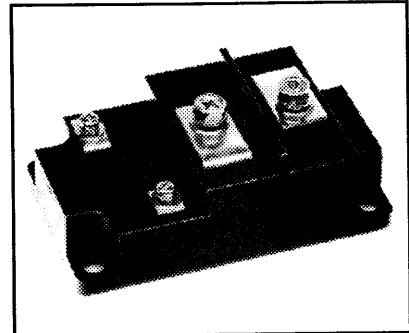
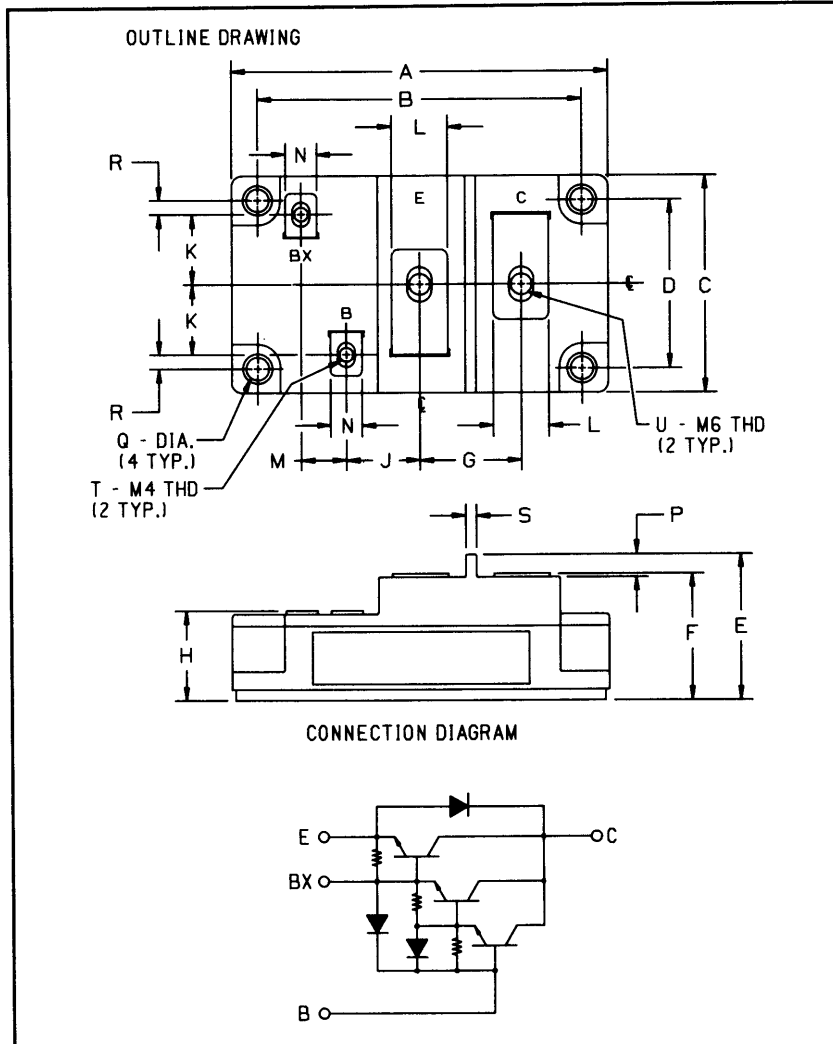


### Single Darlington Transistor Module 200 Amperes/1000 Volts



#### 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. KS621K20 is a 1000 Volt, 200 Ampere Single Darlington Module.

Type	$V_{CE0(sus)}$ Volts (1000)	Current Rating Amperes (X 10)
KS62	1K	20

Outline Drawing

Dimensions	Inches	Millimeters
A	4.252 Max.	108 Max.
B	$3.661 \pm 0.012$	$93 \pm 0.3$
C	2.441 Max.	62 Max.
D	$1.890 \pm 0.0120$	$48 \pm 0.3$
E	1.634 Max.	41.5 Max.
F	1.417 Max.	36 Max.
G	1.142	29
H	1.004	25.5
J	0.827	21
K	0.787	20

