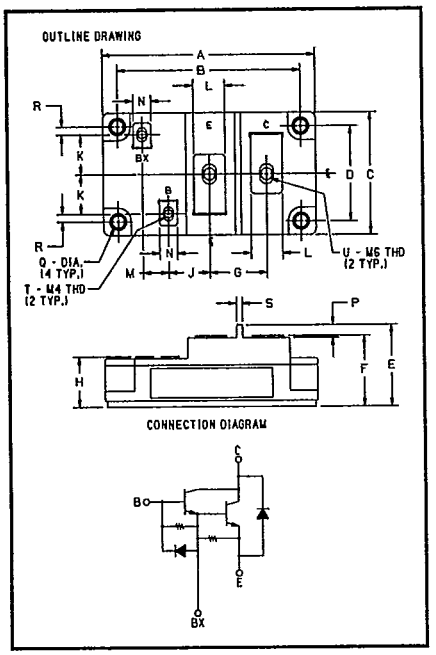
T-33-35

KS625530

Powerex, Inc., Hillis Street, Youngwood, Pennsylvania 15697 (412) 925-7272
Powerex Europe, S.A., 428 Avenue G. Durand, BP107, 72003 Le Mans, France (43) 41.14.14

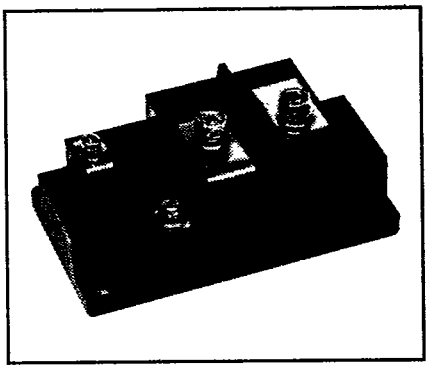
Single Darlington Transistor Module

300 Amperes/600 Volts



600 Volt KS625530 Outline Drawing

Dimension	Inches	Millimeters
A	4.252 Max.	108 Max.
B	3.661±.012	93±0.3
C	2.441 Max.	62 Max.
D	1.890±.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	.827	21
K	.787	20
L	.630	16
M	.512	13
N	.354	9
P	.256	6.5
Q	.256 Dia.	6.5 Dia.
R	.157	4
S	.118	3
T	M4 Metric	M4
U	M6 Metric	M6



KS625530
Single Darlington
Transistor Module
300 Amperes/600 Volts

Description
Powerex Single Darlington Transistor Modules are 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 emitter speed up diodes.

Features:
- ☐ Isolated Mounting
- ☐ Planar Chips
- ☐ Discrete Fast Recovery Feed-Back 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. KS625530 is a 550 $V_{CEO(SUS)}$ (600 V_{CEV}), 300 Ampere Single Darlington Module.

Type	$V_{CEO(SUS)}$ Volts (x10)	Current Rating Amperes (x10)
KS62	55	30

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Maximum Ratings T_J =25°C unless otherwise specified

	Symbol	KS625530	Units
Junction Temperature	T_J	−40 to 150	°C
Storage Temperature	T_{STG}	−40 to 125	°C
Collector-Emitter Sustaining Voltage	$V_{CEO(SUS)}$	550	Volts
Collector-Emitter Sustaining Voltage V_{BE} = −2V	$V_{CEV(SUS)}$	600	Volts
Collector-Base Voltage	V_{CBO}	600	Volts
Emitter-Base Voltage	V_{EBO}	7	Volts
Collector-Emitter Voltage V_{BE} = −2V	V_{CEV}	600	Volts
Continuous Collector Current	I_C	300	Amperes
Diode Forward Current	I_{FM}	300	Amperes
Continuous Base Current	I_B	18	Amperes
Diode Surge Current	I_{FSM}	3000	Amperes
Power Dissipation	P_T	1380	Watts
Max. Mounting Torque M6 Terminal Screws (E,C)	—	26	in.-lb.
Max. Mounting Torque M4 Terminal Screws (Bx,B)	—	12	in.-lb.
Max. Mounting Torque M6 Mounting Screws	—	26	in.-lb.
Module Weight	—	460	Grams
V isolation	V_{RMS}	2000	Volts

Electrical and Mechanical Characteristics T_J =25°C unless otherwise specified

Characteristics		Symbol	Test Conditions	KS625530 Min.	Typ.	Max.	Units
Collector Cutoff Current		I_{CEV}	V_{CE} =600V, V_{BE} = −2V	—	—	4	mA
Collector Cutoff Current		I_{CEV}	V_{CE} =600V, V_{BE} = −2V, T_C =125°C	—	—	30	mA
Emitter Cutoff Current		I_{EBO}	V_{EB} =7V	—	—	700	mA
DC Current Gain		h_{FE}	I_C =300A, V_{CE} =5.0V	75	—	—	—
Diode Forward Voltage		V_{FM}	I_{FM} =300A	—	—	1.85	V
Collector-Emitter Saturation Voltage		$V_{CE(SAT)}$	I_C =300A, I_B =6.0A	—	—	2.0	V
Base-Emitter Saturation Voltage		$V_{BE(SAT)}$	I_C =300A, I_B =6.0A	—	—	2.5	V
Resistive Load Switch Times	Turn On	t_{on}	V_{CC} =300V	—	—	2.0	μs
	Storage Time	t_s	I_C =300A	—	—	12	μs
	Fall Time	t_f	I_{B1} = −I_{B2} =6.0A	—	—	3.0	μs
Thermal Resistance, Case to Sink Lubricated		$R_{\theta CS}$	—	—	—	.04	°C/W
Thermal Resistance, Junction to Case		$R_{\theta JC}$	Transistor Part	—	—	.09	°C/W
Thermal Resistance, Junction to Case		$R_{\theta JC}$	Diode Part	—	—	.30	°C/W

