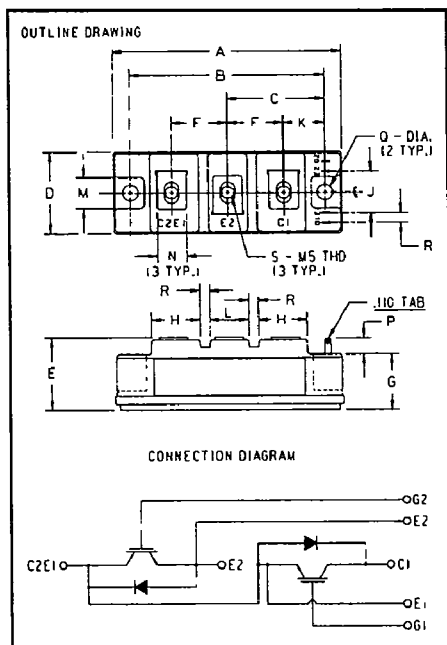


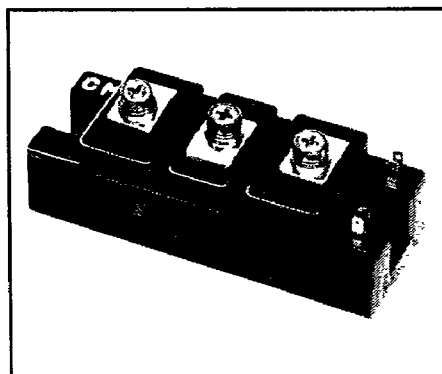
## Dual IGBTMOD™ Power Module

25 Amperes/600 Volts



**ID2260A2**  
**Outline Drawing**

| Dimension | Inches     | Millimeters |
|-----------|------------|-------------|
| A         | 3.70       | 94          |
| B         | 3.150±.010 | 80±0.25     |
| C         | 1.57       | 40          |
| D         | 1.34       | 34          |
| E         | 1.22Max.   | 31 Max.     |
| F         | .90        | 23          |
| G         | .85        | 21.5        |
| H         | .79        | 20          |
| J         | .71        | 18          |
| K         | .67        | 17          |
| L         | .63        | 16          |
| M         | .51        | 13          |
| N         | .47        | 12          |
| P         | .28        | 7           |
| Q         | .256 Dia.  | Dia. 6.5    |
| R         | .16        | 4           |
| S         | M5 Metric  | M5          |



**ID2260A2**  
**Dual IGBTMOD™ Power Module**  
25 Amperes/600 Volts

### 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 (150ns) Free Wheel Diode
- ☐ High Frequency Operation (15-20kHz)
- ☐ Isolated Base Plate for Easy Heat Sinking

### Applications:

- ☐ AC Motor Control
- ☐ Motion/Servo Control
- ☐ UPS
- ☐ Welding Power Supplies
- ☐ Laser Power Supplies

### Ordering Information

Example: Select the complete eight digit part module number you desire from the table below -i.e. ID2260A2 is a 600V ( $V_{CES}$ ), 25 Ampere Dual IGBTMOD™ Power Module.

| Type | $V_{CES}$<br>Volts (x10) | Current Rating<br>Amperes (25) |
|------|--------------------------|--------------------------------|
| ID22 | 60                       | A2                             |



Powerex, Inc., Hillis Street, Youngwood, Pennsylvania 15697 (412) 925-7272

Powerex, Europe, S.A. 428 Avenue G. Durand, BP107, 72003 Le Mans, France (43) 41.14.14

**ID2260A2**

**Dual IGBTMOD™ Power Module**

25 Amperes/600Volts

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

| Ratings                                 | Symbol    | ID2260A2   | 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                    | $V_{GES}$ | $\pm 20$   | Volts            |
| Collector Current                       | $I_C$     | 25         | Amperes          |
| Peak Collector Current                  | $I_{CM}$  | 50*        | Amperes          |
| Diode Forward Current                   | $I_{FM}$  | 25         | Amperes          |
| Diode Forward Surge Current             | $I_{FM}$  | 50*        | Amperes          |
| Power Dissipation                       | $P_d$     | 150        | Watts            |
| Max. Mounting Torque M5 Terminal Screws | —         | 17         | In.-lb.          |
| Max. Mounting Torque M6 Mounting Screws | —         | 26         | In.-lb.          |
| Module Weight (Typical)                 | —         | 190        | Grams            |
| V isolation                             | $V_{RMS}$ | 2500       | Volts            |

