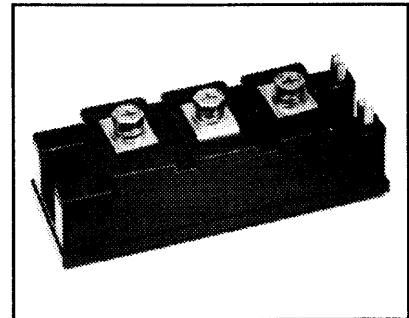
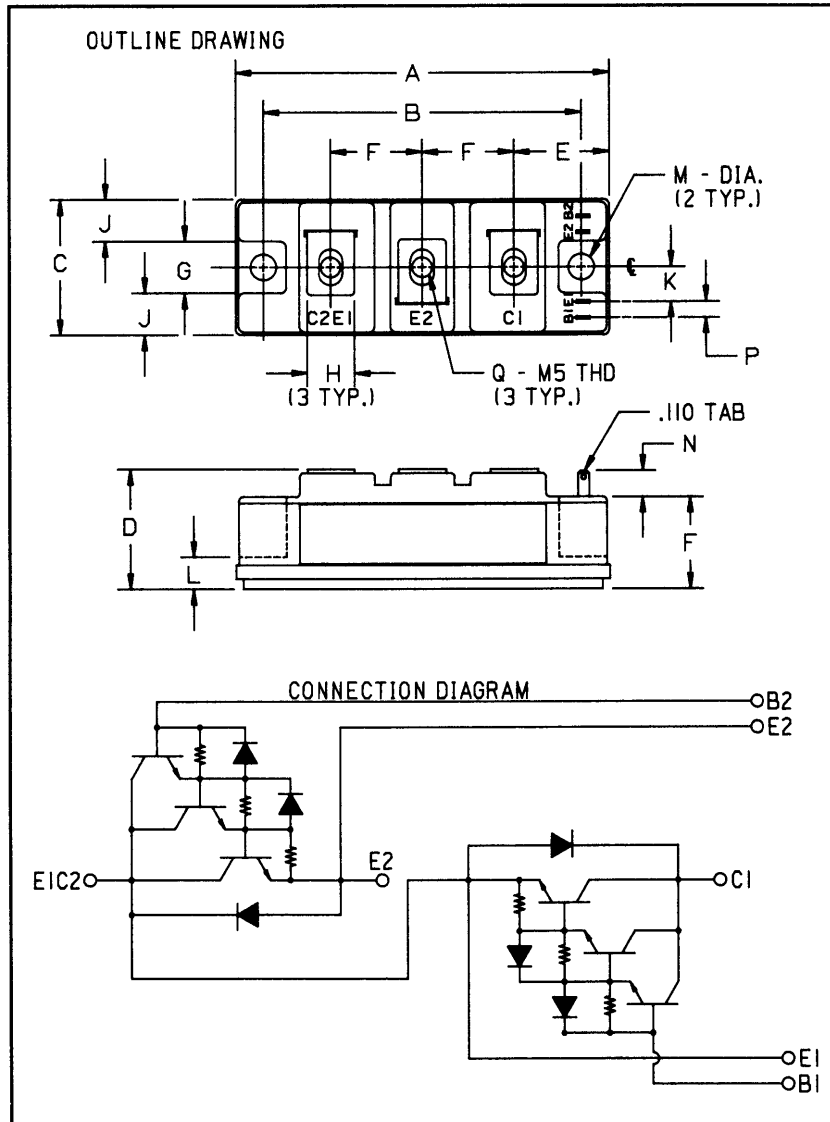


### Dual Darlington Transistor Module 50 Amperes/1000 Volts



#### Description:

The Powerex 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
- High Gain ( $h_{FE}$ )
- Quick Connect Base-Emitter Signal Terminals
- Base-Emitter Speed-up Diodes

#### Applications:

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

#### Ordering Information:

Example: Select the complete eight digit module part number you desire from the table - i.e. KD221K05 is a 1000 Volt, 50 Ampere Dual Darlington Module.

