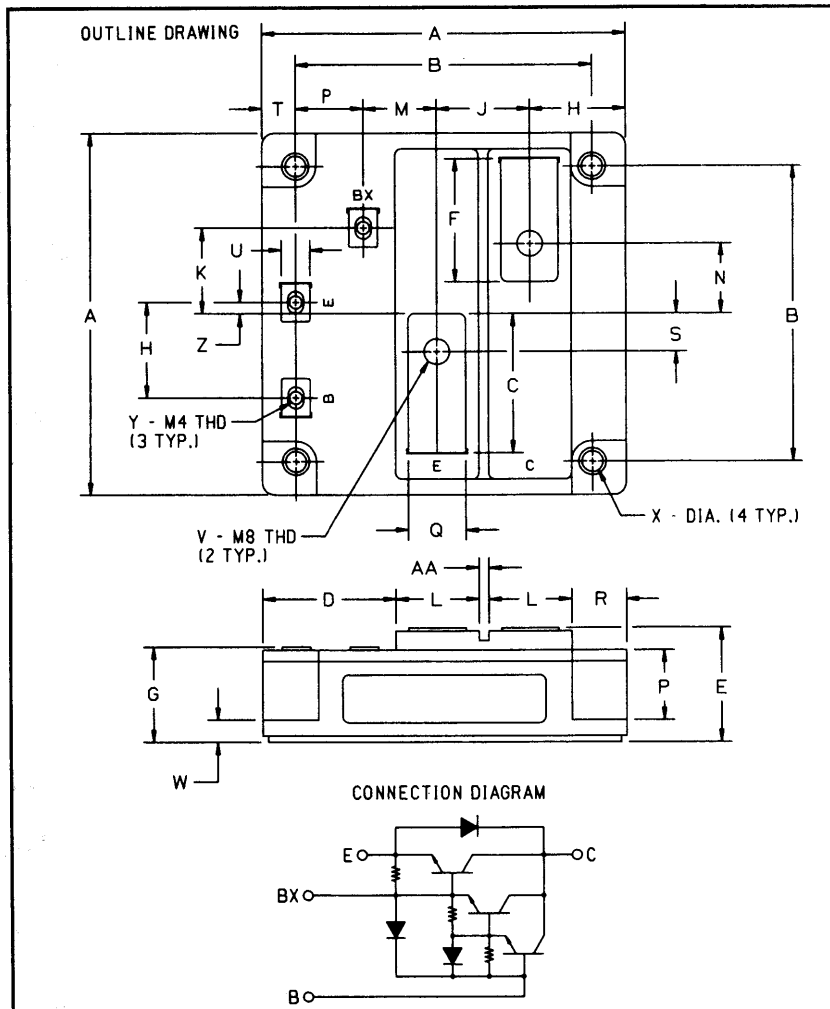


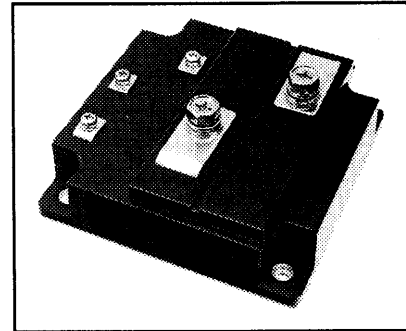
Single Darlington Transistor Module 600 Amperes/1000 Volts



Outline Drawing

Dimensions	Inches	Millimeters
A	4.448	114
B	3.661 ± 0.012	93 ± 0.3
C	1.654	42.
D	1.417 Max.	36 Max.
E	1.181 Max.	30 Max.
F	1.181	30
G	1.142	29
H	1.063	27
J	1.024	26
K	0.906	23
L	0.866	22

Dimensions	Inches	Millimeters
M	0.846	21.5
N	0.709	18
P	0.669	17
Q	0.472	12
R	0.413	10.5
S	0.354	9
T	M8 Metric	M8
U	0.276	7
V	0.256 Dia.	6.5 Dia.
W	M4 Metric	M4
X	0.118	3



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. KS621K60 is a 1000 Volt, 600 Ampere Single Darlington Module.