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

**Static Electrical Characteristics,  $T_j = 25^\circ\text{C}$  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   | $\mu A$ |
| Gate-Emitter Threshold Voltage       | $V_{GE(th)}$  | $I_C=2.5mA$ , $V_{CE}=10V$                         | 3.0  | 4.0  | 6.0   | Volts   |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=25A$ , $V_{GE}=15V$                           | —    | 3.0  | 5.0** | Volts   |
|                                      |               | $I_C=25A$ , $V_{GE}=15V$ , $T_j=150^\circ\text{C}$ | —    | 3.2  | **    | Volts   |
| Total Gate Charge                    | $Q_G$         | $V_{CC}=300V$ , $I_C=25A$ , $V_{GS}=15V$           | —    | 80   | —     | nC      |
| Diode Forward Voltage                | $V_{FM}$      | $I_C=25A$ , $V_{GS}=0V$                            | —    | —    | 2.5   | Volts   |

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

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

| Characteristics               | Symbol              | Test Conditions                                                        | Min. | Typ. | Max. | Units   |
|-------------------------------|---------------------|------------------------------------------------------------------------|------|------|------|---------|
| Input Capacitance             | $C_{ies}$           | $V_{GE}=0V$ , $V_{CE}=10V$ , $f=1MHz$                                  | —    | —    | 2500 | pF      |
| Output Capacitance            | $C_{oes}$           |                                                                        | —    | —    | 600  | pF      |
| Reverse Transfer Capacitance  | $C_{res}$           |                                                                        | —    | —    | 60   | pF      |
| Resistive Load Switch Times   | Turn-on Delay Time  | $V_{CC}=300V$ , $I_C=25A$ ,<br>$V_{GE1}=V_{GE2}=15V$ , $R_G=100\Omega$ | —    | —    | 250  | ns      |
|                               | Rise Time           |                                                                        | —    | —    | 700  | ns      |
|                               | Turn-off Delay Time |                                                                        | —    | —    | 600  | ns      |
|                               | Fall Time           |                                                                        | —    | —    | 800  | ns      |
| Diode Reverse Recovery Time   | $t_{rr}$            | $I_E=25A$ , $di_E/dt=-50A/\mu s$                                       | —    | —    | 200  | ns      |
| Diode Reverse Recovery Charge | $Q_{rr}$            | $I_E=25A$ , $di_E/dt=-50A/\mu s$                                       | —    | 0.3  | —    | $\mu C$ |

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

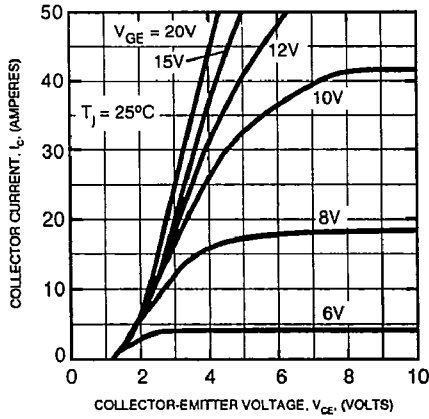
| Characteristics                      | Symbol        | Test Conditions      | Min. | Typ. | Max. | Units              |
|--------------------------------------|---------------|----------------------|------|------|------|--------------------|
| Thermal Resistance, Junction to Case | $R_{th(j-c)}$ | Per IGBT             | —    | —    | 0.80 | $^\circ\text{C/W}$ |
| Thermal Resistance, Junction to Case | $R_{th(j-c)}$ | Per Free Wheel Diode | —    | —    | 2.00 | $^\circ\text{C/W}$ |
| Contact Thermal Resistance           | $R_{th(c-l)}$ | Per Half Module      | —    | —    | 0.15 | $^\circ\text{C/W}$ |

ID2260A2

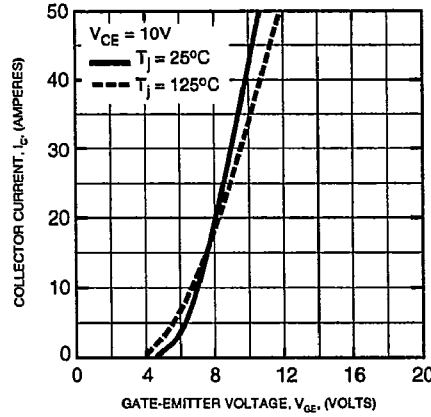
Dual IGBTMOD™ Power Module

25 Amperes/600 Volts

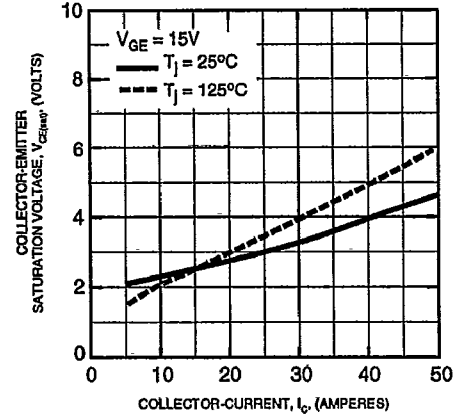
OUTPUT CHARACTERISTICS  
(TYPICAL)



