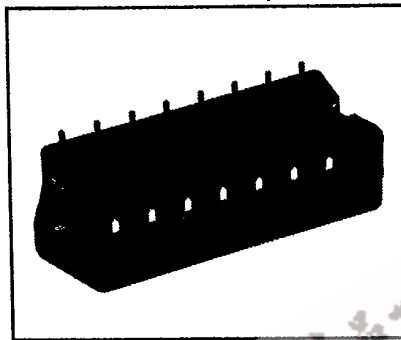
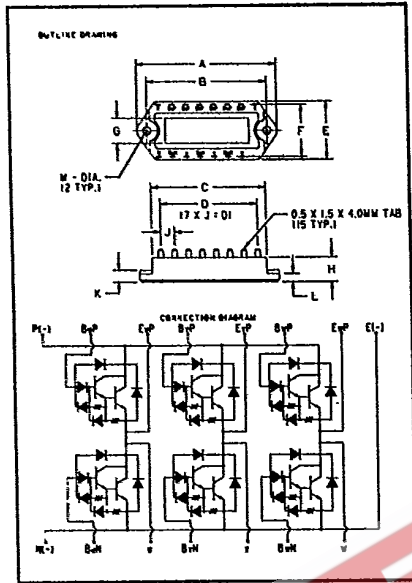




**KEE525B0**

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

**Integral Baker Clamp  
Six-Darlington  
Transistor Module  
8 Amperes/300 Volts**



**KEE525B0**  
Integral Baker Clamp  
Six-Darlington  
Transistor Module  
8 Amperes/300 Volts

**Description**

Powerex Integral Baker Clamp Six-Darlington Transistor Modules are designed for use in switching applications. The modules are isolated, consisting of six Darlington Transistors with each transistor having a reverse parallel connected high-speed diode, base emitter speed up diodes, and Baker clamp diodes. The transistors are connected in a three phase bridge configuration.

**Features:**

- Isolated Mounting
- Planar Chips
- Fast Recovery Feed-Back Diode
- High Gain ( $h_{FE}$ )
- Base Emitter Speed Up Diode
- Base Emitter Resistors & Integral Baker Clamp

**Applications:**

- Inverters
- Switching Power Supplies
- AC Motor Control

**Ordering Information**

Example: Select the complete eight digit module part number you desire from the table - i.e. KEE525B0 is a 250  $V_{CE(sus)}$  (300  $V_{CEV}$ ), 8 Ampere Six-Darlington Module.

**300 Volt KEE525B0  
Outline Drawing**

| Dimension | Inches           | Millimeters    |
|-----------|------------------|----------------|
| A         | 3.031            | 77             |
| B         | 2.598 ± .006     | 66 ± 0.15      |
| C         | 2.480            | 63             |
| D         | 2.100            | 53.34          |
| E         | 1.287            | 32.7           |
| F         | 1.150            | 29.2           |
| G         | .551             | 14             |
| H         | .531             | 13.5           |
| J         | .300             | 7.62           |
| K         | .256             | 6.5            |
| L         | .177             | 4.5            |
| M         | .169 ± .004 Dia. | 4.3 ± 0.1 Dia. |

| Type | $V_{CE(sus)}$<br>Volts (x10) | Current Rating<br>Amperes (8) |
|------|------------------------------|-------------------------------|
| KEE5 | 25                           | B0                            |



