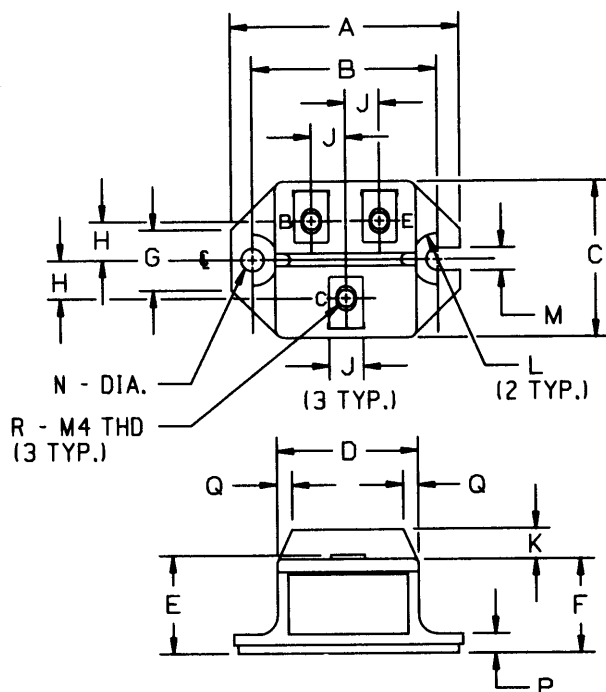
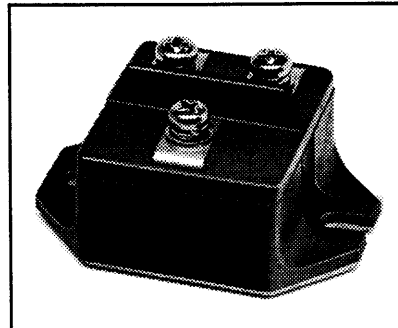
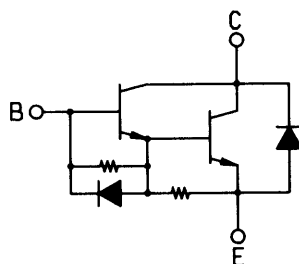


### Single Darlington Transistor Module 50 Amperes/600 Volts

OUTLINE DRAWING



CONNECTION DIAGRAM



#### Description:

The Powerex Single Darlington Transistor Modules are high power devices designed for use in switching applications. The modules are isolated, consisting of one Darlington Transistor with a reverse parallel connected high-speed diode and base-to-emitter speed-up diode.

#### Features:

- ☐ Isolated Mounting
- ☐ Planar Chips
- ☐ Discrete Fast Recovery Feedback Diode
- ☐ High Gain ( $h_{FE}$ )
- ☐ Base-Emitter Speed-up Diode

#### Applications:

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

#### Ordering Information:

Example: Select the complete eight digit module part number you desire from the table - i.e. KS524505 is a 450  $V_{CEO(sus)}$  (600  $V_{CEV}$ ), 50 Ampere Single Darlington Module.

Outline Drawing

| Dimensions | Inches        | Millimeters |
|------------|---------------|-------------|
| A          | 2.106         | 53.5        |
| B          | 1.705 ± 0.008 | 43.3 ± 0.02 |
| C          | 1.437         | 36.5        |
| D          | 1.299         | 33          |
| E          | 0.925         | 23.5        |
| F          | 0.866         | 22          |
| G          | 0.551         | 14          |
| H          | 0.354         | 9           |

| Dimensions | Inches     | Millimeters |
|------------|------------|-------------|
| J          | 0.315      | 8           |
| K          | 0.276      | 7           |
| L          | 0.236 Rad. | 6 Rad.      |
| M          | 0.209      | 5.3         |
| N          | 0.209 Dia. | 5.3 Dia.    |
| P          | 0.177      | 4.5         |
| Q          | 0.138      | 3.5         |
| R          | M4 Metric  | M4          |

| Type | $V_{CEO(sus)}$<br>Volts (X 10) | Current Rating<br>Amperes (x 10) |
|------|--------------------------------|----------------------------------|
| KS52 | 45                             | 05                               |



