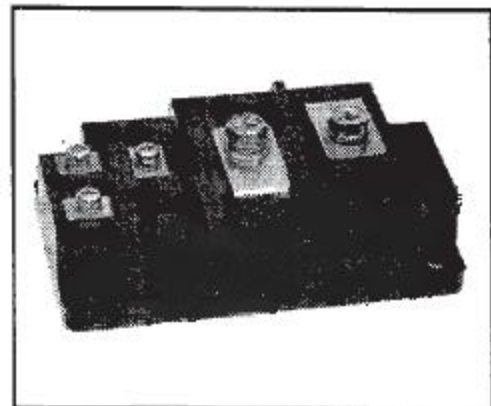
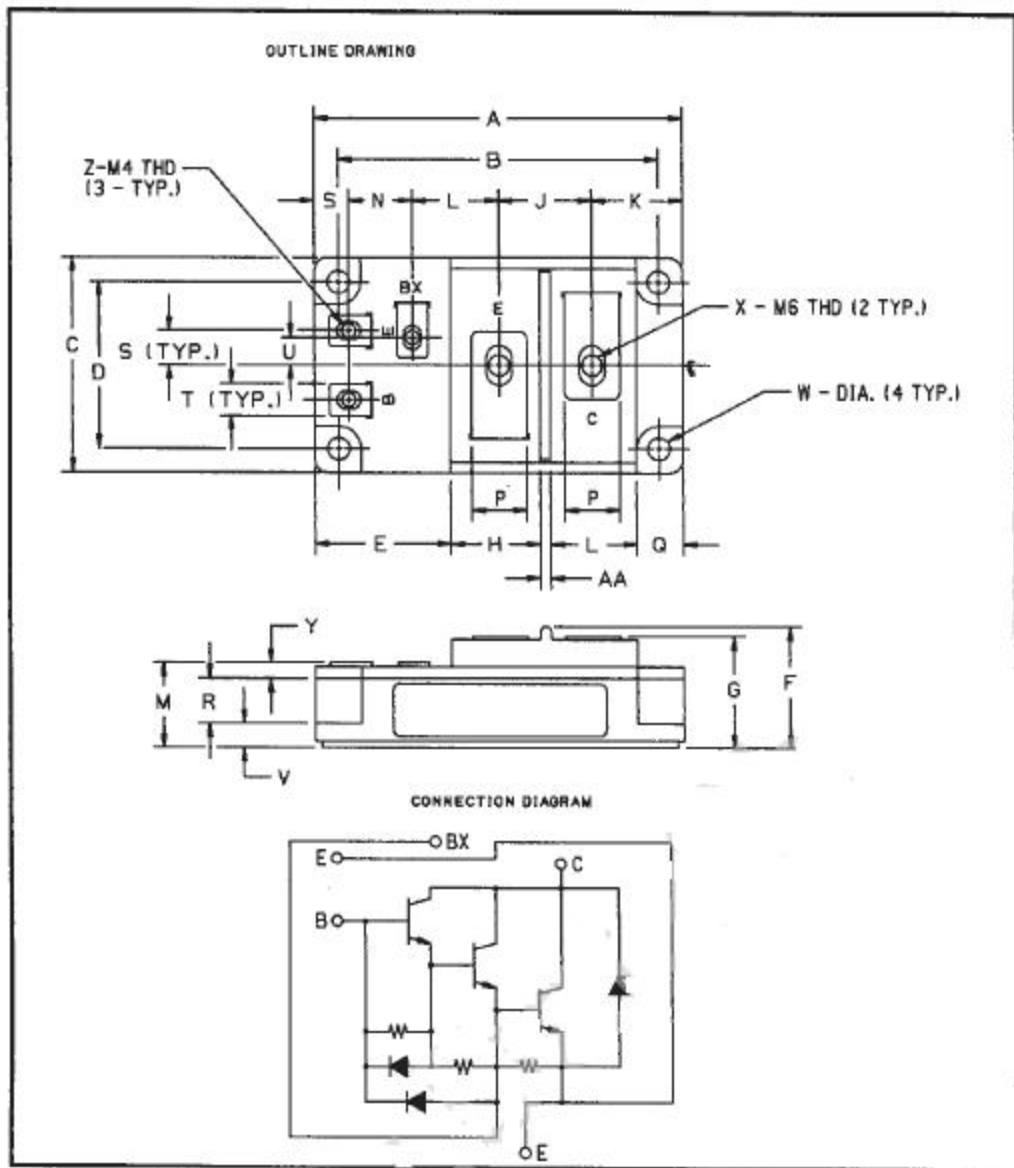


High-Beta Single Darlington Transistor Module 500 Amperes/600 Volts



Description:

The Powerex High-Beta 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. KS624550 is a 450 $V_{CE0(sus)}$ (600 V_{CEV}), 500 Ampere High-Beta Single Darlington Module.

