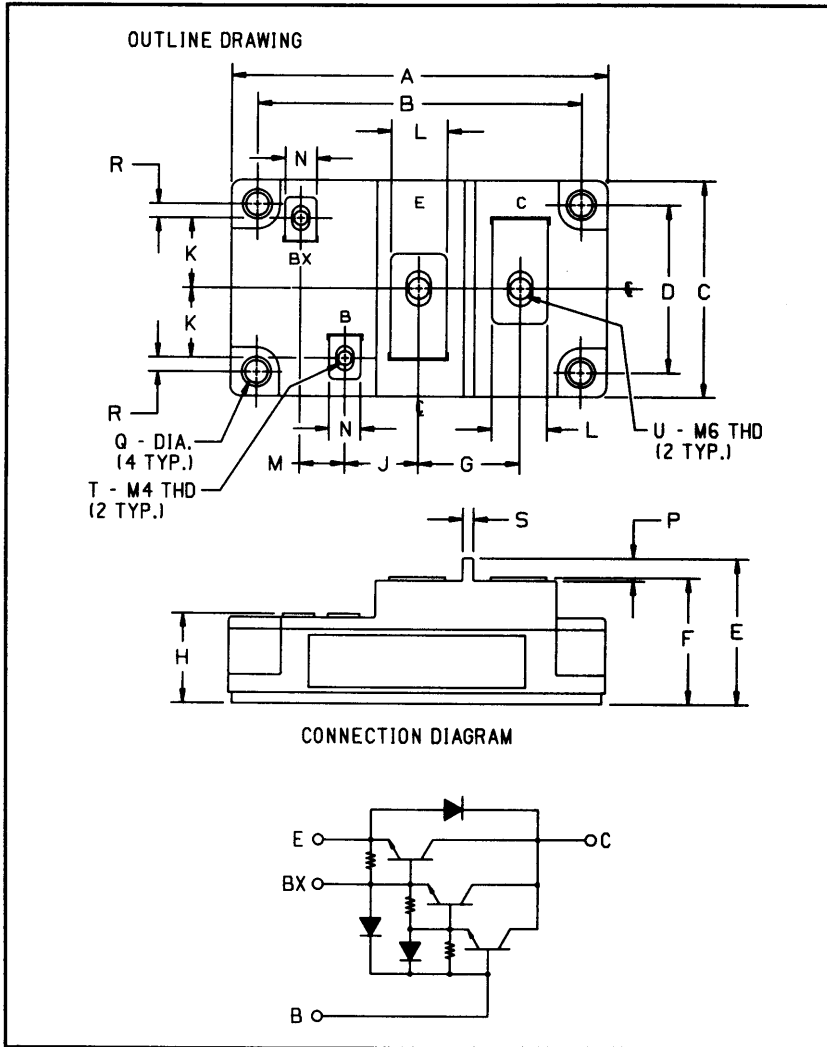


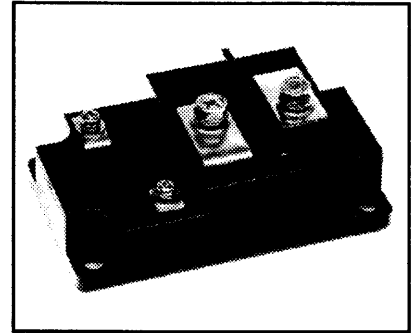
### Single Darlington Transistor Module 300 Amperes/1000 Volts



Outline Drawing

Dimensions	Inches	Millimeters
A	4.252 Max.	108 Max.
B	3.661 ± 0.012	93 ± 0.3
C	2.441 Max.	62 Max.
D	1.890 ± 0.012	48 ± 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



#### 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. KS621K30 is a 1000 Volt, 300 Ampere Single Darlington Module.

Type	$V_{CE0(sus)}$ Volts (1000)	Current Rating Amperes (X 10)
KS62	1K	30



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

**KS621K30**  
**Single Darlington Transistor Module**  
**300 Amperes/1000 Volts**

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

Ratings	Symbol	KS621K30	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, $V_{BE} = -2\text{V}$	$V_{CEV(sus)}$	1000	Volts
Collector-Base Voltage	$V_{CBO}$	1000	Volts
Emitter-Base Voltage	$V_{EBO}$	7	Volts
Collector-Emitter Voltage	$V_{CEV}$	1000	Volts
Continuous Collector Current	$I_C$	300	Amperes
Diode Forward Current	$I_{FM}$	300	Amperes
Continuous Base Current	$I_B$	16	Amperes
Diode Surge Current	$I_{FSM}$	3000	Amperes
Power Dissipation	$P_t$	1980	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	$V_{RMS}$	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	$I_{CEV}$	$V_{CE} = 1000\text{V}, V_{BE} = -2\text{V}$	-	-	4	mA	
		$V_{CE} = 1000\text{V}, V_{BE} = -2\text{V}, T_C = 125^\circ\text{C}$	-	-	30	mA	
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = 7\text{V}$	-	-	800	mA	
DC Current Gain	$h_{FE}$	$I_C = 300\text{A}, V_{CE} = 2.8\text{V}$	75	-	-	-	
		$I_C = 300\text{A}, V_{CE} = 5.0\text{V}$	100	-	-	-	
Diode Forward Voltage	$V_{FM}$	$I_{FM} = 300\text{A}$	-	-	1.8	Volts	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 300\text{A}, I_B = 6.0\text{A}$	-	-	2.5	Volts	
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 300\text{A}, I_B = 6.0\text{A}$	-	-	3.5	Volts	
Resistive	Turn-on	$t_{on}$	$V_{CC} = 600\text{V}$	-	-	3.0	$\mu\text{s}$
Load	Storage Time	$t_s$	$I_C = 300\text{A}$	-	-	15	$\mu\text{s}$
Switch Times	Fall Time	$t_f$	$I_{B1} = 6\text{A}, I_{B2} = -6\text{A}$	-	-	3.0	$\mu\text{s}$