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

**KS524505**

**Single Darlington Transistor Module**

**50 Amperes/600 Volts**

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

| Ratings                                                     | Symbol         | KS524505   | 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                                   | $V_{CEV}$      | 600        | Volts            |
| Continuous Collector Current                                | $I_C$          | 50         | Amperes          |
| Diode Forward Current                                       | $I_{FM}$       | 50         | Amperes          |
| Continuous Base Current                                     | $I_B$          | 3          | Amperes          |
| Diode Surge Current                                         | $I_{FSM}$      | 500        | Amperes          |
| Power Dissipation                                           | $P_T$          | 310        | Watts            |
| Max. Mounting Torque M5 Terminal Screws                     | —              | 17         | in.-lb.          |
| Max. Mounting Torque M6 Mounting Screws                     | —              | 26         | in.-lb.          |
| Module Weight (Typical)                                     | —              | 90         | Grams            |
| V Isolation                                                 | $V_{RMS}$      | 2000       | Volts            |

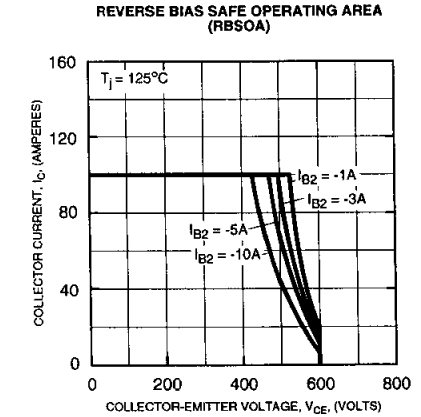
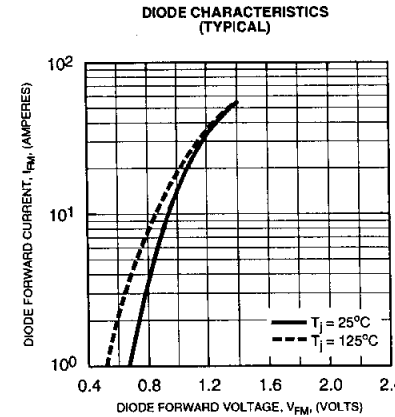
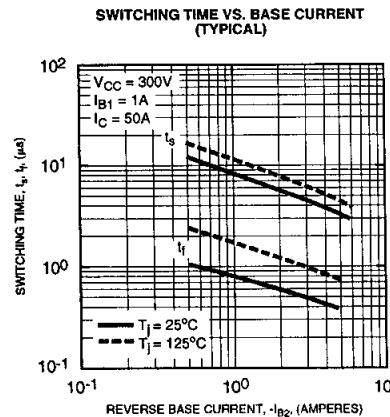
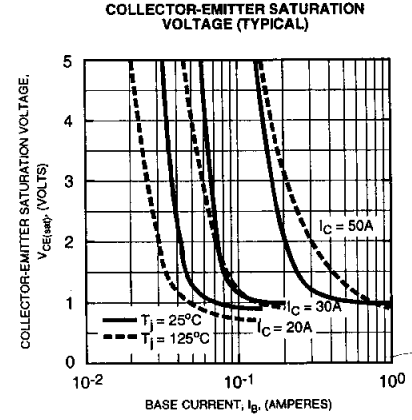
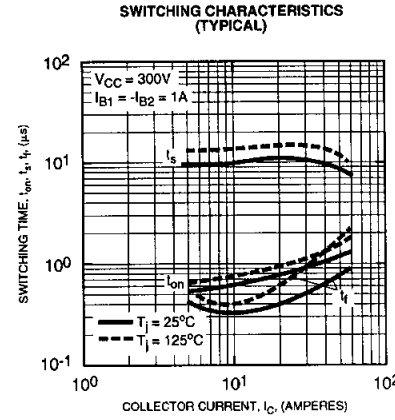
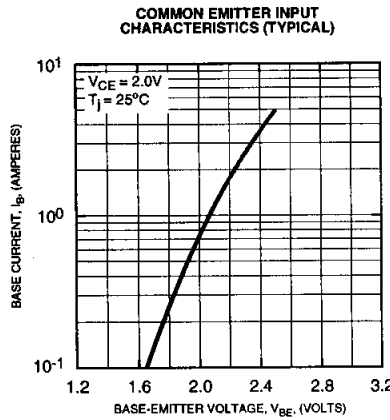
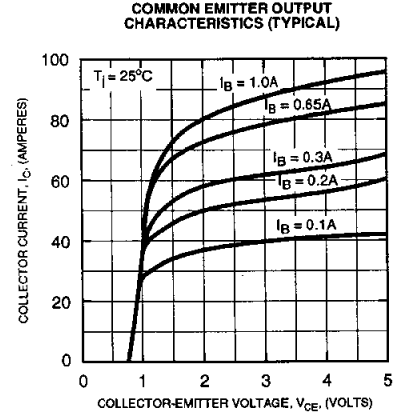
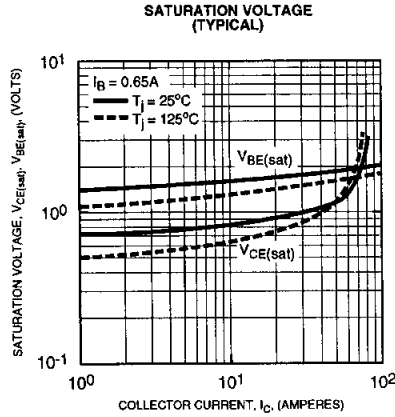
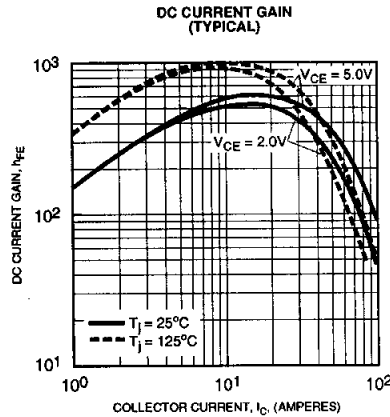
**Electrical Characteristics,  $T_J = 25^\circ\text{C}$  unless otherwise specified**

