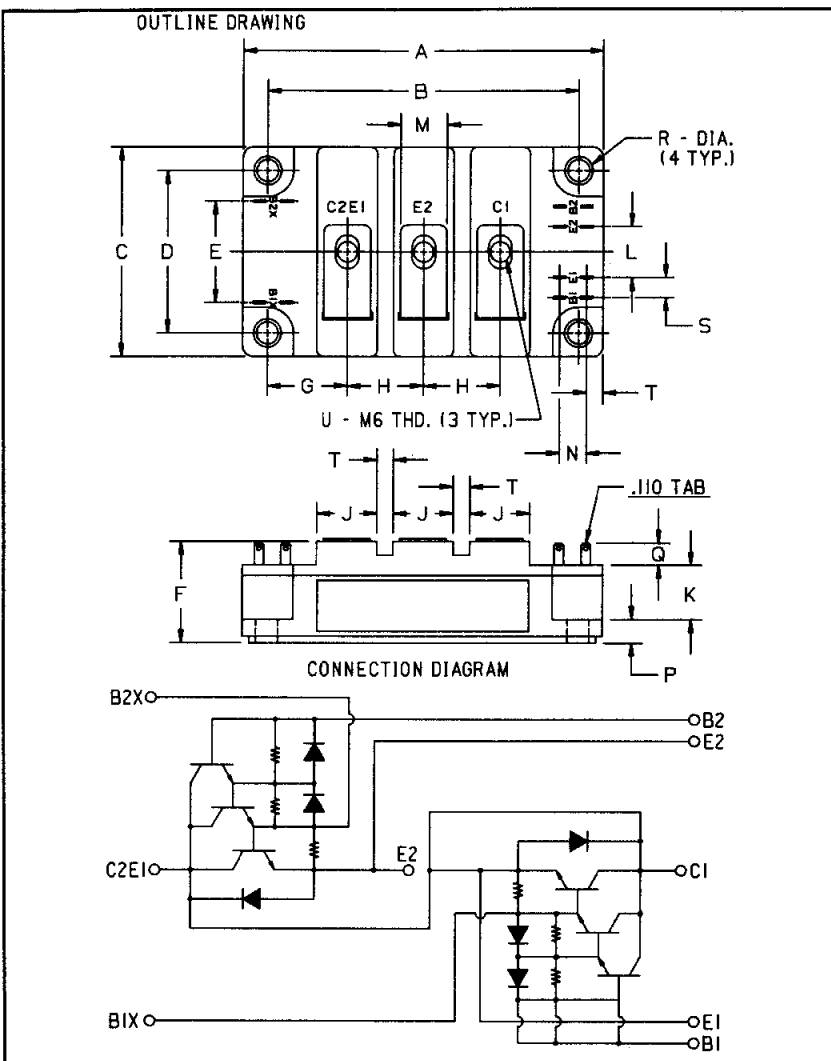


### High-Beta Dual Darlington Transistor Module 200 Amperes/600 Volts



Outline Drawing

| Dimensions | Inches       | Millimeters |
|------------|--------------|-------------|
| A          | 4.25 Max.    | 108 Max.    |
| B          | 3.661 ± 0.01 | 93 ± 0.25   |
| C          | 2.44 Max.    | 62 Max.     |
| D          | 1.890 ± 0.01 | 48 ± 0.25   |
| E          | 1.18         | 30          |
| F          | 1.18 Max.    | 30 Max.     |
| G          | 0.92         | 23.5        |
| H          | 0.90 Min.    | 23 Min.     |
| J          | 0.71         | 18          |
| K          | 0.63         | 16          |

| Dimensions | Inches    | Millimeters |
|------------|-----------|-------------|
| L          | 0.59      | 15          |
| M          | 0.55      | 14          |
| N          | 0.31      | 8           |
| P          | 0.28      | 7           |
| Q          | 0.25 Min. | 6.5 Min.    |
| R          | 0.25 Dia. | 6.5 Dia.    |
| S          | 0.24      | 6           |
| T          | 0.20      | 5           |
| U          | M6 Metric | M6          |

#### Description:

The Powerex High-Beta Dual Darlington Transistor Modules are high power devices designed for use in switching applications. The modules are isolated, consisting of two Darlington Transistors with each transistor having a reverse parallel connected high-speed diode.