Type	$V_{CE0(sus)}$ Volts (1000)	Current Rating Amperes (X 10)
KS62	1K	60



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

KS621K60
Single Darlington Transistor Module
 600 Amperes/1000 Volts

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

Ratings	Symbol	KS621K60	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	600	Amperes
Diode Forward Current	I_{FM}	600	Amperes
Continuous Base Current	I_B	30	Amperes
Diode Surge Current	I_{FSM}	6000	Amperes
Power Dissipation	P_t	3500	Watts
Max. Mounting Torque M8 Terminal Screws (E, C)	—	95	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)	—	1100	Grams
V Isolation	V_{RMS}	2500	Volts

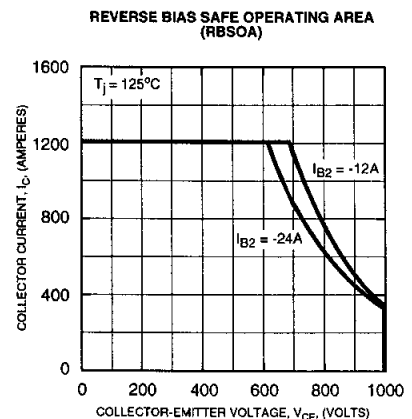
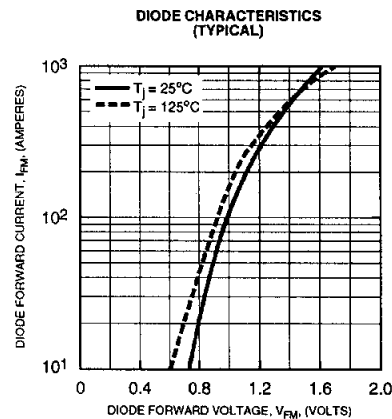
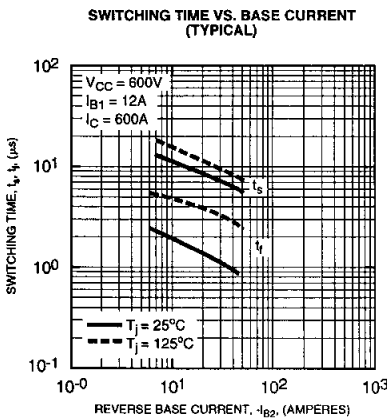
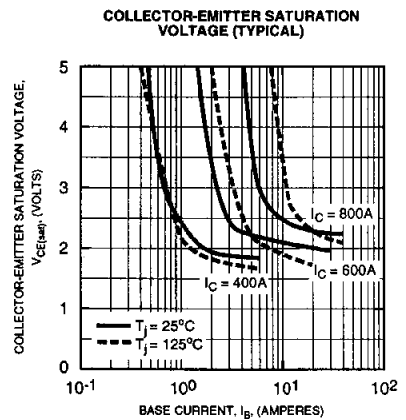
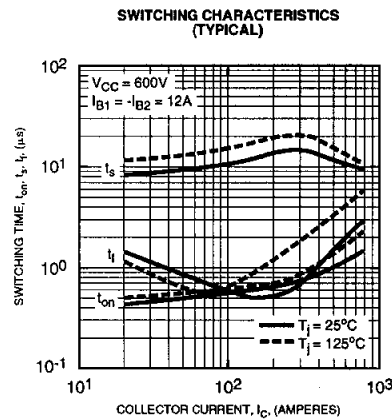
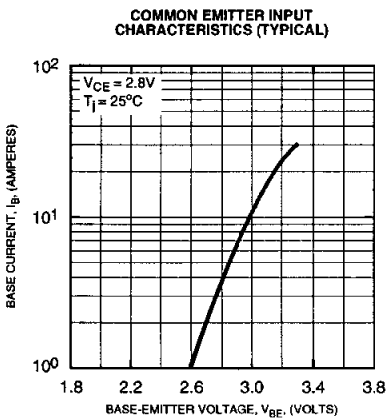
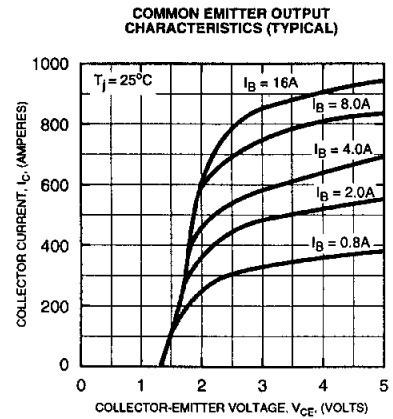
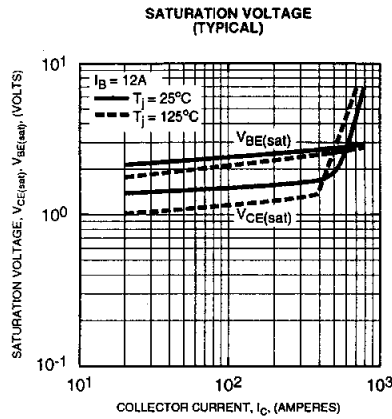
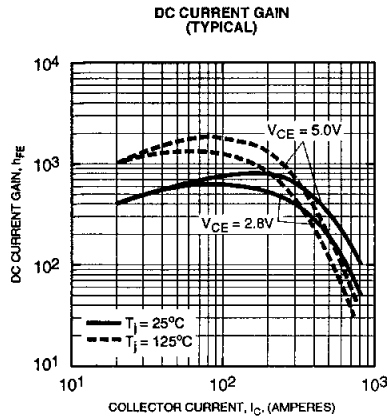
Electrical Characteristics, $T_j = 25^\circ\text{C}$ unless otherwise specified