#### Outline Drawing

Dimensions	Inches	Millimeters
A	3.701 Max.	94 Max.
B	3.150 ± 0.010	80 ± 0.25
C	1.339 Max.	34 Max.
D	1.181 Max.	30 Max.
E	0.945	24
F	0.906	23
G	0.512	13
H	0.472	12

Dimensions	Inches	Millimeters
J	0.413	10.5
K	0.344	8.75
L	0.315	8
M	0.256 Dia.	6.5 Dia.
N	0.256 Min.	6.5 Min.
P	0.157	4
Q	M5 Metric	M5

Type	$V_{CE0(sus)}$ Volts (X 1000)	Current Rating Amperes (X 10)
KD22	1K	05

**KD221K05**  
**Dual Darlingtion Transistor Module**  
 50 Amperes/1000 Volts

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

Ratings	Symbol	KD221K05	Units
Junction Temperature	$T_j$	-40 to 150	$^\circ\text{C}$
Storage Temperature	$T_{\text{stg}}$	-40 to 125	$^\circ\text{C}$
Collector-Emitter Sustaining Voltage, $V_{\text{BE}} = -2\text{V}$	$V_{\text{CEV(sus)}}$	1000	Volts
Collector-Base Voltage	$V_{\text{CBO}}$	1000	Volts
Emitter-Base Voltage	$V_{\text{EBO}}$	7	Volts
Collector-Emitter Voltage, $V_{\text{BE}} = -2\text{V}$	$V_{\text{CEV}}$	1000	Volts
Continuous Collector Current	$I_C$	50	Amperes
Diode Forward Current	$I_{\text{FM}}$	50	Amperes
Continuous Base Current	$I_B$	3	Amperes
Diode Surge Current	$I_{\text{FSM}}$	500	Amperes
Power Dissipation (Each Transistor)	$P_t$	400	Watts
Max. Mounting Torque M5 Terminal Screws	–	17	in.-lb.
Max. Mounting Torque M6 Mounting Screws	–	26	in.-lb.
Module Weight (Typical)	–	210	Grams
V Isolation	$V_{\text{RMS}}$	2500	Volts

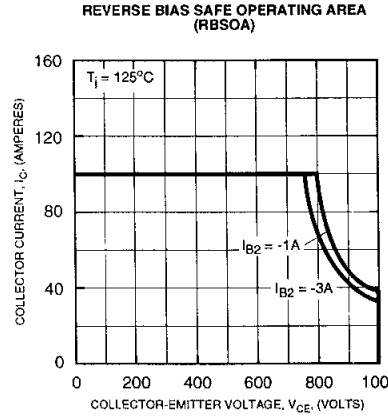
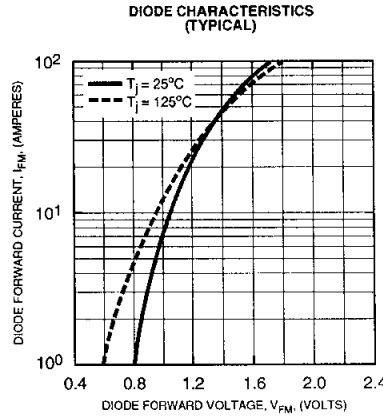
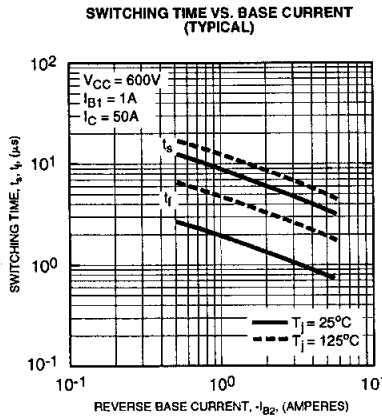
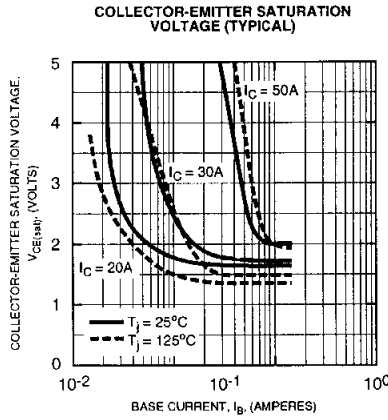
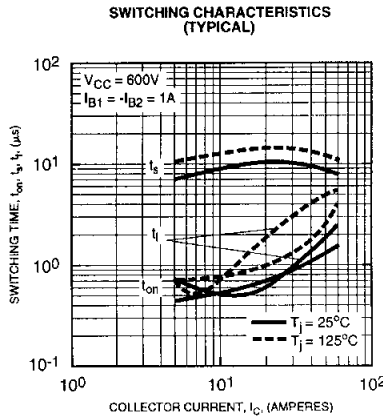
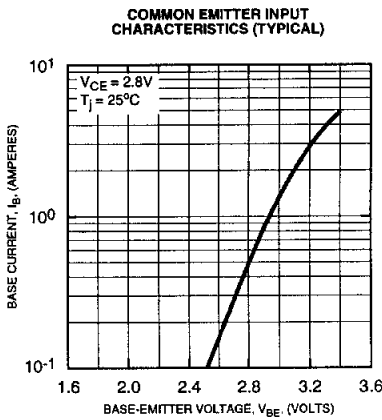
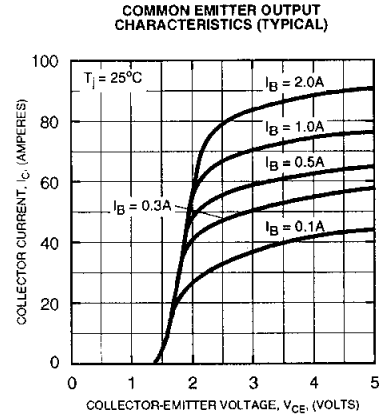
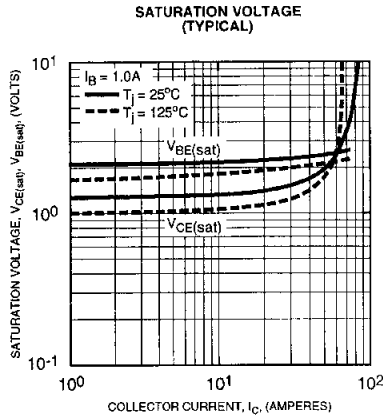
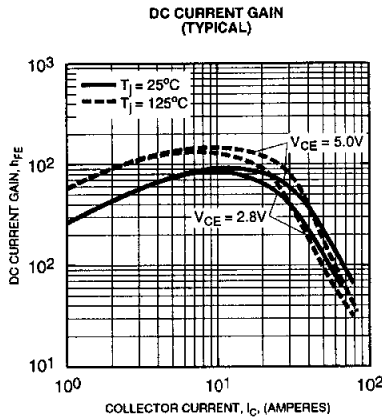
**Electrical Characteristics,  $T_j = 25\text{ }^\circ\text{C}$  unless otherwise specified**