#### Features:

- ☐ Isolated Mounting
- ☐ Planar Chips
- ☐ Discrete Fast Recovery Feedback Diode
- ☐ Very High Gain ( $h_{FE}$ )
- ☐ Quick Connect Signal Terminals
- ☐ Base-Emitter Speed-up Diodes
- ☐ UL Recognized 

#### Applications:

- ☐ AC Motor Control
- ☐ DC Motor Control
- ☐ Switching Power Supplies
- ☐ Inverters

#### Ordering Information:

Example: Select the complete ten digit module part number you desire from the table - i.e. KD424520HB is a 450  $V_{CE(sus)}$  (600  $V_{CEV}$ ), 200 Ampere High-Beta Dual Darlington Module with a gain of 750 at rated current (200 Amperes).

| Type | $V_{CE(sus)}$<br>Volts (X 10) | Current Rating<br>Amperes (X 10) | High<br>Beta |
|------|-------------------------------|----------------------------------|--------------|
| KD42 | 45                            | 20                               | HB           |



Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (412) 925-7272

**KD424520HB**  
**High-Beta Dual Darlington Transistor Module**  
 200 Amperes/600 Volts

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

| Ratings                                                     | Symbol         | KD424520HB | Units            |
|-------------------------------------------------------------|----------------|------------|------------------|
| Junction Temperature                                        | $T_J$          | -40 to 150 | $^\circ\text{C}$ |
| Storage Temperature                                         | $T_{stg}$      | -40 to 125 | $^\circ\text{C}$ |
| Collector-Emitter Sustaining Voltage                        | $V_{CEO(sus)}$ | 450        | Volts            |
| Collector-Emitter Sustaining Voltage, $V_{BE} = -2\text{V}$ | $V_{CEV(sus)}$ | 600        | Volts            |
| Collector-Base Voltage                                      | $V_{CBO}$      | 600        | Volts            |
| Emitter-Base Voltage                                        | $V_{EBO}$      | 7          | Volts            |
| Collector-Emitter Voltage, $V_{BE} = -2\text{V}$            | $V_{CEV}$      | 600        | Volts            |
| Continuous Collector Current                                | $I_C$          | 200        | Amperes          |
| Diode Forward Current                                       | $I_{FM}$       | 200        | Amperes          |
| Continuous Base Current                                     | $I_B$          | 12         | Amperes          |
| Diode Surge Current                                         | $I_{FSM}$      | 2000       | Amperes          |
| Power Dissipation (Each Transistor)                         | $P_t$          | 1240       | Watts            |
| Max. Mounting Torque M6 Terminal Screws                     | —              | 26         | in.-lb.          |
| Max. Mounting Torque M6 Mounting Screws                     | —              | 26         | in.-lb.          |
| Module Weight (Typical)                                     | —              | 470        | Grams            |
| V Isolation                                                 | $V_{RMS}$      | 2500       | Volts            |

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

| Characteristics                      | Symbol        | Test Conditions                               | Min. | Typ. | Max. | Units         |
|--------------------------------------|---------------|-----------------------------------------------|------|------|------|---------------|
| Collector Cutoff Current             | $I_{CEV}$     | $V_{CE} = 600\text{V}, V_{BE} = -2\text{V}$   | —    | —    | 4    | mA            |
| Emitter Cutoff Current               | $I_{EBO}$     | $V_{EB} = 7\text{V}$                          | —    | —    | 300  | mA            |
| DC Current Gain                      | $h_{FE}$      | $I_C = 200\text{A}, V_{CE} = 2.5\text{V}$     | 750  | —    | —    | —             |
| Diode Forward Voltage                | $V_{FM}$      | $I_{FM} = 200\text{A}$                        | —    | —    | 1.8  | Volts         |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C = 200\text{A}, I_B = 260\text{mA}$       | —    | —    | 2.5  | Volts         |
| Base-Emitter Saturation Voltage      | $V_{BE(sat)}$ | $I_C = 200\text{A}, I_B = 260\text{mA}$       | —    | —    | 3.0  | Volts         |
| Resistive Turn-on                    | $t_{on}$      | $V_{CC} = 300\text{V}$                        | —    | —    | 2.5  | $\mu\text{s}$ |
| Load Storage Time                    | $t_s$         | $I_C = 200\text{A}$                           | —    | —    | 10   | $\mu\text{s}$ |
| Switch Times Fall Time               | $t_f$         | $I_{B1} = 0.4\text{A}, I_{B2} = -4.0\text{A}$ | —    | —    | 2.0  | $\mu\text{s}$ |