| Characteristics                      | Symbol        | Test Conditions                                                      | Min.                           | Typ. | Max. | Units             |
|--------------------------------------|---------------|----------------------------------------------------------------------|--------------------------------|------|------|-------------------|
| Collector Cutoff Current             | $I_{CEV}$     | $V_{CE} = 600\text{V}, V_{BE} = -2\text{V}$                          | —                              | —    | 1    | mA                |
|                                      |               | $V_{CE} = 600\text{V}, V_{BE} = -2\text{V}, T_C = 125^\circ\text{C}$ | —                              | —    | 5    | mA                |
| Emitter Cutoff Current               | $I_{EBO}$     | $V_{EB} = 7\text{V}$                                                 | —                              | —    | 200  | mA                |
| DC Current Gain                      | $h_{FE}$      | $I_C = 50\text{A}, V_{CE} = 2\text{V}$                               | 75                             | —    | —    | —                 |
|                                      |               | $I_C = 50\text{A}, V_{CE} = 5\text{V}$                               | 100                            | —    | —    | —                 |
| Diode Forward Voltage                | $V_{FM}$      | $I_{FM} = 50\text{A}$                                                | —                              | —    | 1.75 | Volts             |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C = 50\text{A}, I_B = 0.65\text{A}$                               | —                              | —    | 2.0  | Volts             |
| Base-Emitter Saturation Voltage      | $V_{BE(sat)}$ | $I_C = 50\text{A}, I_B = 0.65\text{A}$                               | —                              | —    | 2.5  | Volts             |
| Resistive                            | Turn-on       | $t_{on}$                                                             | $V_{CC} = 300\text{V}$         | —    | —    | 1.5 $\mu\text{s}$ |
| Load                                 | Storage Time  | $t_s$                                                                | $I_C = 50\text{A}$             | —    | —    | 12 $\mu\text{s}$  |
| Switch Times                         | Fall Time     | $t_f$                                                                | $I_{B1} = I_{B2} = -1\text{A}$ | —    | —    | 3.0 $\mu\text{s}$ |

**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     | $R_{\theta(c-s)}$ | —               | —    | —    | 0.15 | $^\circ\text{C/W}$ |
| Thermal Resistance, Junction-to-Case | $R_{\theta(j-c)}$ | Transistor Part | —    | —    | 0.4  | $^\circ\text{C/W}$ |
| Thermal Resistance, Junction-to-Case | $R_{\theta(j-c)}$ | Diode Part      | —    | —    | 1.3  | $^\circ\text{C/W}$ |

**KS524505**  
**Single Darlington Transistor Module**  
**50 Amperes/600 Volts**



## KS524505

### Single Darlington Transistor Module

50 Amperes/600 Volts

