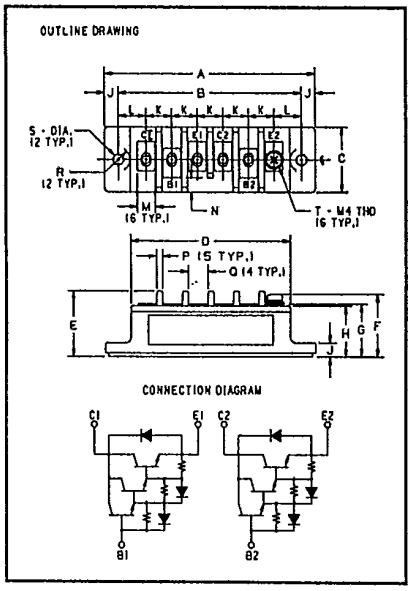
POWEREX

KT521203

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

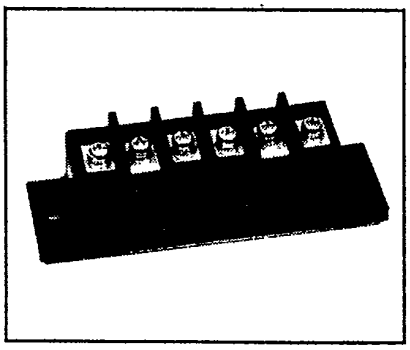
Split-Dual Darlington Transistor Module

30 Amperes/1200 Volts



1200 Volt KT521203 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



KT521203
Split-Dual Darlington Transistor Module
30 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. KT521203 is a 1200 Volt, 30 Ampere Split-Dual Darlington Module.

Type	$V_{CE(SUS)}$ Volts (×100)	Current Rating Amperes (×10)
KT52	12	03

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Maximum Ratings T_J = 25°C unless otherwise specified

	Symbol	KT521203	Units
Junction Temperature	T_J	−40 to 150	°C
Storage Temperature	T_{STG}	−40 to 125	°C
Collector-Emitter Sustaining Voltage V_{BE} = −2V	$V_{CEV(SUS)}$	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	30	Amperes
Diode Forward Current	I_{FM}	30	Amperes
Continuous Base Current	I_B	2	Amperes
Diode Surge Current	I_{FSM}	300	Amperes
Power Dissipation, Each Transistor	P_T	300	Watts
Max. Mounting Torque M5 Terminal Screws	—	17	in.-lb.
Max. Mounting Torque M6 Mounting Screws	—	25	in.-lb.
Module Weight	—	210	Grams
V isolation	V_{RMS}	2500	Volts

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

Characteristics		Symbol	Test Conditions	KT521203 Min.	Typ.	Max.	Units
Collector Cutoff Current		I_{CEV}	V_{CE} = 1200V, V_{BE} = −2V	—	—	1	mA
Emitter Cutoff Current		I_{EBO}	V_{EB} = 7V	—	—	150	mA
DC Current Gain		h_{FE}	I_C = 30A, V_{CE} = 5V	75	—	—	—
Diode Forward Voltage		V_{FM}	I_{FM} = 30A	—	—	1.5	V
Collector-Emitter Saturation Voltage		$V_{CE(SAT)}$	I_C = 30A, I_B = 0.6A	—	—	3.0	V
Base-Emitter Saturation Voltage		$V_{BE(SAT)}$	I_C = 30A, I_B = 0.6A	—	—	3.5	V
Resistive Load Switch Times	Turn On	t_{on}	V_{CC} = 600V,	—	—	2.5	μs
	Storage Time	t_s	I_C = 25A	—	—	15	μs
	Fall Time	t_f	I_{B1} = −I_{B2} = 0.6A	—	—	3.0	μs
Thermal Resistance, Case to Sink Lubricated		$R_{\theta CS}$	Per Half Module	—	—	0.15	°C/W
Thermal Resistance, Junction to Case		$R_{\theta JC}$	Transistor Part	—	—	0.4	°C/W
Thermal Resistance, Junction to Case		$R_{\theta JC}$	Diode Part	—	—	1.5	°C/W