Dimensions	Inches	Millimeters
L	0.630	16
M	0.512	13
N	0.354	9
P	0.256	6.5
Q	0.256 Dia.	6.5 Dia.
R	0.157	4
S	0.118	3
T	M4 Metric	M4
U	M6 Metric	M6



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

**KS621K20**  
**Single Darlington Transistor Module**  
 200 Amperes/1000 Volts

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

Ratings	Symbol	KS621K20	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	$V_{\text{CEV}}$	1000	Volts
Continuous Collector Current	$I_C$	200	Amperes
Diode Forward Current	$I_{\text{FM}}$	200	Amperes
Continuous Base Current	$I_B$	10	Amperes
Diode Surge Current	$I_{\text{FSM}}$	2000	Amperes
Power Dissipation	$P_t$	1560	Watts
Max. Mounting Torque M6 Terminal Screws (E, C)	-	26	in.-lb.
Max. Mounting Torque M4 Terminal Screws (B, Bx)	-	12	in.-lb.
Max. Mounting Torque M6 Mounting Screws	-	26	in.-lb.
Modular Weight (Typical)	-	470	Grams
V Isolation	$V_{\text{RMS}}$	2500	Volts

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

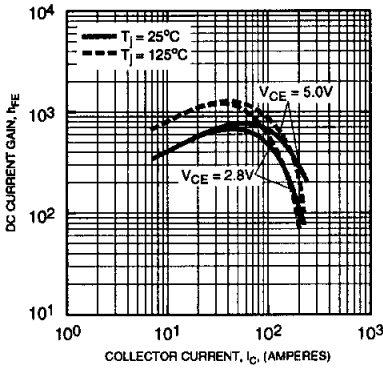
Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Collector Cutoff Current	$I_{\text{CEV}}$	$V_{\text{CE}} = 1000\text{V}, V_{\text{BE}} = -2\text{V}$	-	-	4	mA
		$V_{\text{CE}} = 1000\text{V}, V_{\text{BE}} = -2\text{V}, T_C = 125^\circ\text{C}$	-	-	40	mA
Emitter Cutoff Current	$I_{\text{EBO}}$	$V_{\text{EB}} = 7\text{V}$	-	-	800	mA
DC Current Gain	$h_{\text{FE}}$	$I_C = 200\text{A}, V_{\text{CE}} = 5.0\text{V}$	100	-	-	-
Diode Forward Voltage	$V_{\text{FM}}$	$I_{\text{FM}} = 200\text{A}$	-	-	1.8	Volts
Collector-Emitter Saturation Voltage	$V_{\text{CE(sat)}}$	$I_C = 200\text{A}, I_B = 4.0\text{A}$	-	-	2.5	Volts
Base-Emitter Saturation Voltage	$V_{\text{BE(sat)}}$	$I_C = 200\text{A}, I_B = 4.0\text{A}$	-	-	3.5	Volts
Resistive	Turn-on	$V_{\text{CC}} = 600\text{V}$	-	-	3.0	$\mu\text{s}$
	Storage Time					
Switch Times	Fall Time	$I_{\text{B1}} = 4\text{A}, I_{\text{B2}} = -4\text{A}$	-	-	3.0	$\mu\text{s}$

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

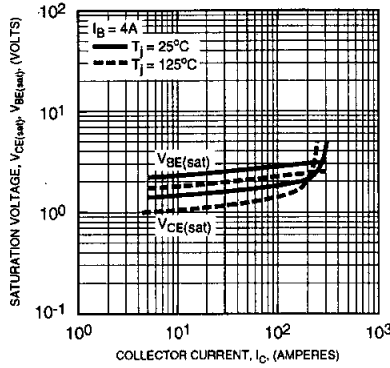
Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal Resistance, Case-to-Sink	$R_{\theta(\text{c-s})}$	-	-	-	0.04	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Case	$R_{\theta(\text{j-c})}$	Transistor Part	-	-	0.08	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Case	$R_{\theta(\text{j-c})}$	Diode Part	-	-	0.35	$^\circ\text{C/W}$

