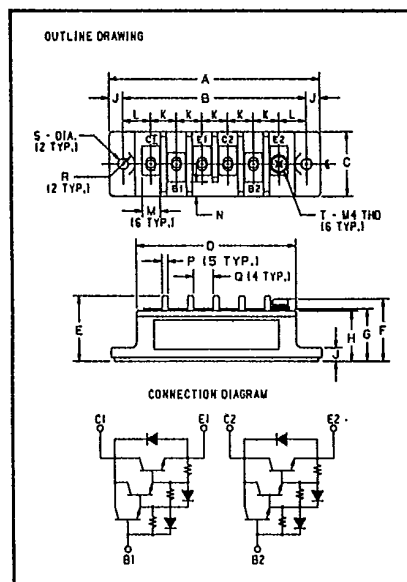
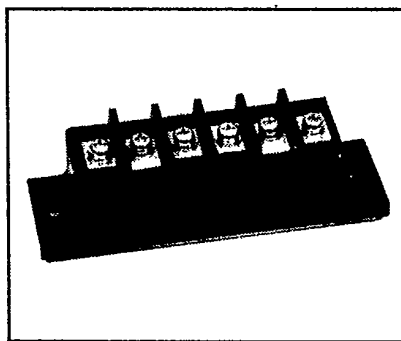


**POWEREX****KT521205**

Powerex, Inc., Hills Street, Youngwood, Pennsylvania 15697 (412) 925-7272

**Split-Dual Darlington  
Transistor Module****50 Amperes/1200 Volts****1200 Volt KT521205  
Outline Drawing**

Dimension	Inches	Millimeters
A	4.213	107
B	3.661	93
C	1.339	34
D	3.189	81
E	1.319	33.5
F	1.260 Max.	32 Max.
G	1.063	27
H	1.024	26
J	.276	7
K	.512	13
L	.551	14
M	.354	9
N	.295	7.5
P	.118	3
Q	.394	10
R	.236 R	R6
S	.216 ± .004 Dia.	5.5 ± 0.1 Dia.
T	M4 Metric	M4

**KT521205  
Split-Dual Darlington  
Transistor Module  
50 Amperes/1200 Volts****Description**

Powerex Split-Dual Darlington Transistor Modules are designed for use in switching applications. The modules are isolated, consisting of two Darlington Transistors with each transistor having a reverse parallel connected high-speed diode.

**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. KT521205 is a 1200 Volt, 50 Ampere Split-Dual Darlington Module.

Type	V <sub>CE(SUS)</sub> Volts (x100)	Current Rating Amperes (x10)
KT52	12	05



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

KT521205

Split-Dual Darlington Transistor Module

50 Amperes / 1200 Volts

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

	Symbol	KT521205	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 $V_{BE} = -2\text{V}$	$V_{CEV(SUS)}$	1200	Volts
Collector-Base Voltage	$V_{CBO}$	1200	Volts
Emitter-Base Voltage	$V_{EBO}$	7	Volts
Collector-Emitter Voltage	$V_{CEV}$	1200	Volts
Continuous Collector Current	$I_C$	50	Amperes
Diode Forward Current	$I_{FM}$	50	Amperes
Continuous Base Current	$I_B$	3	Amperes
Diode Surge Current	$I_{FSM}$	500	Amperes
Power Dissipation, Each Transistor	$P_T$	400	Watts
Max. Mounting Torque M5 Terminal Screws	—	17	in.-lb.
Max. Mounting Torque M6 Mounting Screws	—	26	in.-lb.
Module Weight	—	9	Oz
Module Weight	—	250	Grams
V isolation	$V_{RMS}$	2500	Volts

Electrical and Mechanical Characteristics  $T_J = 25^\circ\text{C}$  unless otherwise specified

