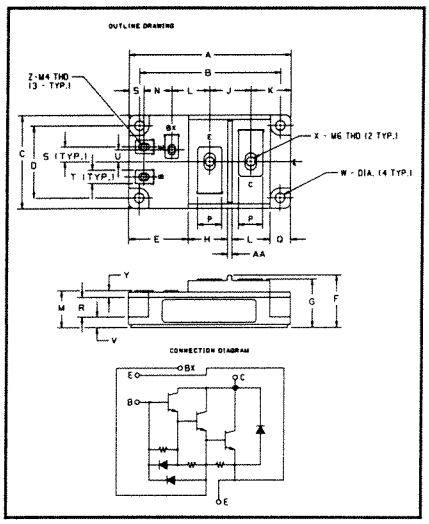
Powerex, Inc., Hillis Street, Youngwood, Pennsylvania 15697 (412) 925-7272
Powerex Europe, S.A., 428 Avenue G. Durand, BP107, 72003 Le Mans, France (43) 41.14.14

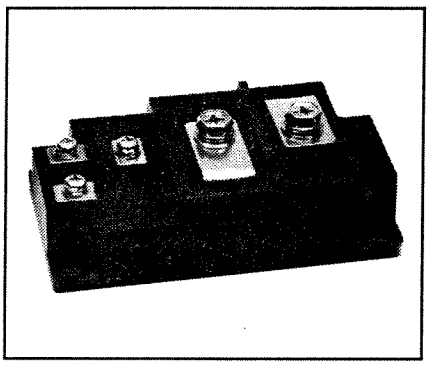
High-Beta Single Darlington Transistor Module

400 Amperes/600 Volts



600 Volt KS624540
Outline Drawing

Dimension	Inches	Millimeters
A	4.212	107
B	3.661	93
C	2.441	62
D	1.890 ± .010	48 ± 0.25
E	1.476	37.5
F	1.378 Max.	35 Max.
G	1.268	32.2
H	1.102	28
J	1.063	27
K	1.043	26.5
L	.984	25
M	.964	24.5
N	.728	18.5
P	.630	16
Q	.531	13.5
R	.512	13
S	.394	10
T	.354	9
U	.315	8
V	.276	7
W	.256 Dia.	6.5 Dia.
X	M6 Metric	M6
Y	.177	4.5
Z	M4 Metric	M4
AA	.118	3



KS624540
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400 Amperes/600 Volts

Description

Powerex High Beta 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 Diodes

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. KS624540 is a 450 $V_{CEO(SUS)}$ (600 V_{CEV}), 400 Ampere High Beta Single Darlington Module.

Type	$V_{CEO\ (SUS)}$ Volts (x100)	Current Rating Amperes (25)
KS62	45	40

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400 Amperes/600 Volts

Maximum Ratings T_J = 25°C unless otherwise specified

	Symbol	KS624540	Units
Junction Temperature	T_J	−40 to 150	°C
Storage Temperature	T_{STG}	−40 to 125	°C
Collector-Emitter Sustaining Voltage	$V_{CEO(SUS)}$	450	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_{CEV}	600	Volts
Continuous Collector Current	I_C	400	Amperes
Diode Forward Current	I_{FM}	400	Amperes
Continuous Base Current	I_B	10	Amperes
Diode Surge Current	I_{FSM}	4000	Amperes
Power Dissipation	P_T	1500	Watts
Max. Mounting Torque M6 Terminal Screws (E,C)	—	26	in.-lb.
Max. Mounting Torque M4 Terminal Screws (B,Bx,E)	—	12	in.-lb.
Max. Mounting Torque M6 Mounting Screws	—	26	in.-lb.
Module Weight	—	640	Grams
V isolation	V_{RMS}	2500	Volts

