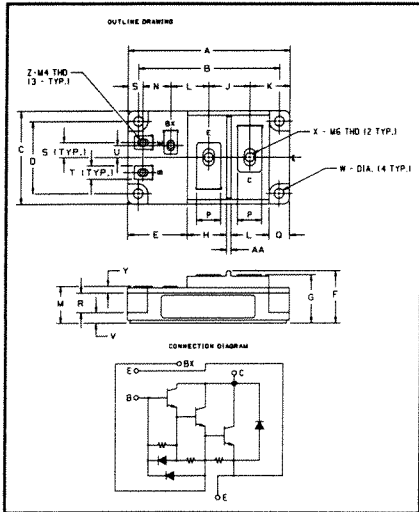
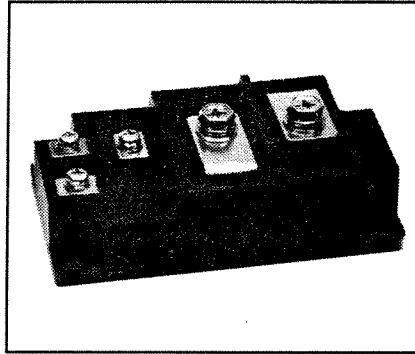


### High-Beta Single Darlington Transistor Module 400 Amperes/600 Volts



**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  
High-Beta Single Darlington  
Transistor Module  
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

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

**KS624540**  
**High-Beta Single Darlington Transistor Module**  
 400 Amperes/600 Volts

### Maximum Ratings $T_J = 25^\circ\text{C}$ unless otherwise specified

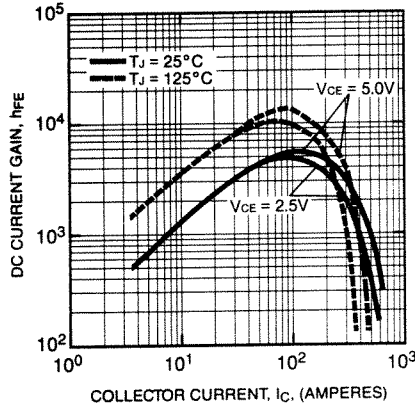
	Symbol	KS624540	Units
Junction Temperature	$T_J$	- 40 to 150	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	- 40 to 125	$^\circ\text{C}$
Collector-Emitter Sustaining Voltage	$V_{CEQ(SUS)}$	450	Volts
Collector-Emitter Sustaining Voltage $V_{BE} = -2\text{V}$	$V_{CEV(SUS)}$	600	Volts
Collector-Base Voltage	$V_{CBO}$	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 $T_J = 25^\circ\text{C}$ unless otherwise specified

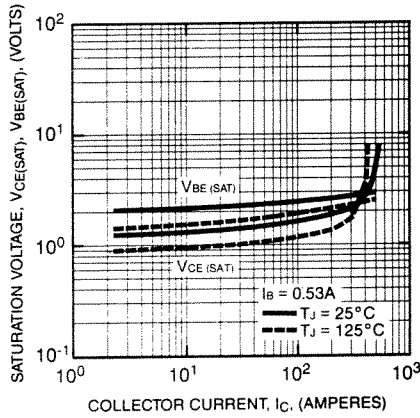
Characteristics	Symbol	Test Conditions	KS624540			Units
			Min.	Typ.	Max.	
Collector Cutoff Current	$I_{CEV}$	$V_{CE} = 600\text{V}, V_{BE} = -2\text{V}$	—	—	5	mA
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = 7\text{V}$	—	—	400	mA
DC Current Gain	$h_{FE}$	$I_C = 400, V_{CE} = 2.5\text{V}$	750	—	—	—
Diode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