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

**KEE525B0**  
Integral Baker Clamp  
Six-Darlington Transistor Module  
8 Amperes/300 Volts

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

|  | Symbol         | KEE525B0   | 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                       | $V_{CE(SUS)}$  | 250        | Volts            |
| Collector-Emitter Sustaining Voltage $V_{BE} = -2\text{V}$ | $V_{CEV(SUS)}$ | 300        | Volts            |
| Collector-Base Voltage                                     | $V_{CB0}$      | 300        | Volts            |
| Emitter-Base Voltage                                       | $V_{EB0}$      | 7          | Volts            |
| Collector-Emitter Voltage $V_{BE} = -2\text{V}$            | $V_{CEV}$      | 300        | Volts            |
| Continuous Collector Current                               | $I_C$          | 8          | Amperes          |
| Diode Forward Current                                      | $I_{FM}$       | 8          | Amperes          |
| Continuous Base Current                                    | $I_B$          | 2          | Amperes          |
| Diode Surge Current  | $I_{FSM}$      | 80         | Amperes          |
| Power Dissipation, Each Transistor                         | $P_T$          | 62.5       | Watts            |
| Max. Mounting Torque M4 Mounting Screws                    | —              | 12         | in.-lb.          |
| Module Weight  | —              | 55         | Grams            |
| V isolation  | $V_{RMS}$      | 2000       | Volts            |

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

| Characteristics                                | Symbol          | Test Conditions                             | Min. | KEE525B0<br>Typ. | Max. | Units              |
|--|-----------------|---|------|------------------|------|--------------------|
| Collector Cutoff Current                       | $I_{CEV}$       | $V_{CE} = 300\text{V}, V_{BE} = -2\text{V}$ | —    | —                | 1    | mA                 |
| Emitter Cutoff Current                         | $I_{EB0}$       | $V_{EB} = 7\text{V}$                        | —    | —                | 200  | mA                 |
| DC Current Gain                                | $h_{FE}$        | $I_C = 7.5\text{A}, V_{CE} = 2.5\text{V}$   | 250  | —                | —    | —                  |
| Diode Forward Voltage                          | $V_{FM}$        | $I_{FM} = 7.5\text{A}$                      | —    | —                | 1.4  | V                  |
| Collector-Emitter Saturation Voltage           | $V_{CE(SAT)}$   | $I_C = 7.5\text{A}, I_B = 0.03\text{A}$     | —    | —                | 2.5  | V                  |
| Base-Emitter Saturation Voltage                | $V_{BE(SAT)}$   | $I_C = 7.5\text{A}, I_B = 0.03\text{A}$     | —    | —                | 3.5  | V                  |
| Resistive Turn On                              | $t_{on}$        | $V_{CC} = 150\text{V}$                      | —    | .32              | 0.6  | $\mu\text{s}$      |
| Load Storage Time                              | $t_s$           | $I_C = 7.5\text{A}$                         | —    | .7               | 1.4  | $\mu\text{s}$      |
| Switch Times Fall Time                         | $t_f$           | $I_{B1} = 0.08, -I_{B2} = 0.5\text{A}$      | —    | .3               | 0.6  | $\mu\text{s}$      |
| Diode Reverse Recovery                         | $t_{rr}$        | $I_F = 7.5\text{A}$                         | —    | .3               | .5   | $\mu\text{s}$      |
| Thermal Resistance, Case to Sink<br>Lubricated | $R_{\theta CS}$ | —   | —    | —                | 0.6  | $^\circ\text{C/W}$ |
| Thermal Resistance, Junction to Case           | $R_{\theta JC}$ | Transistor Part                             | —    | —                | 2.0  | $^\circ\text{C/W}$ |
| Thermal Resistance, Junction to Case           | $R_{\theta JC}$ | Diode Part                                  | —    | —                | 3.0  | $^\circ\text{C/W}$ |

