POWEREX

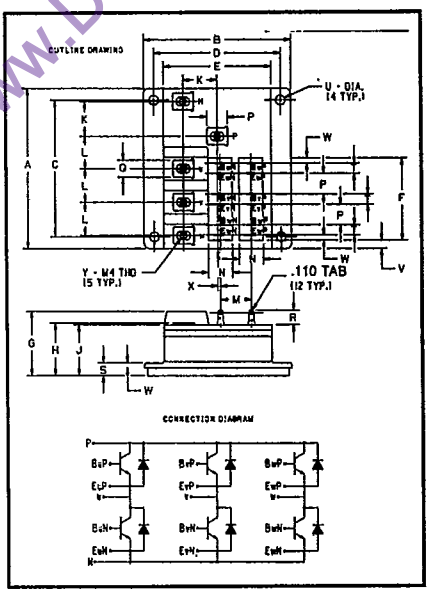
KE924503

T-33-35

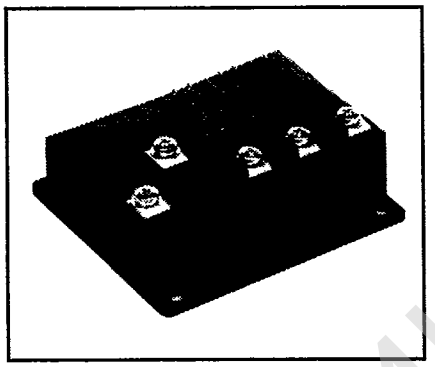
Powerex, Inc., Hillis Street, Youngwood, Pennsylvania 15697 (412) 925-7272
Powerex Europe, S.A., 428 Avenue G. Durand, BP107, 72003 Le Mans, France (43) 41.14.14

Six-Darlington Transistor Module

30 Amperes/600 Volts



600 Volt KE924503 Outline Drawing



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Six-Darlington
Transistor Module
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Dimension	Inches	Millimeters
A	3.701	94
B	3.386	86
C	3.150	80
D	2.913	74
E	2.480	63
F	1.890	48
G	1.496	38
H	1.220	31
J	1.181	30
K	.787	20
L	.768	19.5
M	.709	18
N	.551	14
P	.472	12
Q	.394	10
R	.338	8.6
S	.295	7.5
T	.236	6
U	.216 Dia.	5.5 Dia.
V	.197	5
W	.118	3
X	.059	1.5
Y	M4 Metric	M4

Note: Each Transistor symbol represents a Darlington Transistor with base emitter resistors on each stage and a base emitter speed up diode on the input stage.

Description
Powerex Six-Darlington Transistor Modules are medium power devices which are designed for use in switching applications. The modules are isolated, consisting of six Darlington Transistors with each transistor having a reverse parallel connected high-speed diode. The transistors are connected in a three phase bridge configuration.

Features:
- ☐ Isolated Mounting
- ☐ Planar Chips
- ☐ Discrete Fast Recovery Feed-Back Diode
- ☐ High Gain (h_{FE})
- ☐ Quick Connect Base Emitter Signal Terminals
- ☐ Base-Emitter Speed Up Diode
- ☐ Base-Emitter Resistors

Applications:
- ☐ Inverters
- ☐ Switching Power Supplies
- ☐ AC Motor Control

Ordering Information
Example: Select the complete eight digit module part number you desire from the table - i.e. KE924503 is a 450 $V_{CEO(SUS)}$ (600 V_{CEV}), 30 Ampere Six-Darlington Module.

Type	$V_{CEO(SUS)}$ Volts (×10)	Current Rating Amperes (×10)
KE92	45	03

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Maximum Ratings T_J=25°C unless otherwise specified

	Symbol	KE924503	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-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	30	Amperes
Diode Forward Current	I_{FM}	30	Amperes
Continuous Base Current	I_B	1.8	Amperes
Diode Surge Current	I_{FSM}	300	Amperes
Power Dissipation, Each Transistor	P_T	250	Watts
Max. Mounting Torque M5 Mounting Screw	—	17	in.-lb.
Max. Mounting Torque M4 Terminal Screw	—	12	in.-lb.
Module Weight (typical)	—	16	Oz
Module Weight (typical)	—	460	Grams
V isolation	V_{RMS}	2500	Volts

