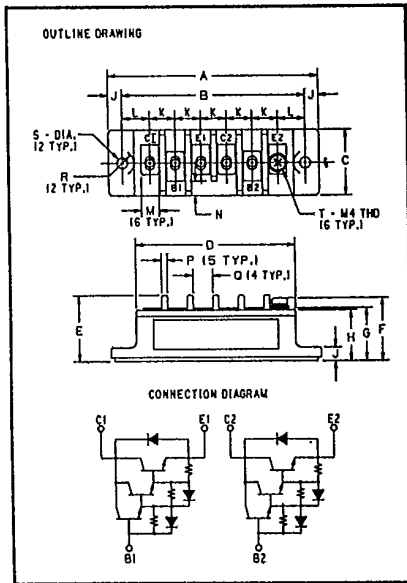




Powerex, Inc., Hills Street, Youngwood, Pennsylvania 15697 (412) 925-7272

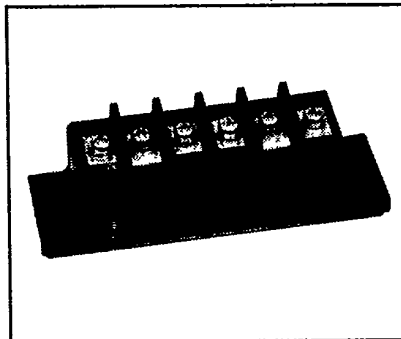
KT521K03

Split-Dual Darlington Transistor Module
30 Amperes/1000 Volts



1000 Volt KT521K03
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



KT521K03
Split-Dual Darlington Transistor Module
30 Amperes/1000 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. KT521K03 is a 1000 Volt, 30 Ampere Split-Dual Darlington Module.

Type	V _{CE(SUS)} Volts (1000)	Current Rating Amperes (×10)
KT52	1K	03

POWEREX

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

KT521K03

Split-Dual Darlington Transistor Module

30 Amperes/1000 Volts

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

	Symbol	KT521K03	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 $V_{BE} = -2\text{V}$	$V_{CE(SUS)}$	1000	Volts
Collector-Base Voltage	V_{CBO}	1000	Volts
Emitter-Base Voltage	V_{EBO}	7	Volts
Collector-Emitter Voltage	V_{CEV}	1000	Volts
Continuous Collector Current	I_C	30	Amperes
Diode Forward Current	I_{FM}	30	Amperes
Continuous Base Current	I_B	2.0	Amperes
Diode Surge Current	I_{FSM}	300	Amperes
Power Dissipation, Each Transistor	P_T	300	Watts
Max. Mounting Torque M5 Terminal Screw	—	17	in.-lb.
Max. Mounting Torque M6 Mounting Screw	—	26	in.-lb.
Module Weight	—	9	Oz
Module Weight	—	210	Grams
V Isolation	V_{RMS}	2500	Volts

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

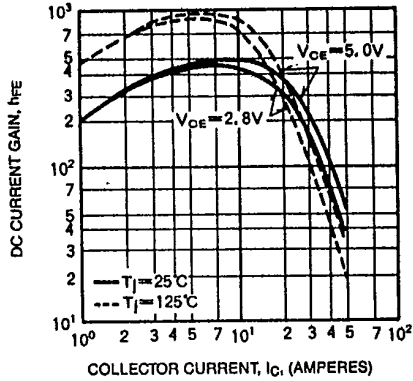
Characteristics	Symbol	Test Conditions	KT521K03			Units
			Min.	Typ.	Max.	
Collector Cutoff Current	I_{CEV}	$V_{CE} = 1000\text{V}, V_{BE} = -2\text{V}$	—	—	1	mA
Collector Cutoff Current	I_{CEV}	$V_{CE} = 1000\text{V}, V_{BE} = -2\text{V}$ $T_C = 125^\circ\text{C}$	—	—	10	mA
Emitter Cutoff Current	I_{EBO}	$V_{EB} = 7\text{V}$	—	—	150	mA
DC Current Gain	h_{FE}	$I_C = 30\text{A}, V_{CE} = 5\text{V}$	100	—	—	—
Diode Forward Voltage	V_{FM}	$I_{FM} = 30\text{A}$	—	—	1.5	V
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C = 30\text{A}, I_B = .5\text{A}$	—	—	2.5	V
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	$I_C = 30\text{A}, I_B = .5\text{A}$	—	—	3.5	V
Resistive Turn On	t_{on}	$V_{CC} = 600\text{V}$	—	—	2.5	μs
Load Storage Time	t_s	$I_C = 30\text{A}$	—	—	.15	μs
Switch Times Fall Time	t_f	$I_{B1} = 1\text{A}, I_{B2} = -.6\text{A}$	—	—	3.0	μs
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	—	—	.4	$^\circ\text{C/W}$
Thermal Resistance, Junction to Case	$R_{\theta JC}$	Diode Part	—	—	1.5	$^\circ\text{C/W}$