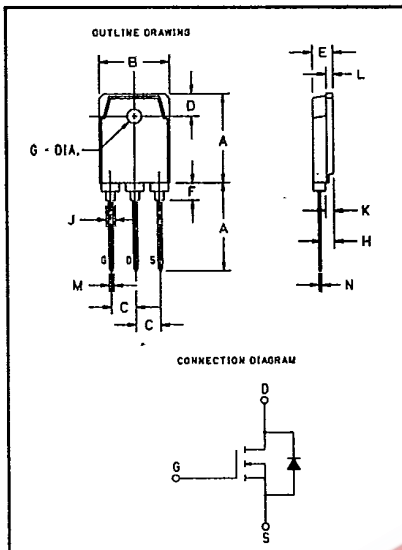


**JS0225A1**  
**JS0230A1** Tentative

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

98 DE 7294621 0002516 0

**Single FETMOD™**  
**Power Modules**  
**15 Amperes/250-300 Volts**



250-300 Volts JS0225A1, JS0230A1  
Outline Drawing

| Dimension | Inches           | Millimeters    |
|-----------|------------------|----------------|
| A         | .787             | 20             |
| B         | .614             | 15.6           |
| C         | .214 ± .008      | 5.45 ± 0.2     |
| D         | .197             | 5              |
| E         | .177             | 4.5            |
| F         | .157             | 4              |
| G         | .126 ± .008 Dia. | 3.2 ± 0.2 Dia. |
| H         | .110             | 2.8            |
| J         | .079             | 2              |
| K         | .071             | 1.8            |
| L         | .059             | 1.5            |
| M         | .039             | 1              |
| N         | .024             | 0.6            |

**Description**

Powerex Single FETMOD™ Power Modules are designed for use in applications requiring high frequency switching and low loss control.

**Features:**

- TO-3P Package
- Vertical DMOS Chip
- High Speed Body Diode
- Low Drive Requirement
- Fast Switching

**Applications:**

- AC Motor Control
- UPS Inverters
- Switch Mode Power Supply
- PWM Regulators

**Ordering Information**

Example: Select the complete eight digit module part number you desire from the table - i.e. JS0230A1 is a 300 Volt, 15 Ampere Single FETMOD™ Module.

| Type | Voss Volts (x10) | Current Rating Amperes (15) |
|------|------------------|-----------------------------|
| JS02 | 25               | A1                          |
| JS02 | 30               | A1                          |

**POWEREX**

98 DE 7294621 0002517 2

**Tentative****Powerex, Inc., Hillis Street, Youngwood, Pennsylvania 15697 (412) 925-7272****JS0225A1****JS0230A1****Single FETMOD™ Power Modules****15 Amperes/250-300 Volts****Maximum Ratings  $T_J = 25^\circ\text{C}$  unless otherwise specified**

|  | Symbol    | JS0225A1/JS0230A1 | Units            |
|--|-----------|-------------------|------------------|
| Junction Temperature                     | $T_J$     | -55 to 150        | $^\circ\text{C}$ |
| Storage Temperature                      | $T_{STG}$ | -55 to 125        | $^\circ\text{C}$ |
| Drain Source Voltage                     | $V_{DSS}$ | 250/300           | Volts            |
| Gate-Source Voltage                      | $V_{GSS}$ | $\pm 20$          | Volts            |
| Continuous Drain Current                 | $I_D$     | 13                | Amperes          |
| Continuous Source Current                | $I_S$     | 13                | Amperes          |
| Pulsed Drain Current Repetitive          | $I_{DM}$  | 45                | Amperes          |
| Power Dissipation                        | $P_T$     | 100               | Watts            |
| Max. Mounting Torque (M3) Mounting Screw | —         | 7                 | in.-lb.          |
| Module Weight                            | —         | —                 | Grams            |
| V isolation                              | $V_{RMS}$ | —                 | Volts            |