Outline Drawing

| Dimensions | Inches | Millimeters |
|------------|---------------|-------------|
| A | 4.212 | 107 |
| B | 3.661 | 93 |
| C | 2.441 | 62 |
| D | 1.890 ± 0.010 | 48 ± 0.25 |
| E | 1.476 | 37.5 |
| F | 1.378 Max. | 35 Max. |
| G | 1.268 | 32.2 |
| H | 1.102 | 28 |
| J | 1.063 | 27 |
| K | 1.043 | 26.5 |
| L | 0.984 | 25 |
| M | 0.964 | 24.5 |
| N | 0.728 | 18.5 |

| Dimensions | Inches | Millimeters |
|------------|------------|-------------|
| P | 0.630 | 16 |
| Q | 0.531 | 13.5 |
| R | 0.512 | 13 |
| S | 0.394 | 10 |
| T | 0.354 | 9 |
| U | 0.315 | 8 |
| V | 0.276 | 7 |
| W | 0.256 Dia. | 6.5 Dia. |
| X | M6 Metric | M6 |
| Y | 0.177 | 4.5 |
| Z | M4 Metric | M4 |
| AA | 0.118 | 3 |

| Type | $V_{CE0(sus)}$ $V_{CEV} \times 10$ | Current Rating Amperes (X 10) |
|------|---------------------------------------|----------------------------------|
| KS62 | 45 | 50 |



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

KS624550

High-Beta Single Darlington Transistor Module

500 Amperes/600 Volts

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

| Ratings | Symbol | KS624550 | 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 | $V_{CE(sus)}$ | 450 | Volts |
| Collector-Emitter Sustaining Voltage, $V_{BE} = -2\text{V}$ | $V_{CEV(sus)}$ | 600 | Volts |
| Collector-Base Voltage | V_{CB0} | 600 | Volts |
| Emitter-Base Voltage | V_{EBO} | 7 | Volts |
| Collector-Emitter Voltage | V_{CEV} | 600 | Volts |
| Continuous Collector Current | I_C | 500 | Amperes |
| Diode Forward Current | I_{FM} | 500 | Amperes |
| Continuous Base Current | I_B | 10 | Amperes |
| Diode Surge Current | I_{FSM} | 5000 | Amperes |
| Power Dissipation | P_t | 1780 | Watts |
| Max. Mounting Torque M6 Terminal Screws (E, C) | - | 26 | in.-lb. |
| Max. Mounting Torque M4 Terminal Screws (B, Bx, E) | - | 12 | in.-lb. |
| Max. Mounting Torque M6 Mounting Screws | - | 26 | in.-lb. |
| Modular Weight (Typical) | - | 6400 | Grams |
| V Isolation | V_{RMS} | 2500 | Volts |

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

| Characteristics | Symbol | Test Conditions | Min. | Typ. | Max. | Units | |
|--------------------------------------|---------------|---|--|------|------|-------|---------------|
| Collector Cutoff Current | I_{CEV} | $V_{CE} = 600\text{V}, V_{BE} = -2\text{V}$ | - | - | 5 | mA | |
| Emitter Cutoff Current | I_{EBO} | $V_{EB} = 7\text{V}$ | - | - | 500 | mA | |
| DC Current Gain | h_{FE} | $I_C = 500\text{A}, V_{CE} = 2.5\text{V}$ | 75 | - | - | - | |
| Diode Forward Voltage | V_{FM} | $I_{FM} = 500\text{A}$ | - | - | 1.8 | Volts | |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C = 500\text{A}, I_B = 0.67\text{A}$ | - | - | 2.5 | Volts | |
| Base-Emitter Saturation Voltage | $V_{BE(sat)}$ | $I_C = 500\text{A}, I_B = 0.67\text{A}$ | - | - | 3.5 | Volts | |
| Resistive | Turn-on | t_{on} | $V_{CC} = 300\text{V}$ | - | - | 3.0 | μs |
| Load | Storage Time | t_s | $I_C = 500\text{A}$ | - | - | 10 | μs |
| Switch Times | Fall Time | t_f | $I_{B1} = 1\text{A}, I_{B2} = -10\text{A}$ | - | - | 3.5 | μs |

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

| Characteristics | Symbol | Test Conditions | Min. | Typ. | Max. | Units |
|--------------------------------------|-------------------|-----------------|------|------|------|--------------------|
| Thermal Resistance, Case-to-Sink | $R_{\theta(c-s)}$ | - | - | - | 0.04 | $^\circ\text{C/W}$ |
| Thermal Resistance, Junction-to-Case | $R_{\theta(j-c)}$ | Transistor Part | - | - | 0.07 | $^\circ\text{C/W}$ |
| Thermal Resistance, Junction-to-Case | $R_{\theta(j-c)}$ | Diode Part | - | - | 0.25 | $^\circ\text{C/W}$ |