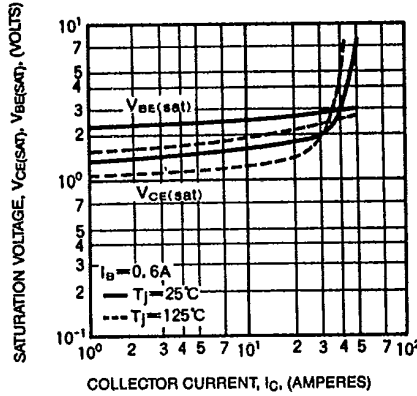
Powerex, Inc., Hillis Street, Youngwood, Pennsylvania 15697 (412) 925-7272

KT521K03
Split-Dual Darlington Transistor Module
30 Amperes/1000 Volts

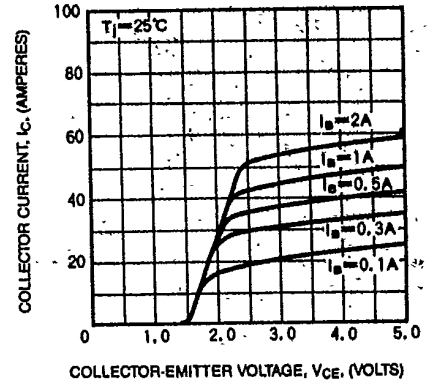
DC CURRENT GAIN (TYPICAL)



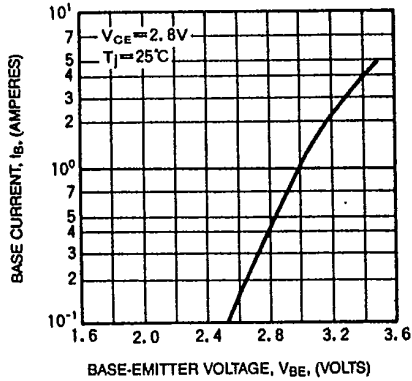
SATURATION VOLTAGE (TYPICAL)



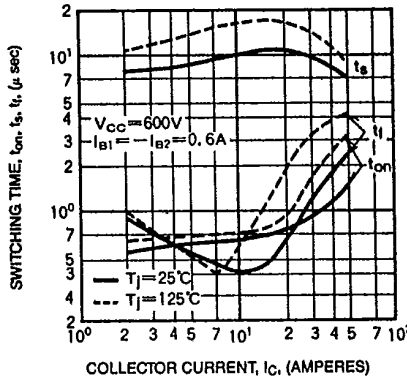
COMMON EMITTER OUTPUT CHARACTERISTICS (TYPICAL)



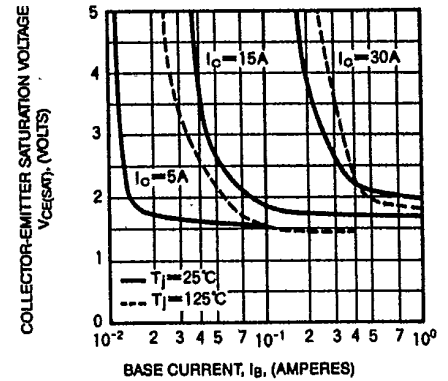
COMMON EMITTER INPUT CHARACTERISTICS (TYPICAL)



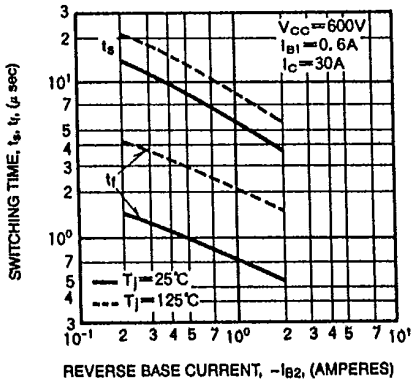
SWITCHING CHARACTERISTICS (TYPICAL)