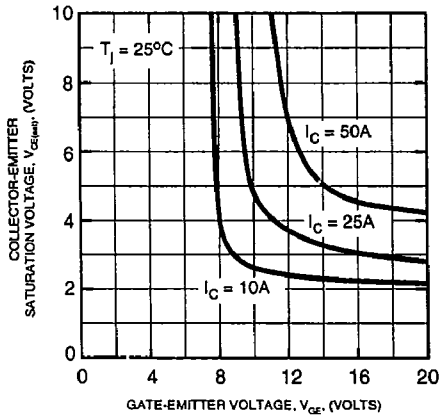
TRANSFER CHARACTERISTICS  
(TYPICAL)



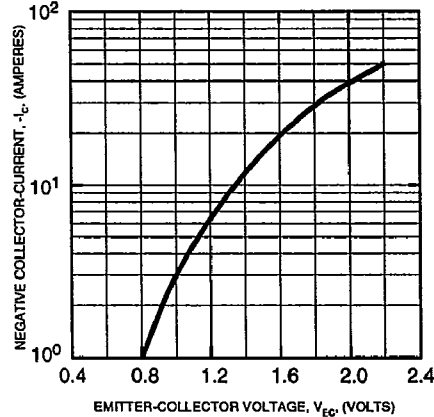
COLLECTOR-EMITTER  
SATURATION VOLTAGE CHARACTERISTICS  
(TYPICAL)



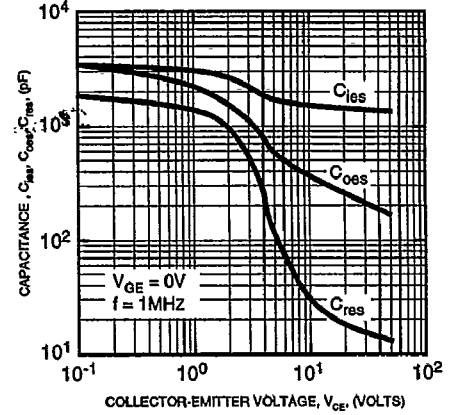
COLLECTOR-EMITTER  
SATURATION VOLTAGE CHARACTERISTICS  
(TYPICAL)



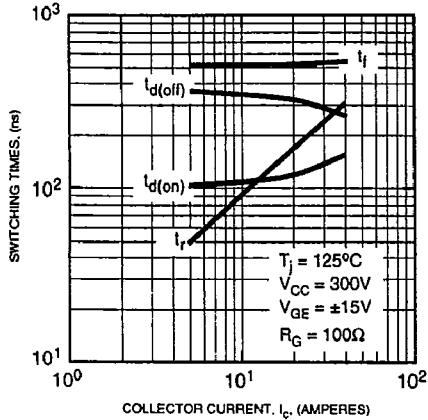
FREE-WHEEL DIODE  
FORWARD CHARACTERISTICS  
(TYPICAL)



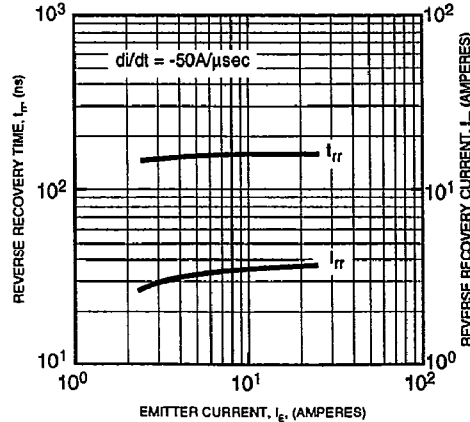
CAPACITANCE VS.  $V_{ce}$   
(TYPICAL)



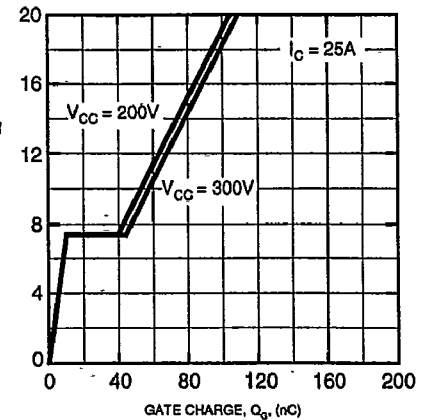
HALF-BRIDGE  
SWITCHING CHARACTERISTICS  
(TYPICAL)



REVERSE RECOVERY CHARACTERISTICS  
(TYPICAL)