**KS624540**  
**High-Beta Single Darlington Transistor Module**  
 400 Amperes/600 Volts

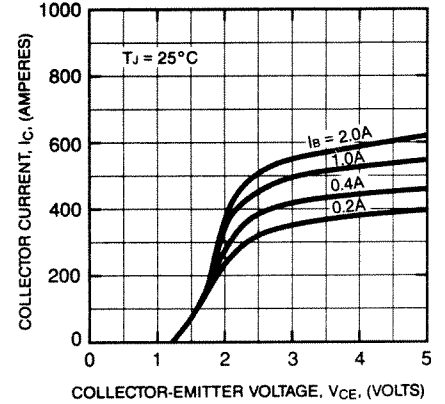
**DC CURRENT GAIN (TYPICAL)**



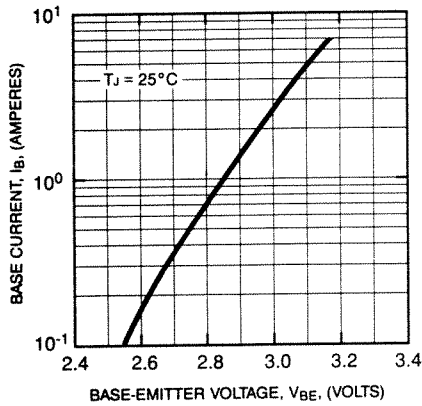
**SATURATION VOLTAGE (TYPICAL)**



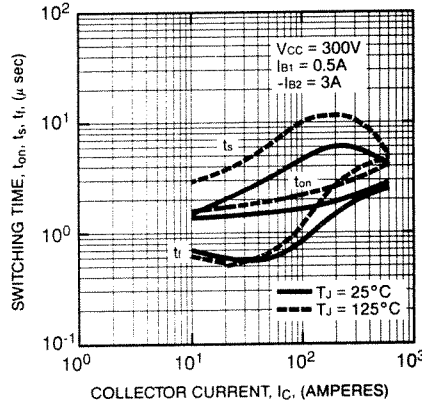
**COMMON EMITTER OUTPUT CHARACTERISTICS (TYPICAL)**



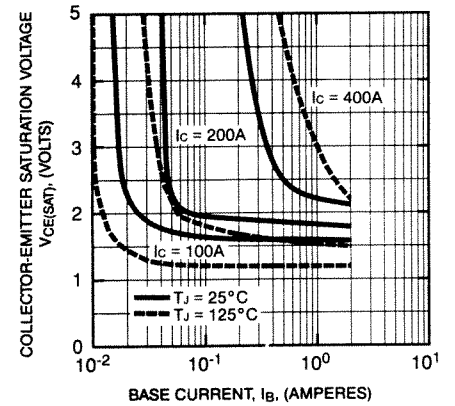
**COMMON EMITTER INPUT CHARACTERISTICS (TYPICAL)**



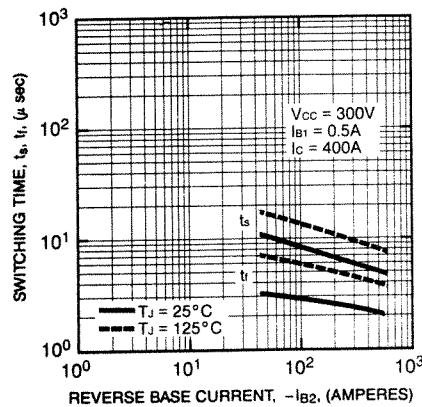
**SWITCHING CHARACTERISTICS (TYPICAL)**



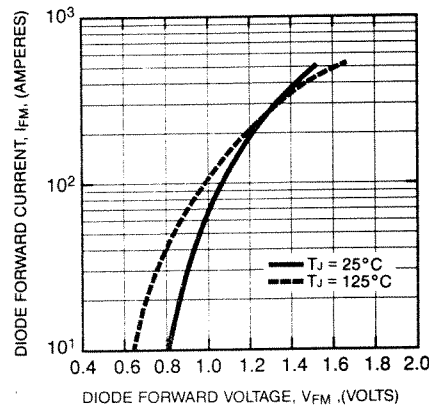
**COLLECTOR-EMITTER SATURATION VOLTAGE (TYPICAL)**



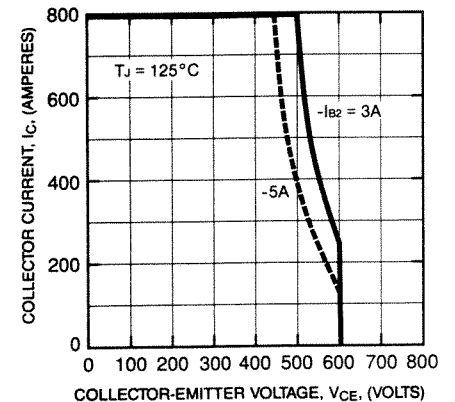
**SWITCHING TIME VS. BASE CURRENT (TYPICAL)**



**DIODE CHARACTERISTICS (TYPICAL)**



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



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**High-Beta Single Darlington Transistor Module**  
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