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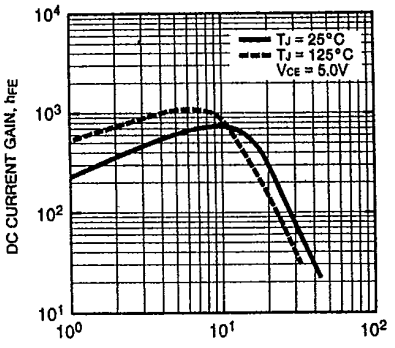
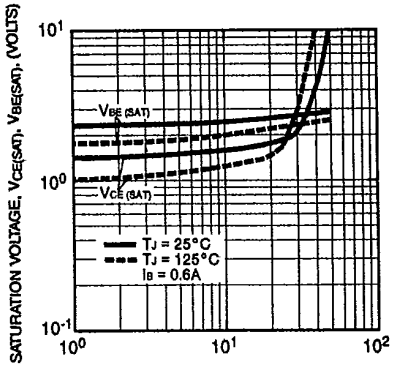
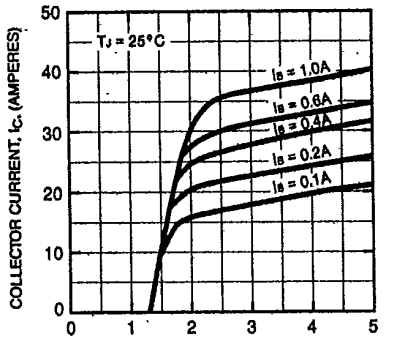
DC CURRENT GAIN (TYPICAL)



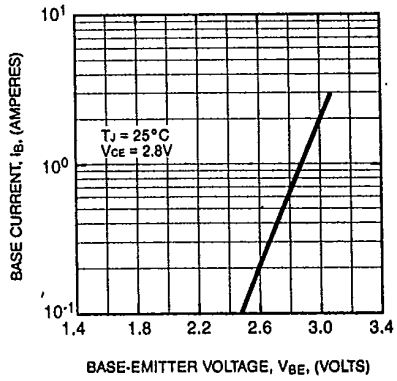
SATURATION VOLTAGE (TYPICAL)



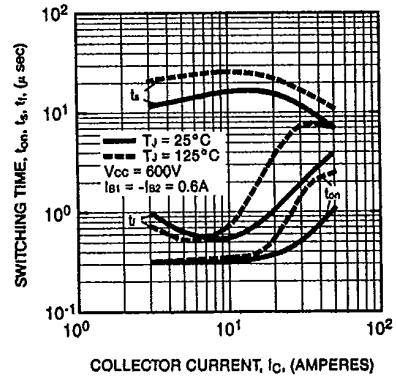
COMMON EMITTER OUTPUT CHARACTERISTICS (TYPICAL)



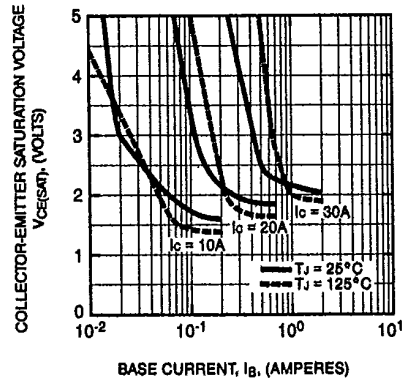
COMMON EMITTER INPUT CHARACTERISTICS (TYPICAL)



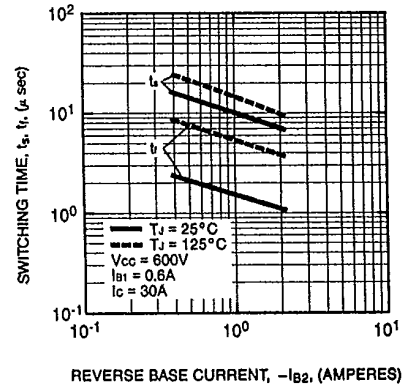
SWITCHING CHARACTERISTICS (TYPICAL)