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

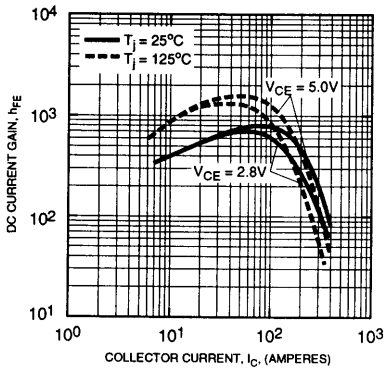
Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal Resistance, Case-to-Sink	$R_{\theta(c-s)}$	-	-	-	0.04	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Case	$R_{\theta(j-c)}$	Transistor Part	-	-	0.063	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Case	$R_{\theta(j-c)}$	Diode Part	-	-	0.3	$^\circ\text{C/W}$



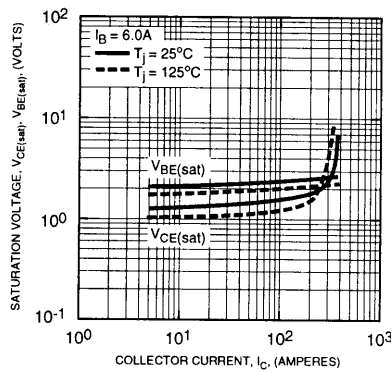
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**KS621K30**  
**Single Darlington Transistor Module**  
 300 Amperes/1000 Volts

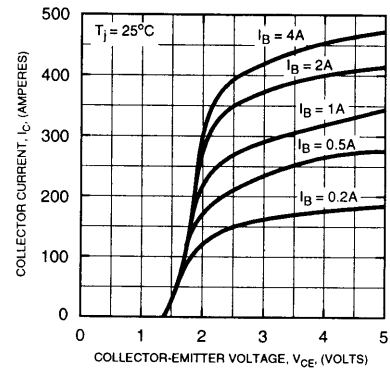
**DC CURRENT GAIN (TYPICAL)**



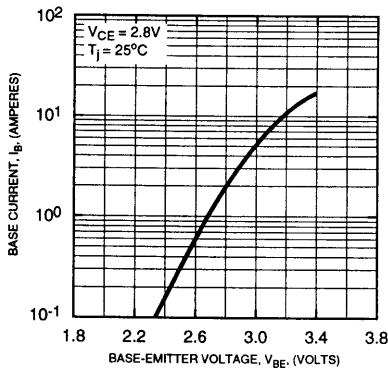
**SATURATION VOLTAGE (TYPICAL)**



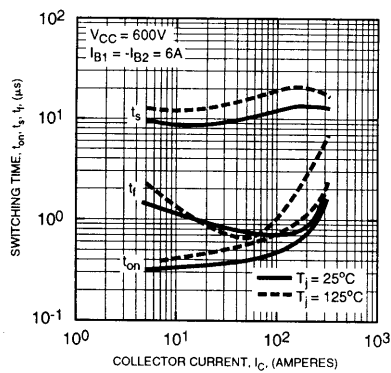
**COMMON EMITTER OUTPUT CHARACTERISTICS (TYPICAL)**



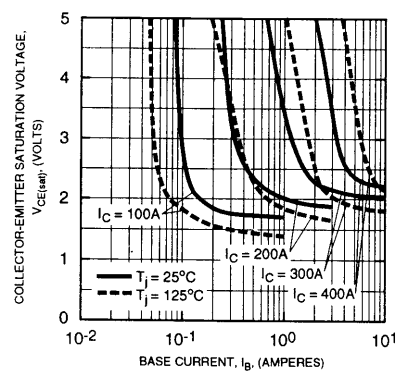
**COMMON EMITTER INPUT CHARACTERISTICS (TYPICAL)**