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

Characteristics		Symbol	Test Conditions	KS624540 Min.	Typ.	Max.	Units
Collector Cutoff Current		I_{CEV}	V_{CE} = 600V, V_{BE} = −2V	—	—	5	mA
Emitter Cutoff Current		I_{EBO}	V_{EB} = 7V	—	—	400	mA
DC Current Gain		h_{FE}	I_C = 400, V_{CE} = 2.5V	750	—	—	—
Diode Forward Voltage		V_{FM}	I_{FM} = 400A	—	—	1.8	V
Collector-Emitter Saturation Voltage		$V_{CE(SAT)}$	I_C = 400A, I_B = 0.53A	—	—	2.5	V
Base-Emitter Saturation Voltage		$V_{BE(SAT)}$	I_C = 400A, I_B = 0.53A	—	—	3.5	V
Resistive Load Switch Times	Turn On	t_{on}	V_{CC} = 300V	—	—	3.0	μs
	Storage Time	t_s	I_C = 400A	—	—	10	μs
	Fall Time	t_f	I_{B1} = 0.8A, I_{B2} = −3A	—	—	3.5	μs
Thermal Resistance, Case to Sink Lubricated		$R_{\theta CS}$	—	—	—	0.04	°C/W
Thermal Resistance, Junction to Case		$R_{\theta JC}$	Transistor Part	—	—	0.083	°C/W
Thermal Resistance, Junction to Case		$R_{\theta JC}$	Diode Part	—	—	.25	°C/W

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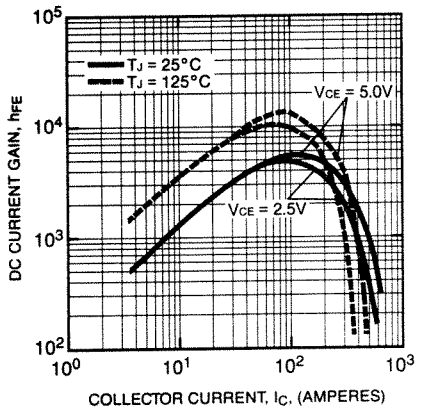
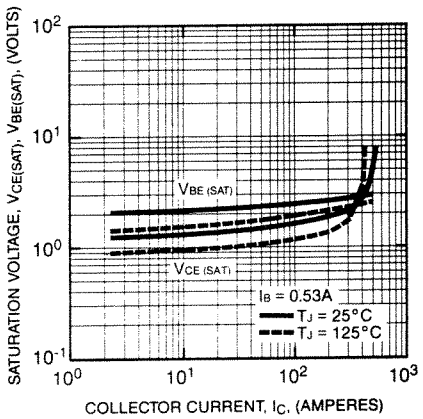
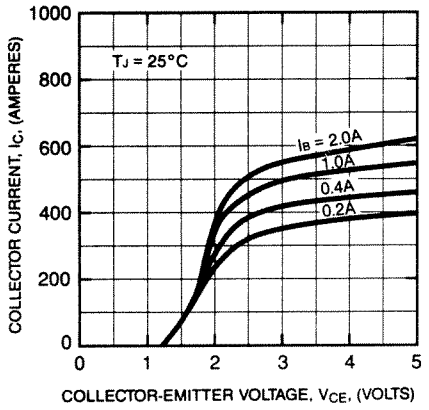
DC CURRENT GAIN (TYPICAL)



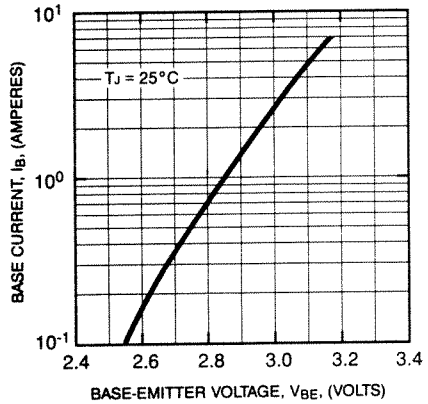
SATURATION VOLTAGE (TYPICAL)



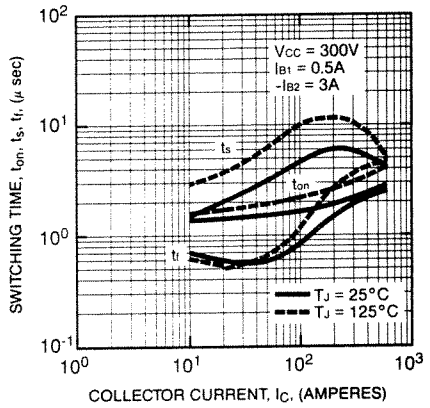
COMMON EMITTER OUTPUT CHARACTERISTICS (TYPICAL)