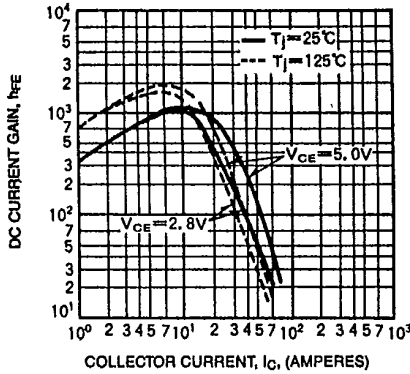
Characteristics	Symbol	Test Conditions	Min.	KT521205 Typ.	Max.	Units
Collector Cutoff Current	$I_{CEV}$	$V_{CE} = 1200\text{V}, V_{BE} = -2\text{V}$	—	—	1	mA
Collector Cutoff Current	$I_{CEV}$	$V_{CE} = 1200\text{V}, V_{BE} = -2\text{V}$ $T_C = 125^\circ\text{C}$	—	—	-10	mA
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = 7\text{V}$	—	—	200	mA
DC Current Gain	$h_{FE}$	$I_C = 50\text{A}, V_{CE} = 5\text{V}$	75	—	—	—
Diode Forward Voltage	$V_{FM}$	$I_{FM} = 50\text{A}$	—	—	1.8	V
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C = 50\text{A}, I_B = 1\text{A}$	—	—	3.0	V
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	$I_C = 50\text{A}, I_B = 1\text{A}$	—	—	3.5	V
Resistive Turn On	$t_{on}$	$V_{CC} = 600\text{V}$	—	—	2.5	$\mu\text{s}$
Load Storage Time	$t_s$	$I_C = 50\text{A}$	—	—	15	$\mu\text{s}$
Switch Times Fall Time	$t_f$	$I_{B1} = 1\text{A}, I_{B2} = -1\text{A}$	—	—	3.0	$\mu\text{s}$
Thermal Resistance, Case to Sink Lubricated	$R_{\theta CS}$	Per Half Module	—	—	0.15	$^\circ\text{C/W}$
Thermal Resistance, Junction to Case	$R_{\theta JC}$	Transistor Part	—	—	.31	$^\circ\text{C/W}$
Thermal Resistance, Junction to Case	$R_{\theta JC}$	Diode Part	—	—	1.2	$^\circ\text{C/W}$



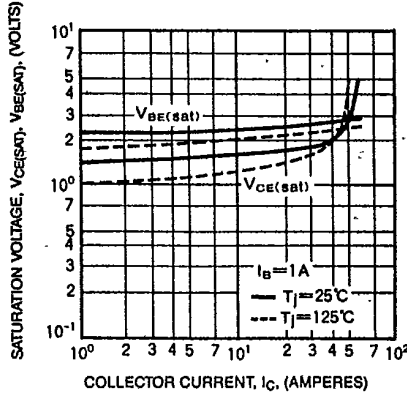
Powerex, Inc., Hillis Street, Youngwood, Pennsylvania 15697 (412) 925-7272

**KT521205**  
**Split-Dual Darlington Transistor Module**  
 50 Amperes / 1200 Volts

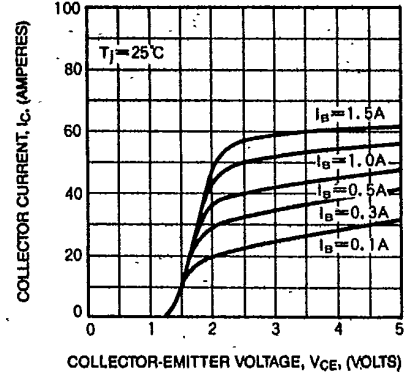
**DC CURRENT GAIN (TYPICAL)**



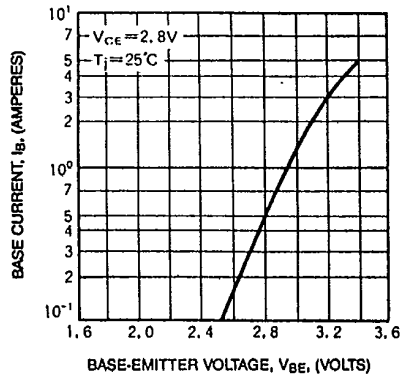
**SATURATION VOLTAGE (TYPICAL)**



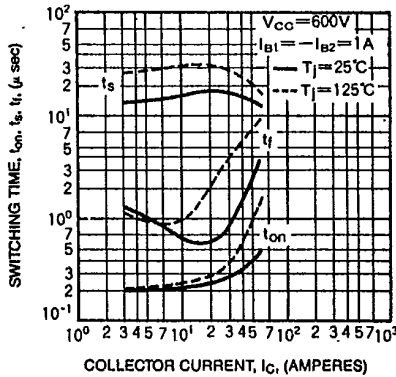
**COMMON EMITTER OUTPUT CHARACTERISTICS (TYPICAL)**



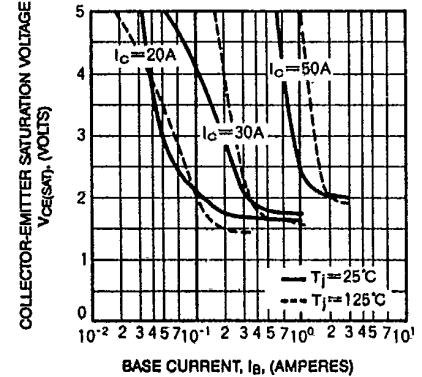
**COMMON EMITTER INPUT CHARACTERISTICS (TYPICAL)**



