/W}$ |
| Thermal Resistance, Junction to Case | $R_{th(j-c)D}$ | Per FWDi 1/6 Module, T_C Reference Point per Outline drawing | – | – | 0.47 | $^\circ\text{C/W}$ |
| Thermal Resistance, Junction to Case | $R_{th(j-c)'Q}$ | Per IGBT 1/6 Module, T_C Reference Point Under Chip | – | 0.19 | – | $^\circ\text{C/W}$ |
| Thermal Resistance, Junction to Case | $R_{th(j-c)D}$ | Per FWDi 1/6 Module, T_C Reference Point Under Chip | – | 0.25 | – | $^\circ\text{C/W}$ |
| Contact Thermal Resistance | $R_{th(c-f)}$ | Per Module, Thermal Grease Applied | – | 0.13 | – | $^\circ\text{C/W}$ |

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



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

CM150TJ-12F
Trench Gate Design Six IGBTMOD™
 150 Amperes/600 Volts



This datasheet has been download from:

www.datasheetcatalog.com

Datasheets for electronics components.