**KS621K20**  
**Single Darlington Transistor Module**  
 200 Amperes/1000 Volts

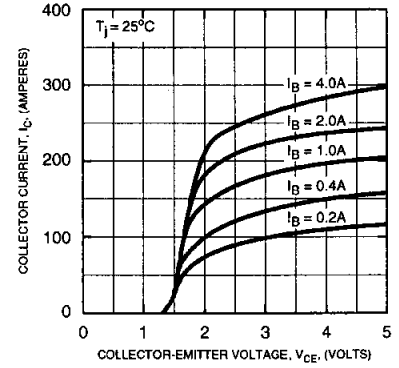
**DC CURRENT GAIN (TYPICAL)**



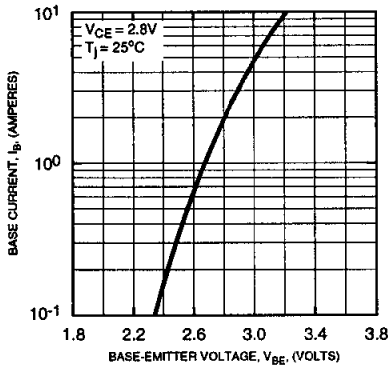
**SATURATION VOLTAGE (TYPICAL)**



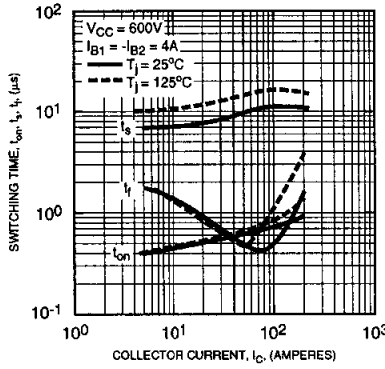
**COMMON EMITTER OUTPUT CHARACTERISTICS (TYPICAL)**



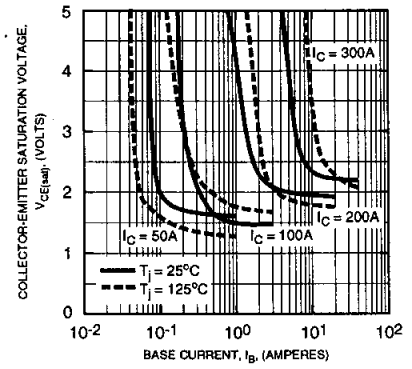
**COMMON EMITTER INPUT CHARACTERISTICS (TYPICAL)**



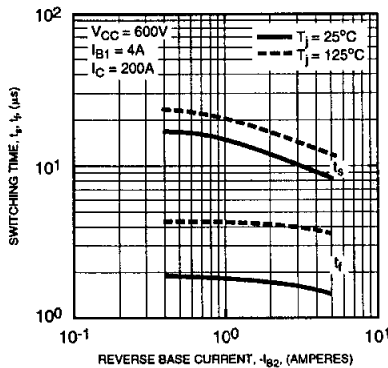
**SWITCHING CHARACTERISTICS (TYPICAL)**



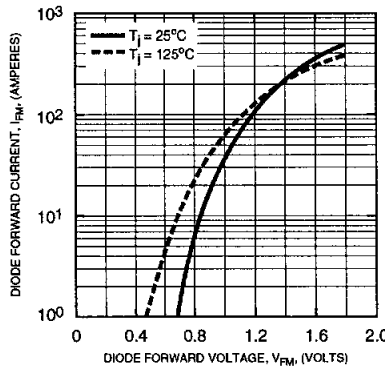
**COLLECTOR-EMITTER SATURATION VOLTAGE (TYPICAL)**



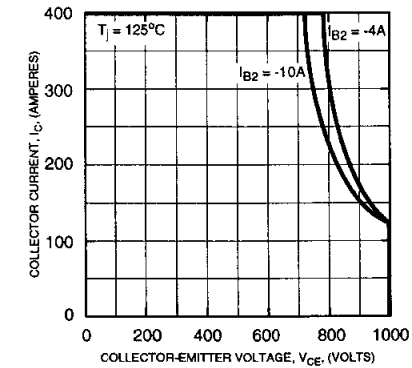
**SWITCHING TIME VS. BASE CURRENT (TYPICAL)**



**DIODE CHARACTERISTICS (TYPICAL)**



**REVERSE BIAS SAFE OPERATING AREA (RBSOA)**



**KS621K20**  
**Single Darlington Transistor Module**  
**200 Amperes/1000 Volts**