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Collector Cutoff Current	$I_{\text{CEV}}$	$V_{\text{CE}} = 1000\text{V}, V_{\text{BE}} = -2\text{V}$	–	–	1	mA
		$V_{\text{CE}} = 1000\text{V}, V_{\text{BE}} = -2\text{V}, T_C = 125^\circ\text{C}$	–	–	10	mA
Emitter Cutoff Current	$I_{\text{EBO}}$	$V_{\text{EB}} = 7\text{V}$	–	–	200	mA
DC Current Gain	$h_{\text{FE}}$	$I_C = 50\text{A}, V_{\text{CE}} = 5\text{V}$	100	–	–	–
Diode Forward Voltage	$V_{\text{FM}}$	$I_{\text{FM}} = 50\text{A}$	–	–	1.8	Volts
Collector-Emitter Saturation Voltage	$V_{\text{CE(sat)}}$	$I_C = 50\text{A}, I_B = 1\text{A}$	–	–	2.5	Volts
Base-Emitter Saturation Voltage	$V_{\text{BE(sat)}}$	$I_C = 50\text{A}, I_B = 1\text{A}$	–	–	3.5	Volts
Resistive	Turn-on	$V_{\text{CC}} = 600\text{V}$	–	–	2.5	$\mu\text{s}$
	Storage Time					
Switch Times	Fall Time	$I_{\text{B1}} = 1\text{A}, I_{\text{B2}} = -1\text{A}$	–	–	3.0	$\mu\text{s}$

**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	$R_{\theta(\text{c-s})}$	Per 1/2 Module	–	–	0.15	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Case	$R_{\theta(\text{j-c})}$	Transistor Part	–	–	0.31	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Case	$R_{\theta(\text{j-c})}$	Diode Part	–	–	1.2	$^\circ\text{C/W}$

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 50 Amperes/1000 Volts



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