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

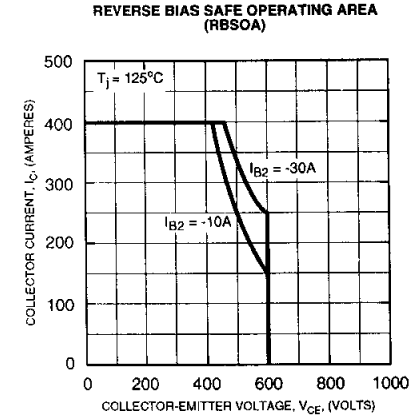
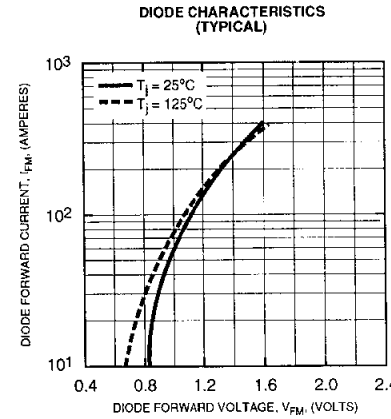
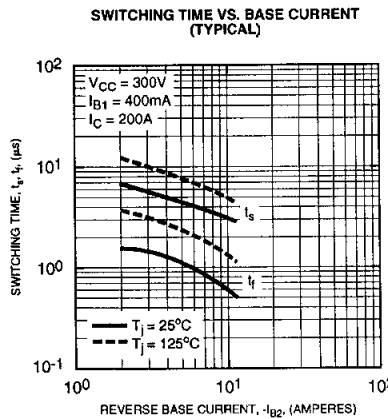
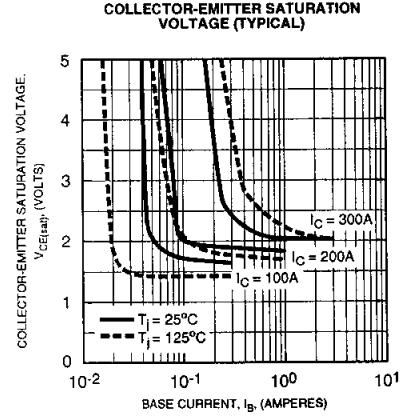
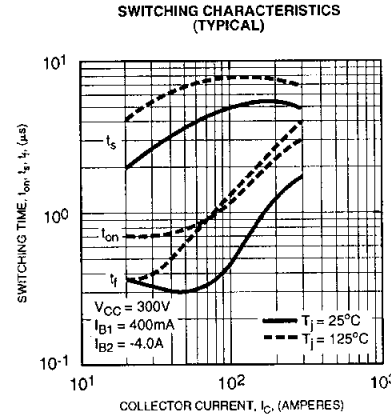
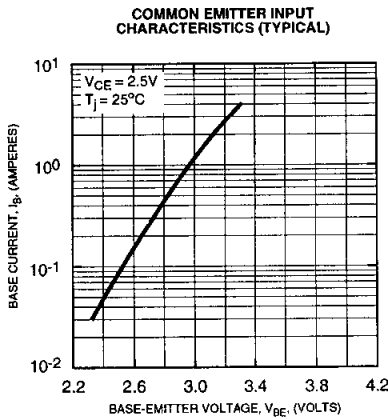
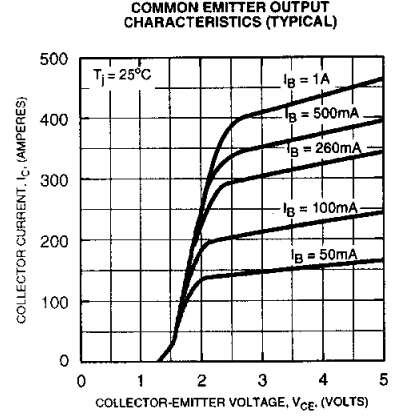
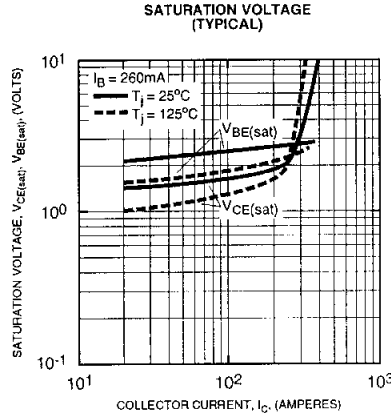
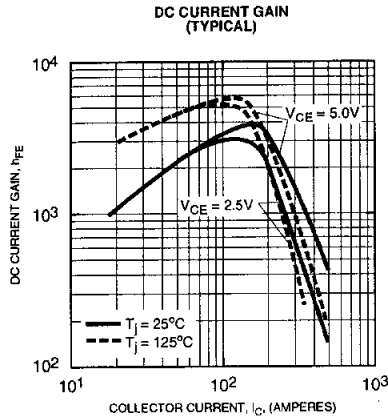
| Characteristics                      | Symbol            | Test Conditions | Min. | Typ. | Max.  | Units              |
|--------------------------------------|-------------------|-----------------|------|------|-------|--------------------|
| Thermal Resistance, Case-to-Sink     | $R_{\theta(c-s)}$ | Per Half Module | —    | —    | 0.075 | $^\circ\text{C/W}$ |
| Thermal Resistance, Junction-to-Case | $R_{\theta(j-c)}$ | Transistor Part | —    | —    | 0.1   | $^\circ\text{C/W}$ |
| Thermal Resistance, Junction-to-Case | $R_{\theta(j-c)}$ | Diode Part      | —    | —    | 0.33  | $^\circ\text{C/W}$ |



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### KD424520HB

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