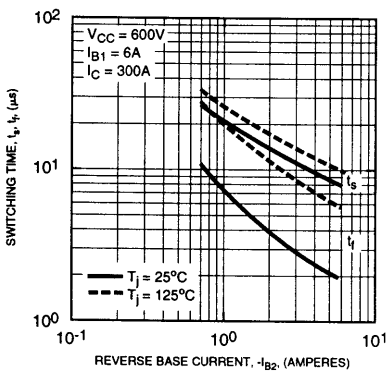
**SWITCHING CHARACTERISTICS (TYPICAL)**



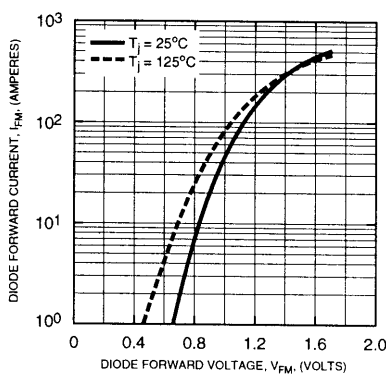
**COLLECTOR-EMITTER SATURATION VOLTAGE (TYPICAL)**



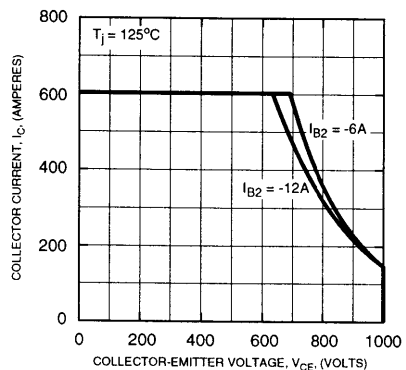
**SWITCHING TIME VS. BASE CURRENT (TYPICAL)**



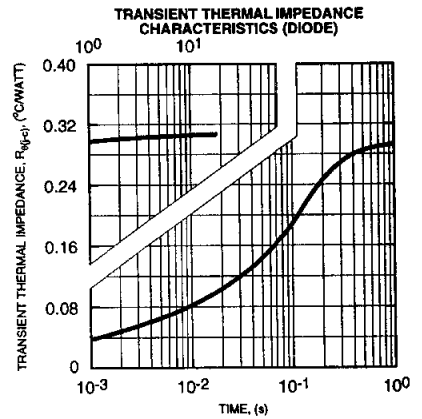
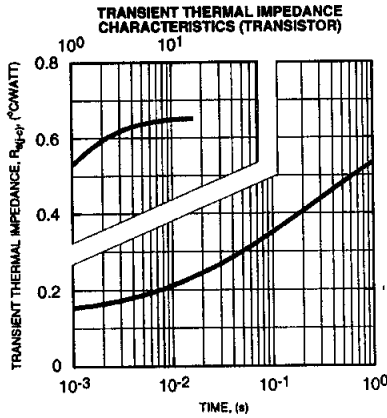
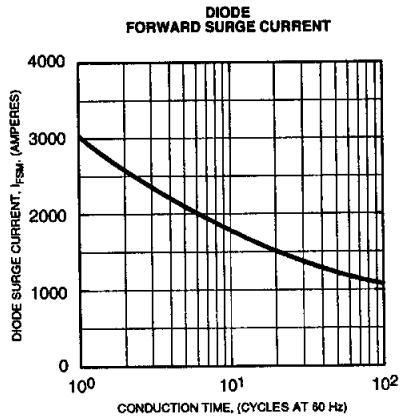
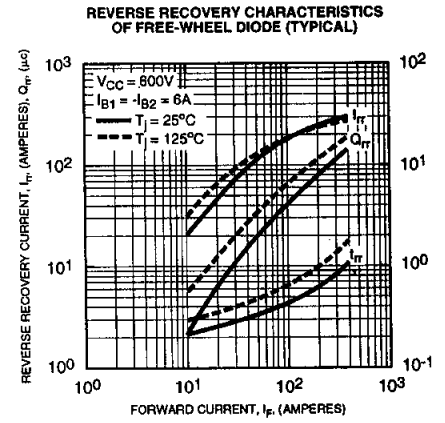
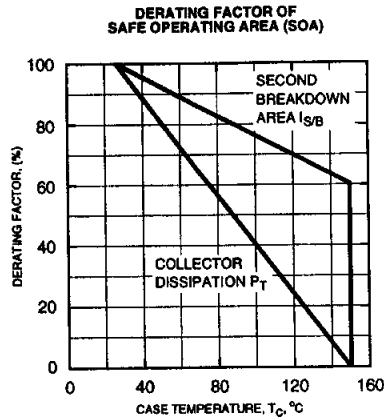
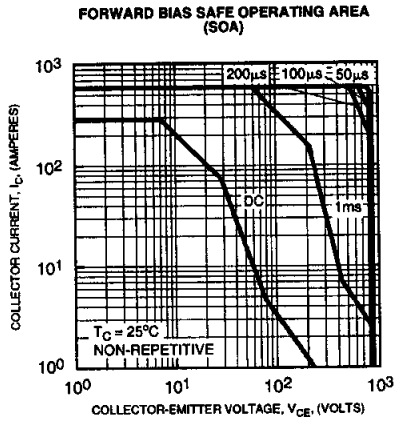
**DIODE CHARACTERISTICS (TYPICAL)**



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



**KS621K30**  
**Single Darlington Transistor Module**  
**300 Amperes/1000 Volts**



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Datasheets for electronics components.