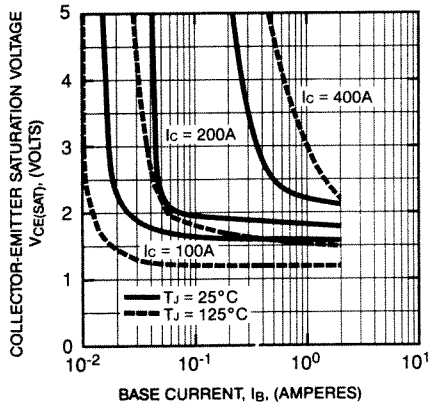
COMMON EMITTER INPUT CHARACTERISTICS (TYPICAL)



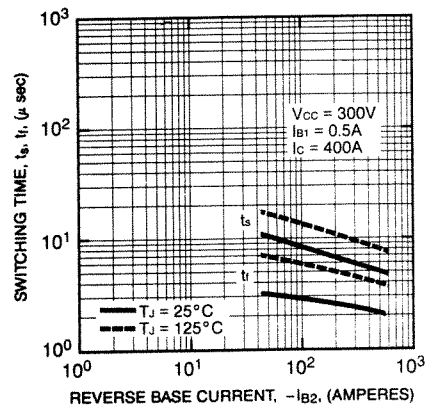
SWITCHING CHARACTERISTICS (TYPICAL)



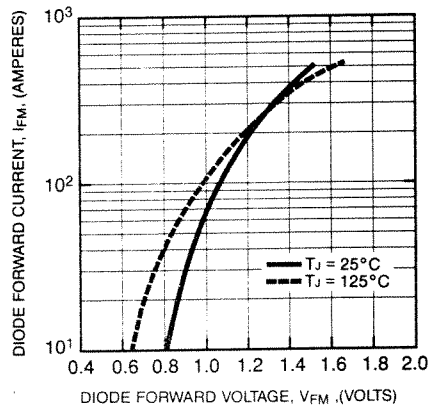
COLLECTOR-EMITTER SATURATION VOLTAGE (TYPICAL)



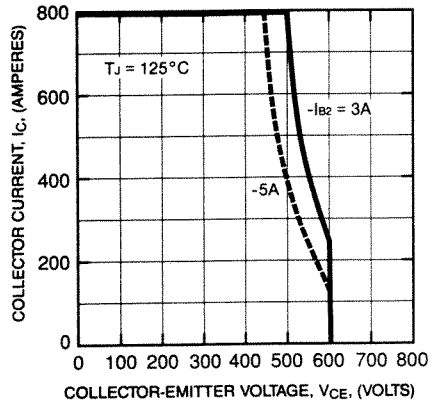
SWITCHING TIME VS. BASE CURRENT (TYPICAL)



DIODE CHARACTERISTICS (TYPICAL)



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



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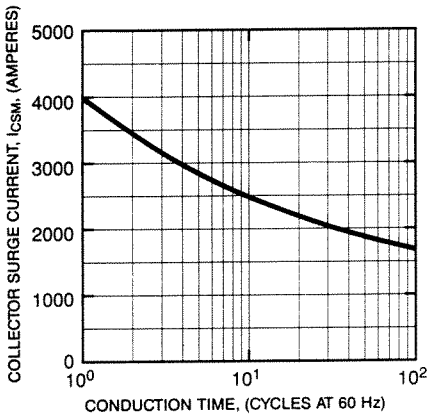
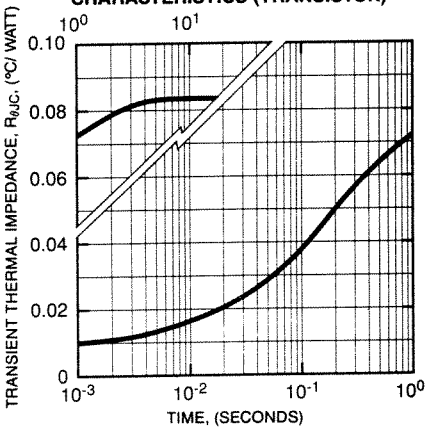
DIODE FORWARD SURGE CURRENT



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (TRANSISTOR)



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (DIODE)