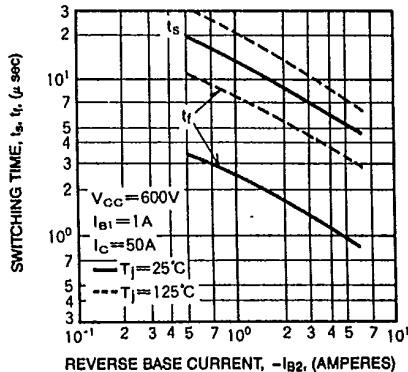
**SWITCHING CHARACTERISTICS (TYPICAL)**



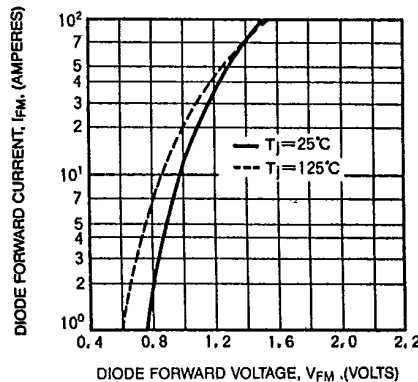
**COLLECTOR-EMITTER SATURATION VOLTAGE (TYPICAL)**



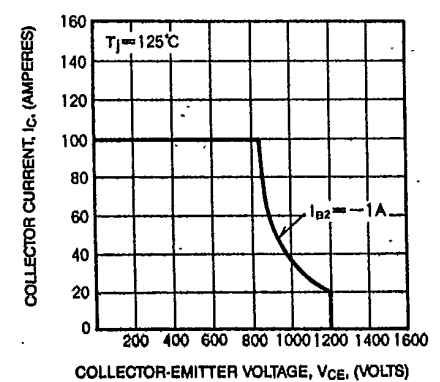
**SWITCHING TIME VS. BASE CURRENT (TYPICAL)**



**DIODE CHARACTERISTICS (TYPICAL)**



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

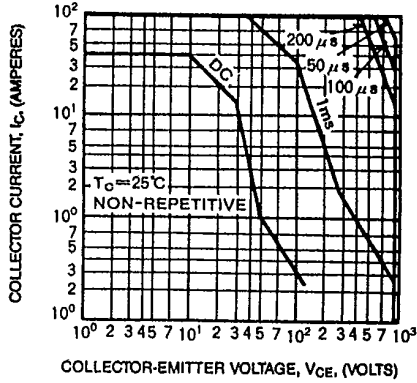




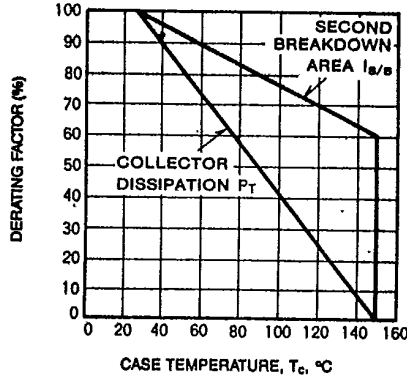
Powerex, Inc., Hillis Street, Youngwood, Pennsylvania 15697 (412) 925-7272

KT521205  
Split-Dual Darlington Transistor Module  
50 Amperes / 1200 Volts

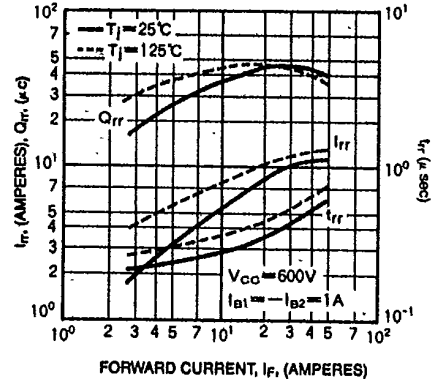
FORWARD BIAS SAFE OPERATING AREA (S.O.A.)



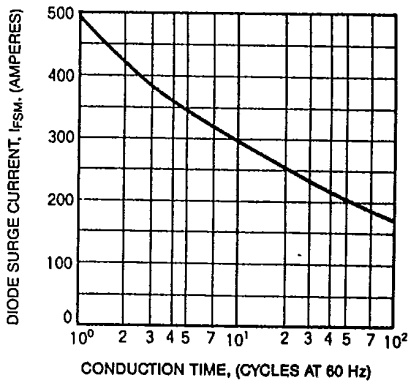
DERATING FACTOR OF SAFE OPERATING AREA (S.O.A.)



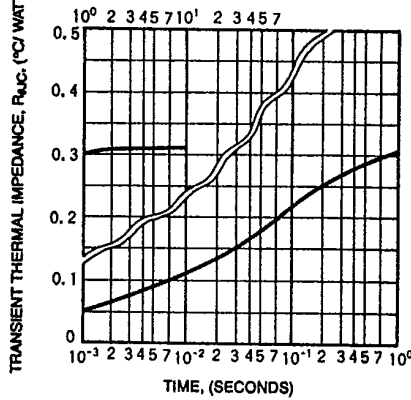
REVERSE RECOVERY CHARACTERISTICS OF FREE-WHEEL DIODE (TYPICAL)



DIODE FORWARD SURGE CURRENT



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (TRANSISTOR)



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (DIODE)