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

JS0225A1

JS0230A1

Single FETMOD™ Power Modules

15 Amperes/250-300 Volts

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

| Characteristics                                | Symbol          | Test Conditions  | JS0225A1/JS0230A1 |      |      | Units              |
|--|-----------------|--|-------------------|------|------|--------------------|
|  |                 |  | Min.              | Typ. | Max. |                    |
| Zero Gate Voltage Drain Current                | $I_{DSS}$       | $V_{DS} = V_{DSS}, V_{GS} = 0V$                                  | —                 | —    | 1    | mA                 |
| Zero Gate Voltage Drain Current                | $I_{DSS}$       | $V_{DS} = 0.8 V_{DSS}, V_{GS} = 0V$<br>$T_J = 150^\circ\text{C}$ | —                 | —    | 4    | mA                 |
| Gate Source Threshold                          | $V_{GS(th)}$    | $I_D = 1mA, V_{DS} = 10V$  | 2                 | 3    | 4    | Volts              |
| Gate Source Leakage                            | $\pm I_{GSS}$   | $\pm V_{GS} = \pm 20V, V_{DS} = 0V$                              | —                 | —    | 0.1  | $\mu\text{A}$      |
| Drain Source On State Resistance*              | $R_{DS(on)}$    | $V_{GS} = 15V, I_D = 15A$  | —                 | .23  | 0.28 | $\Omega$           |
|  |                 | $V_{GS} = 15V, I_D = 15A, T_J = 150^\circ\text{C}$               | —                 | —    | .56  | $\Omega$           |
| Drain Source On State Voltage*                 | $V_{DS(on)}$    | $V_{GS} = 15V, I_D = 15A$  | —                 | —    | 4.2  | Volts              |
|  |                 | $V_{GS} = 15V, I_D = 15A, T_J = 150^\circ\text{C}$               | —                 | —    | 8.4  | Volts              |
| Thermal Resistance, Case to Sink<br>Lubricated | $R_{\theta CS}$ |  | —                 | —    | —    | $^\circ\text{C/W}$ |
| Thermal Resistance, Junction to Case           | $R_{\theta JC}$ |  | —                 | —    | 1.25 | $^\circ\text{C/W}$ |

\* Pulse Test: Pulse width  $\leq 10\mu\text{s}$

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Tentative

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

JS0225A1

JS0230A1

Single FETMOD™ Power Modules

15 Amperes/250-300 Volts

Source-Drain Diode Characteristics  $T_J = 25^\circ\text{C}$  unless otherwise specified

| Characteristics       | Symbol   | Test Conditions  | JS0225A1/JS0230A1 |      |      | Units         |
|-----------------------|----------|--|-------------------|------|------|---------------|
|                       |          |  | Min.              | Typ. | Max. |               |
| Source-Drain Voltage  | $V_{SD}$ | $I_S = 15\text{A}, V_{GS} = 0\text{V}$                                   | —                 | —    | 2.5  | Volts         |
| Reverse Recovery Time | $t_{rr}$ | $I_S = 15\text{A}, di_S/dt = 30\text{A}/\mu\text{s}, V_{GS} = 0\text{V}$ | —                 | —    | 180  | $\mu\text{s}$ |

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

| Characteristics              | Symbol    | Test Conditions   | JS0225A1/JS0230A1 |      |      | Units |
|------------------------------|-----------|---|-------------------|------|------|-------|
|                              |           |   | Min.              | Typ. | Max. |       |
| Forward Transconductance     | $g_{fs}$  | $I_D = 15\text{A}, V_{DS} = 10\text{V}$<br>$t_w \leq 300\mu\text{s}, \text{Duty} = 2\%$ | 4                 | —    | —    | mhos  |
| Input Capacitance            | $C_{iss}$ | $V_{GS} = 0\text{V}, V_{DS} = 10\text{V}, f = 1\text{Mhz}$                              | —                 | —    | 3000 | pf    |
| Output Capacitance           | $C_{oss}$ |   | —                 | —    | 1500 | pf    |
| Reverse Transfer Capacitance | $C_{rss}$ |   | —                 | —    | 600  | pf    |
| Total Gate Charge            | $Q_G$     | $V_{DD} = 0.8 V_{DSS}$<br>$V_{GS} = 10\text{V}, I_D = 15\text{A}$                       | —                 | —    | —    | nC    |
| Turn On Time**               | $t_{on}$  | $V_{DD} = 0.5 V_{DSS}$<br>$I_D = 15\text{A}, V_{GS} = 15\text{V}$                       | —                 | —    | 400  | ns    |
| Turn Off Time**              | $t_{off}$ | $R_{GEN} = R_{GS} = 50\Omega$   | —                 | —    | 600  | ns    |

\*\* Turn on Time ( $t_{on}$ ) = Turn on Delay ( $t_{d(on)}$ ) + Rise Time ( $t_r$ )  
Turn-off Time ( $t_{off}$ ) = Turn Off Delay ( $t_{d(off)}$ ) + Fall Time ( $t_f$ )

This specification is tentative;  
therefore, performance curves are not  
included. Please contact the Powerex  
sales representative nearest you for  
further information.