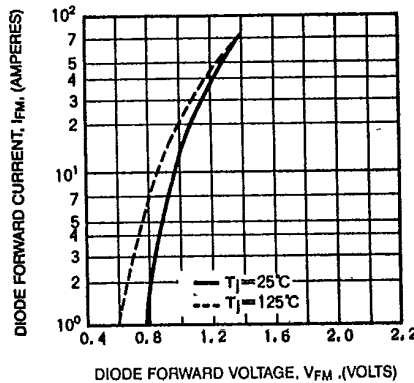
COLLECTOR-EMITTER SATURATION VOLTAGE (TYPICAL)



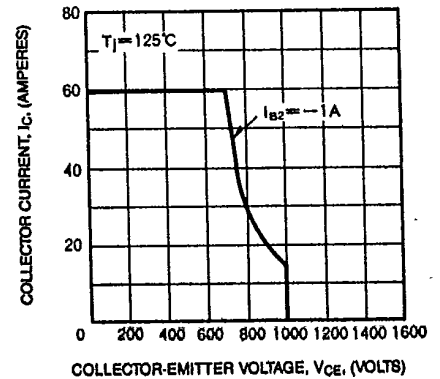
SWITCHING TIME VS. BASE CURRENT (TYPICAL)



DIODE CHARACTERISTICS (TYPICAL)



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

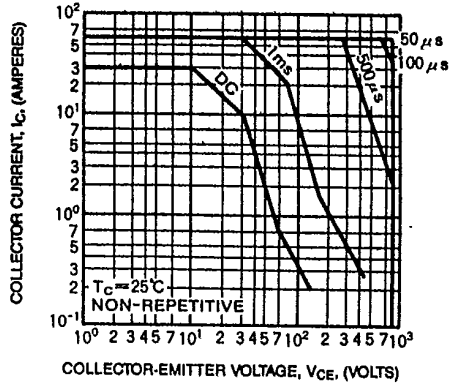




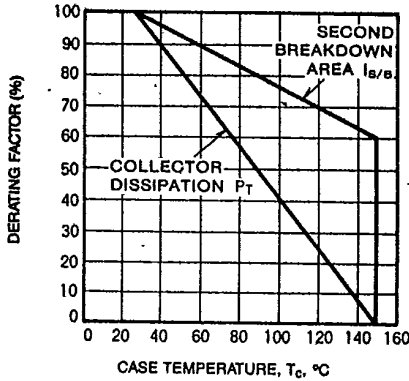
Powerex, Inc., Hillis Street, Youngwood, Pennsylvania 15697 (412) 925-7272

KT521K03
Split-Dual Darlington Transistor Module
30 Amperes/1000 Volts

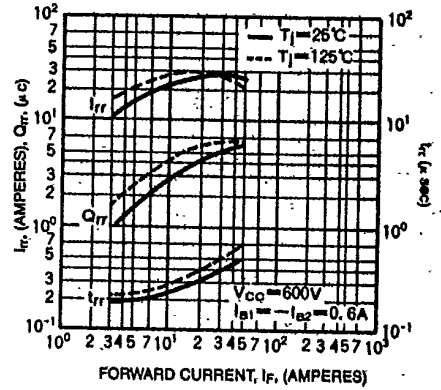
FORWARD BIAS SAFE OPERATING AREA (S.O.A.)



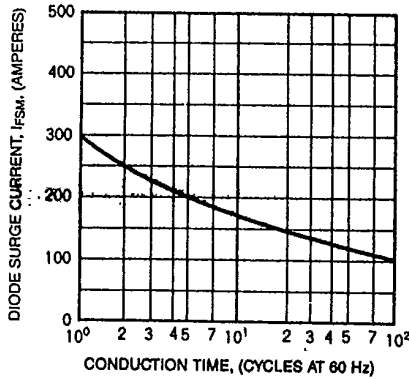
DERATING FACTOR OF SAFE OPERATING AREA (S.O.A.)



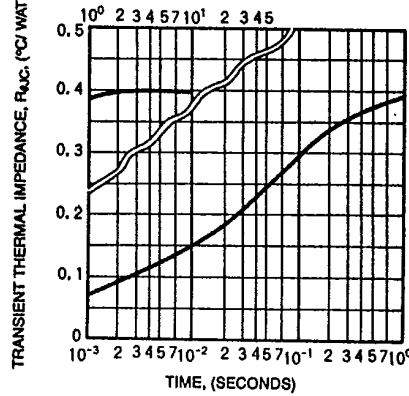
REVERSE RECOVERY CHARACTERISTICS OF FREE-WHEEL DIODE (TYPICAL)



DIODE FORWARD SURGE CURRENT



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (TRANSISTOR)



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (DIODE)