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

Characteristics		Symbol	Test Conditions	KE924503 Min.	Typ.	Max.	Units
Collector Cutoff Current		I_{CEV}	V_{CE}=600V, V_{BE}=−2V	—	—	1	mA
Collector Cutoff Current		I_{CEV}	V_{CE}=600V, V_{BE}=−2V, T_C=125°C	—	—	5	mA
Emitter Cutoff Current		I_{EBO}	V_{EB}=7V	—	—	200	mA
DC Current Gain		h_{FE}	I_C=30A, V_{CE}=2V	75	—	—	—
DC Current Gain		h_{FE}	I_C=30A, V_{CE}=5V	100	—	—	—
Diode Forward Voltage		V_{FM}	I_{FM}=30A	—	—	1.85	V
Collector-Emitter Saturation Voltage		$V_{CE(SAT)}$	I_C=30A, I_B=0.4A	—	—	2.0	V
Base-Emitter Saturation Voltage		$V_{BE(SAT)}$	I_C=30A, I_B=0.4A	—	—	2.5	V
Resistive Load Switch Times	Turn On	t_{on}	V_{CC}=300V	—	—	1.5	μs
	Storage Time	t_s	I_C=30A	—	—	12	μs
	Fall Time	t_f	I_{B1}=.5A, I_{B2}=−.5A	—	—	3.0	μs
Thermal Resistance, Case to Sink Lubricated		$R_{\theta CS}$	—	—	—	.2	°C/W
Thermal Resistance, Junction to Case		$R_{\theta JC}$	Transistor Part	—	—	.5	°C/W
Thermal Resistance, Junction to Case		$R_{\theta JC}$	Diode Part	—	—	1.3	°C/W

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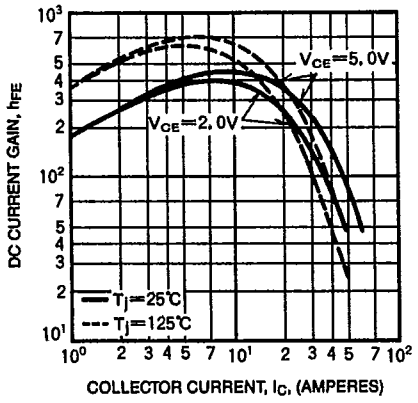
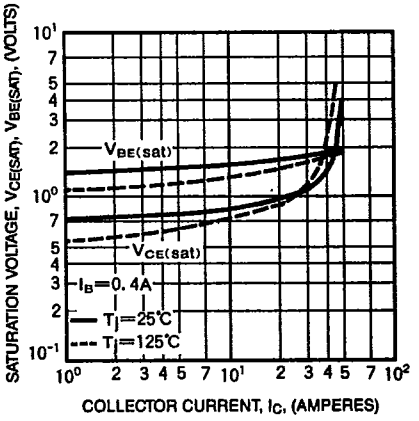
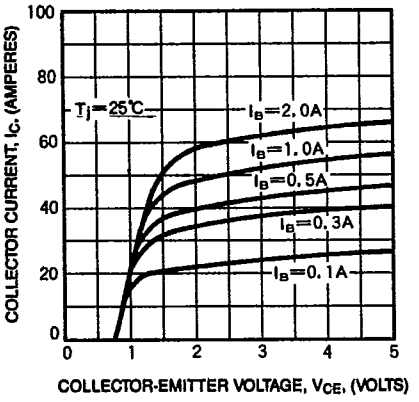
DC CURRENT GAIN (TYPICAL)



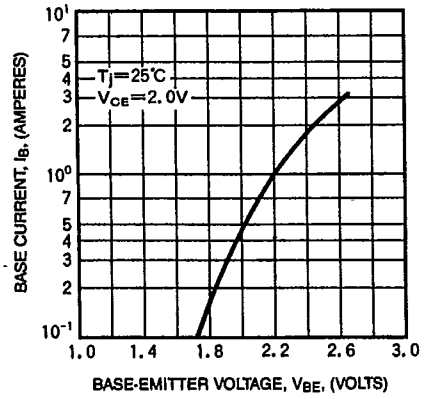
SATURATION VOLTAGE (TYPICAL)



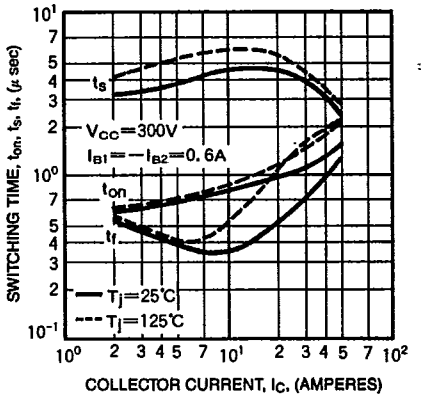
COMMON EMITTER OUTPUT CHARACTERISTICS (TYPICAL)



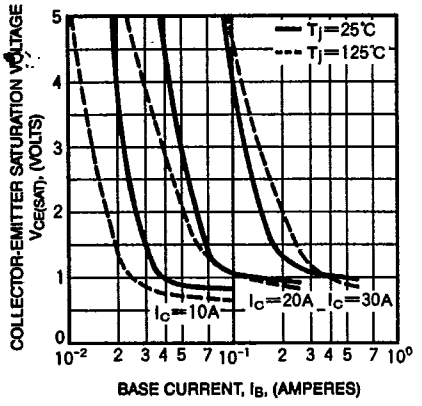
COMMON EMITTER INPUT CHARACTERISTICS (TYPICAL)