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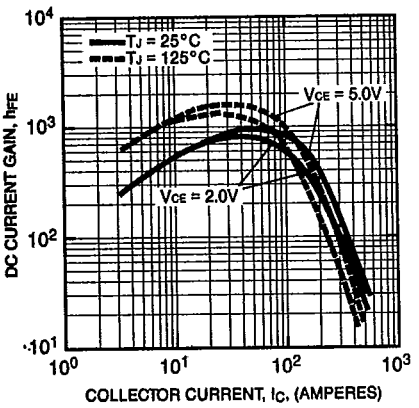
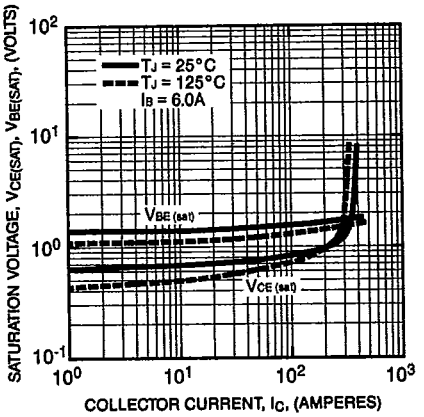
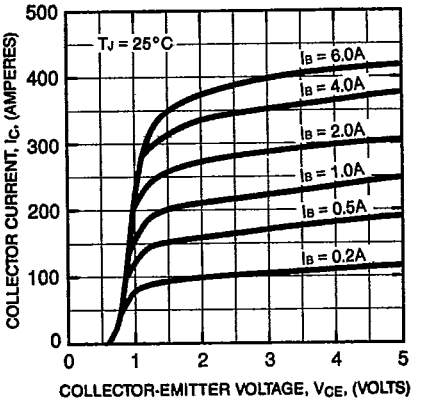
DC CURRENT GAIN (TYPICAL)



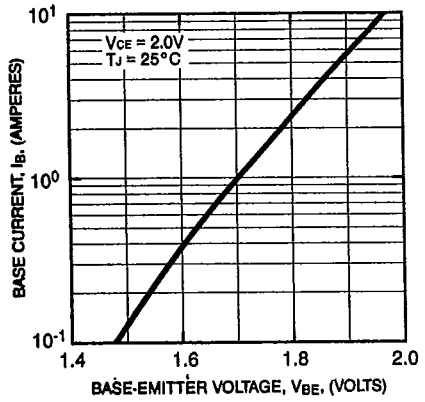
SATURATION VOLTAGE (TYPICAL)



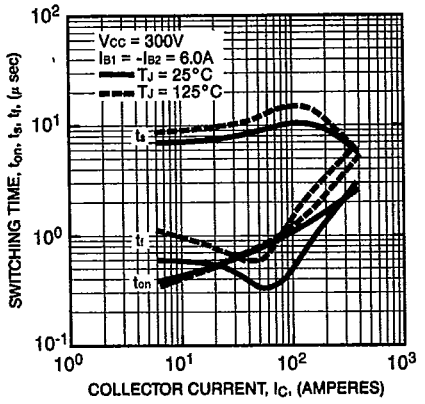
COMMON EMITTER OUTPUT CHARACTERISTICS (TYPICAL)



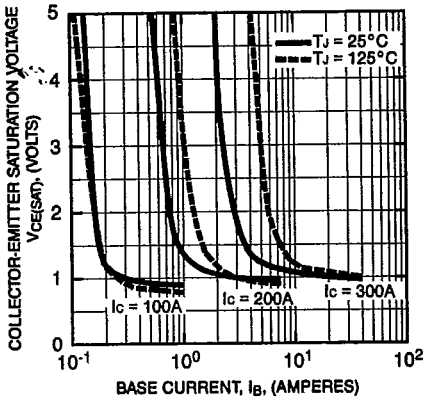
COMMON EMITTER INPUT CHARACTERISTICS (TYPICAL)



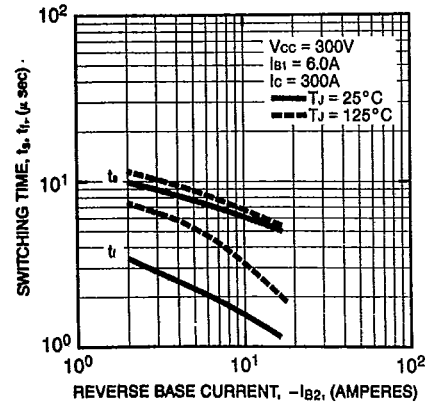
SWITCHING CHARACTERISTICS (TYPICAL)