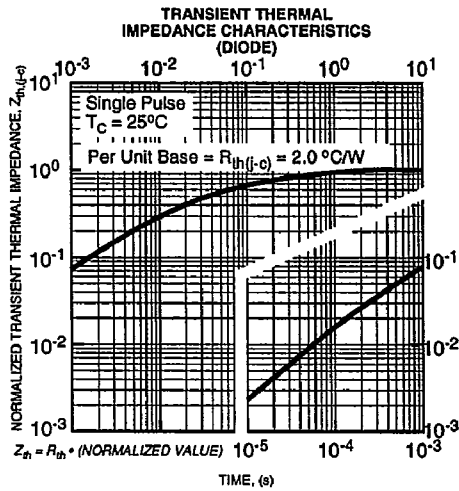
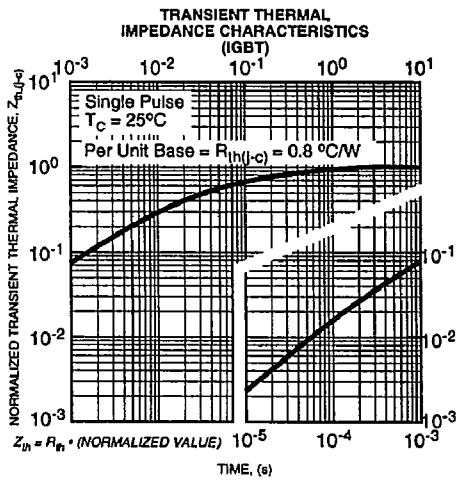
GATE CHARGE,  $V_{ge}$



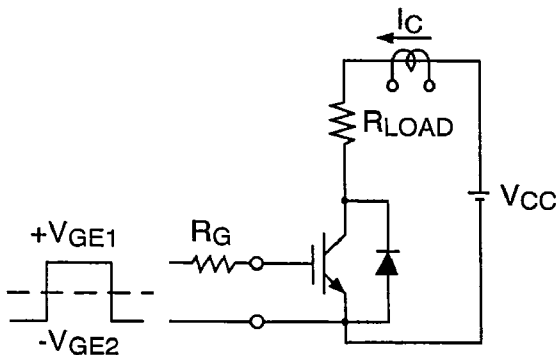
ID2260A2

Dual IGBTMOD™ Power Module

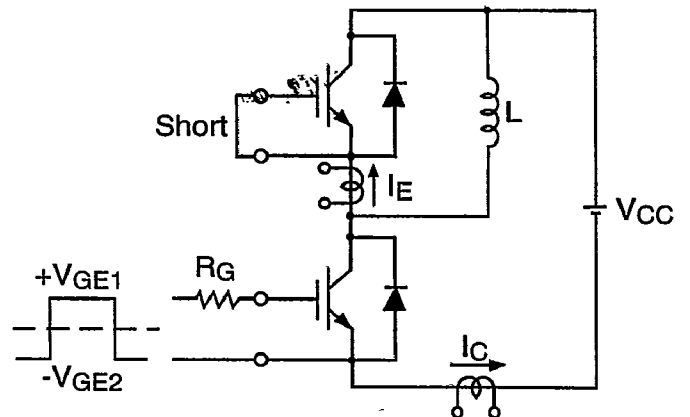
25 Amperes/600Volts



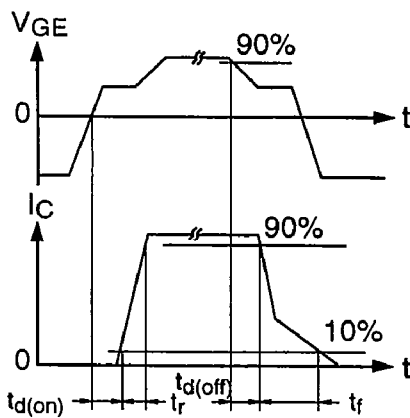
## SWITCHING TIME TEST CIRCUITS & WAVEFORMS



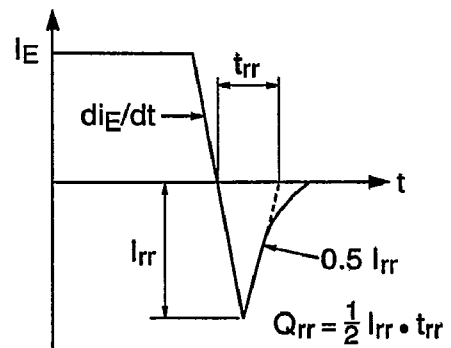
Resistance Load Switching Test Circuit



Half-Bridge Switching Test Circuit



Switching Time Test Waveforms



$t_{rr}$ ,  $Q_{rr}$  Waveforms