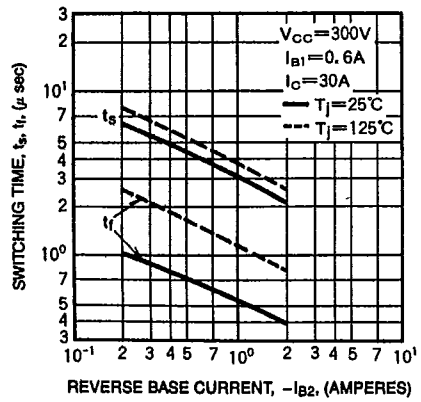
SWITCHING CHARACTERISTICS (TYPICAL)



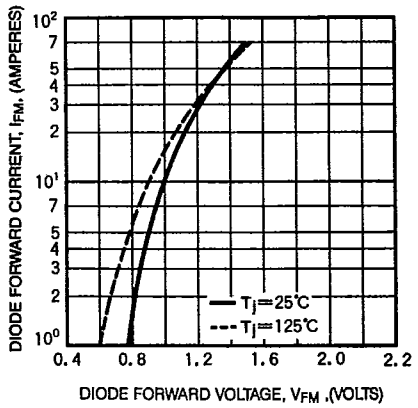
COLLECTOR-EMITTER SATURATION VOLTAGE (TYPICAL)



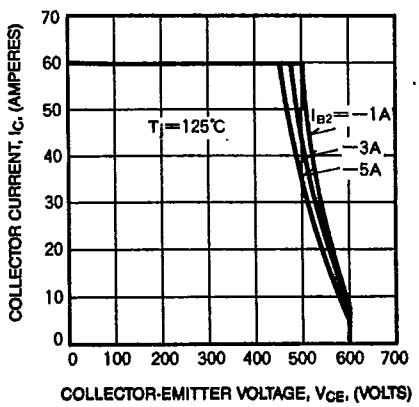
SWITCHING TIME VS. BASE CURRENT (TYPICAL)



DIODE CHARACTERISTICS (TYPICAL)



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



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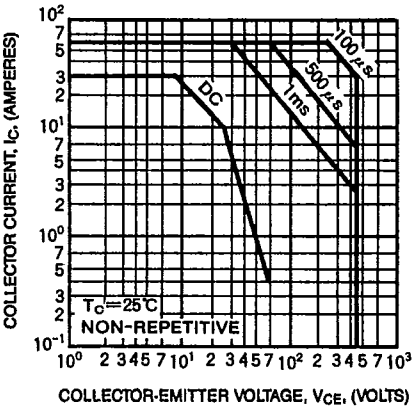
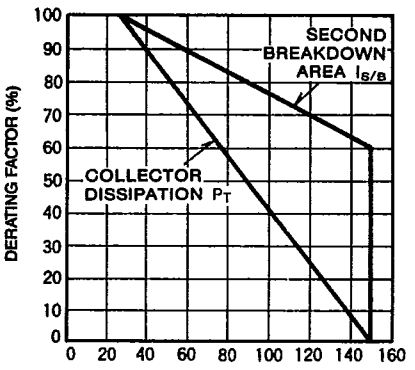
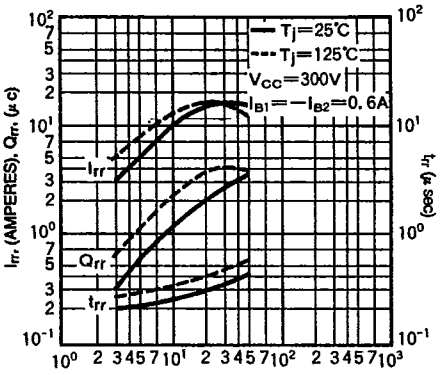
FORWARD BIAS SAFE OPERATING AREA (S.O.A.)



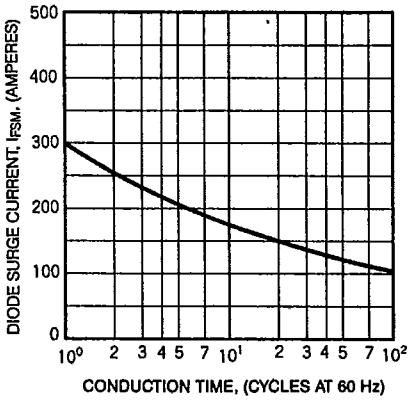
DERATING FACTOR OF SAFE OPERATING AREA (S.O.A.)



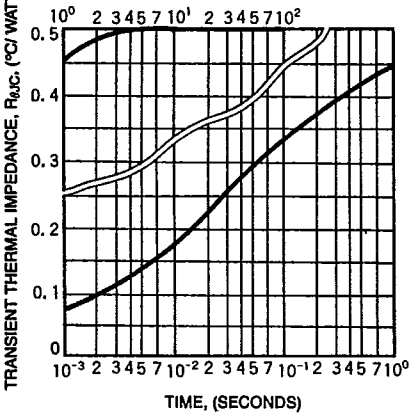
REVERSE RECOVERY CHARACTERISTICS OF FREE-WHEEL DIODE (TYPICAL)



DIODE FORWARD SURGE CURRENT



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (TRANSISTOR)



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (DIODE)