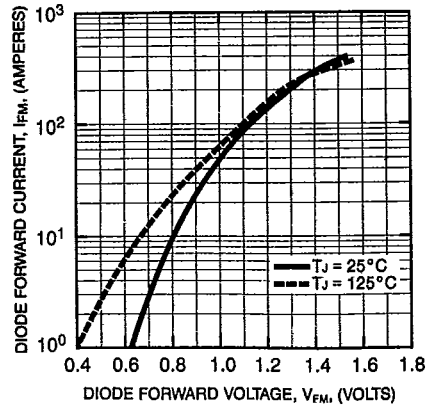
COLLECTOR-EMITTER SATURATION VOLTAGE (TYPICAL)



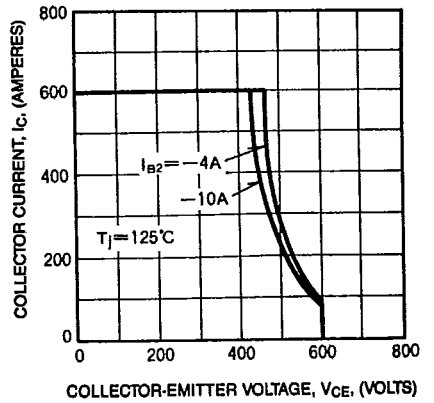
SWITCHING TIME VS. BASE CURRENT (TYPICAL)



DIODE CHARACTERISTICS (TYPICAL)



REVERSE BIAS SAFE OPERATING AREA (R.B.S.O.A.)



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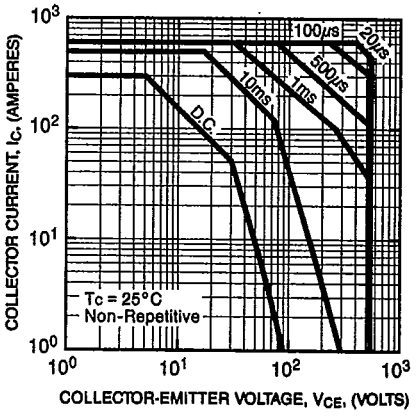
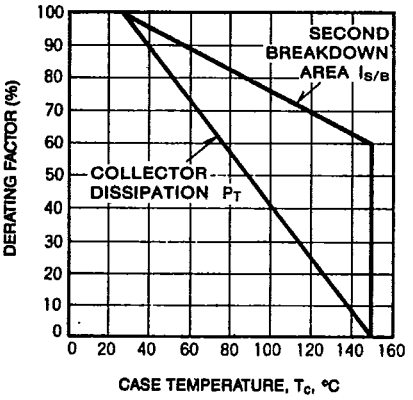
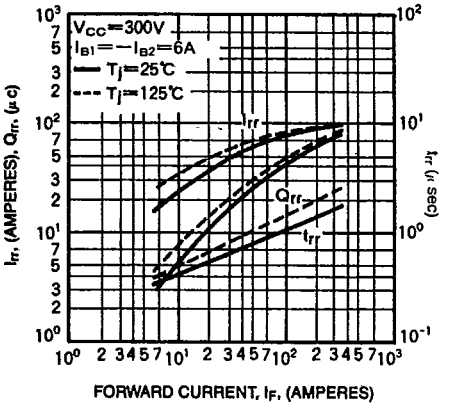
FORWARD BIAS SAFE OPERATING AREA (S.O.A.)



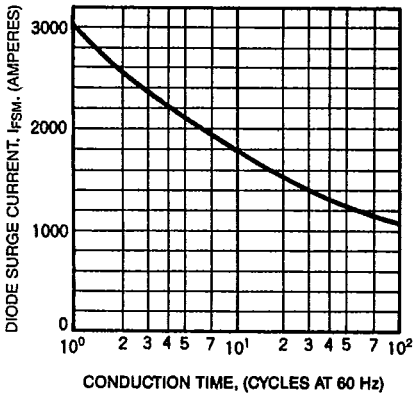
DERATING FACTOR OF SAFE OPERATING AREA (S.O.A.)



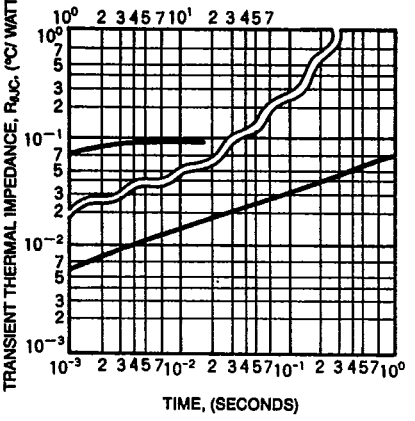
REVERSE RECOVERY CHARACTERISTICS OF FREE-WHEEL DIODE (TYPICAL)



DIODE FORWARD SURGE CURRENT



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (TRANSISTOR)



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (DIODE)