Characteristics		Symbol	Test Conditions	Min.	Typ.	Max.	Units
Collector Cutoff Current		I_{CEV}	$V_{CE} = 1000V, V_{BE} = -2V$	—	—	8	mA
Emitter Cutoff Current		I_{EBO}	$V_{EB} = 7V$	—	—	800	mA
DC Current Gain		h_{FE}	$I_C = 600A, V_{CE} = 2.8V$	75	—	—	—
Diode Forward Voltage		V_{FM}	$I_{FM} = 600A$	—	—	1.8	Volts
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	$I_C = 600A, I_B = 12.0A$	—	—	2.5	Volts
Base-Emitter Saturation Voltage		$V_{BE(sat)}$	$I_C = 600A, I_B = 12.0A$	—	—	3.5	Volts
Resistive Load	Turn-on	t_{on}	$V_{CC} = 600V$	—	—	3.0	μs
	Storage Time	t_s	$I_C = 600A$	—	—	16	μs
Switch Times	Fall Time	t_f	$I_{B1} = -I_{B2} = 12.0A$	—	—	3.0	μs

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

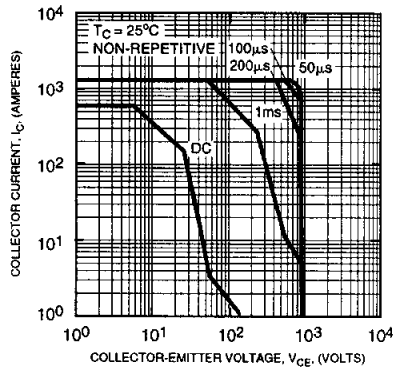
Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal Resistance, Case-to-Sink	$R_{\theta(c-s)}$	—	—	—	0.02	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Case	$R_{\theta(j-c)}$	Transistor Part	—	—	0.035	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Case	$R_{\theta(j-c)}$	Diode Part	—	—	0.16	$^\circ\text{C/W}$

KS621K60
Single Darlington Transistor Module
600 Amperes/1000 Volts

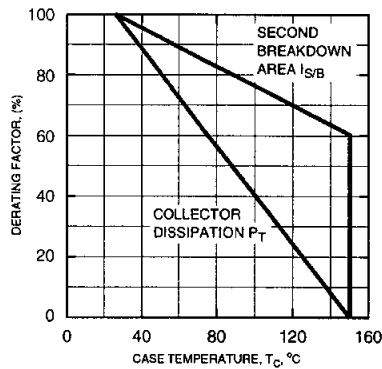


KS621K60
Single Darlington Transistor Module
 600 Amperes/1000 Volts

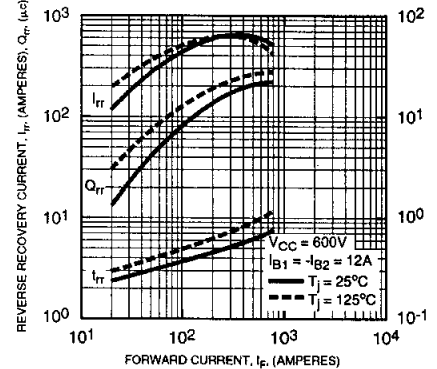
FORWARD BIAS SAFE OPERATING AREA (SOA)



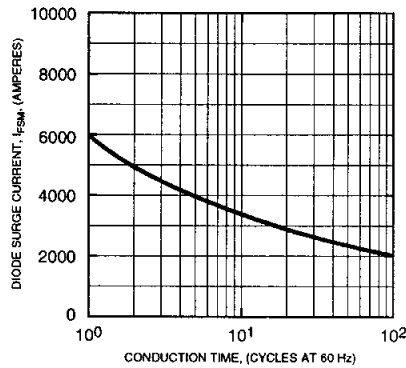
DERATING FACTOR OF SAFE OPERATING AREA (SOA)



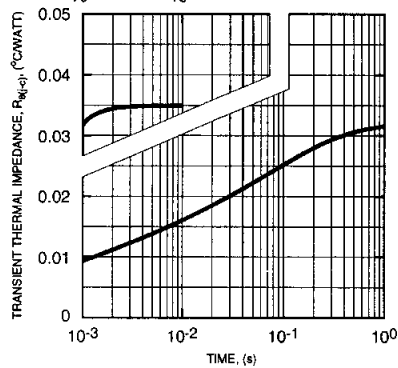
REVERSE RECOVERY CHARACTERISTICS OF FREE-WHEEL DIODE (TYPICAL)



DIODE FORWARD SURGE CURRENT



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (TRANSISTOR)



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (DIODE)