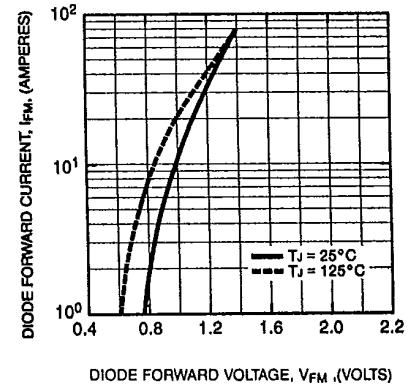
COLLECTOR-EMITTER SATURATION VOLTAGE (TYPICAL)



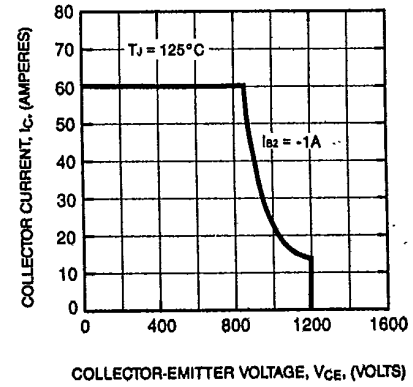
SWITCHING TIME VS. BASE CURRENT (TYPICAL)



DIODE CHARACTERISTICS (TYPICAL)



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



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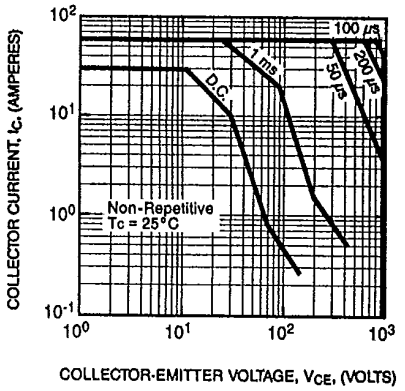
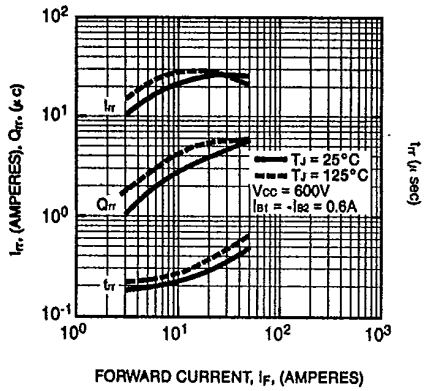
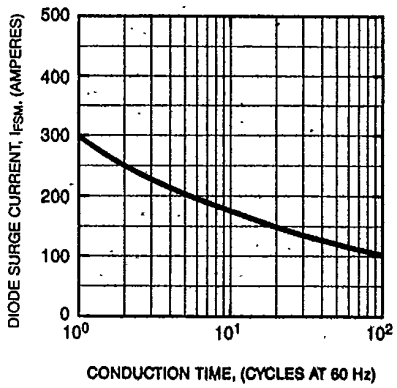
FORWARD BIAS SAFE OPERATING AREA (S.O.A.)



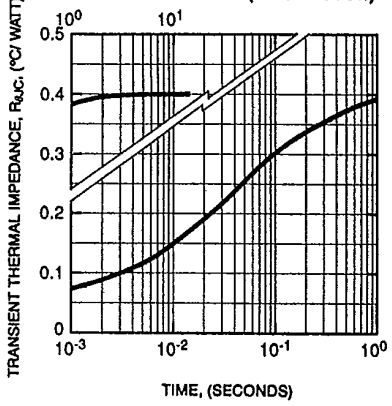
REVERSE RECOVERY CHARACTERISTICS OF FREE-WHEEL DIODE (TYPICAL)



DIODE FORWARD SURGE CURRENT



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (TRANSISTOR)



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (DIODE)