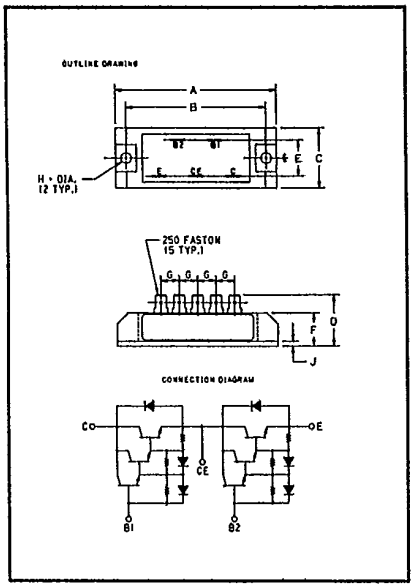
KD721KA2

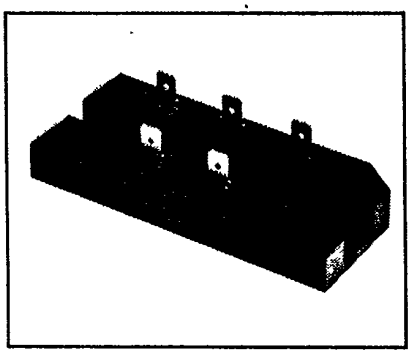
Powerex, Inc., Hillis Street, Youngwood, Pennsylvania 15697 (412) 925-7272

Dual Darlington Transistor Module
25 Amperes/1000 Volts



1000 Volt KD721KA2 Outline Drawing

Dimension	Inches	Millimeters
A	3.622	92
B	3.150±.012	80±0.3
C	1.378	35
D	1.181 Max.	30 Max.
E	.827	21
F	.768	19.5
G	.413	10.5
H	.216 Dia.	5.5 Dia.
J	.177	4.5



KD721KA2
Dual Darlington
Transistor Module
25 Amperes/1000 Volts

Description
Powerex 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})
- ☐ Fast On Connections
- ☐ 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. KD721KA2 is a 1000 Volt, 25 Ampere Dual Darlington Module.

Type	$V_{CE(SUS)}$ Volts (1000)	Current Rating Amperes (25)
KD72	1K	A2

POWEREX

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Maximum Ratings T_J=25°C unless otherwise specified

	Symbol	KD721KA2	Units
Junction Temperature	T_J	−40 to 150	°C
Storage Temperature	T_{STG}	−40 to 125	°C
Collector-Emitter Sustaining Voltage	$V_{CEO(SUS)}$	800	Volts
Collector-Emitter Sustaining Voltage V_{BE}=−2V	$V_{CEV(SUS)}$	1000	Volts
Collector-Base Voltage	V_{CBO}	1000	Volts
Emitter-Base Voltage	V_{EBO}	7	Volts
Collector-Emitter Voltage V_{BE}=−2V	V_{CEV}	1000	Volts
Continuous Collector Current	I_C	25	Amperes
Diode Forward Current	I_{FM}	25	Amperes
Continuous Base Current	I_B	1.5	Amperes
Diode Surge Current	I_{FSM}	250	Amperes
Power Dissipation,Each Transistor	P_T	208	Watts
Max. Mounting Torque M5 Mounting Screws	—	17	in.-lb.
Module Weight	—	155	Grams
V isolation	V_{RMS}	2500	Volts

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

Characteristics		Symbol	Test Conditions	KD721KA2 Min.	Typ.	Max.	Units
Collector Cutoff Current		I_{CEV}	V_{CE}=1000V, V_{BE}=−2V	—	—	1	mA
Emitter Cutoff Current		I_{EBO}	V_{EB}=7V	—	—	200	mA
DC Current Gain		h_{FE}	I_C=25A, V_{CE}=2.8V	75	—	—	—
DC Current Gain		h_{FE}	I_C=25A, V_{CE}=5V	100	—	—	—
Diode Forward Voltage		V_{FM}	I_{FM}=25A	—	—	1.8	V
Collector-Emitter Saturation Voltage		$V_{CE(SAT)}$	I_C=25A, I_B=0.5A	—	—	2.5	V
Base-Emitter Saturation Voltage		$V_{BE(SAT)}$	I_C=25A, I_B=0.5A	—	—	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}=0.5A	—	—	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	—	—	0.6	°C/W
Thermal Resistance, Junction to Case		$R_{\theta JC}$	Diode Part	—	—	1.5	°C/W

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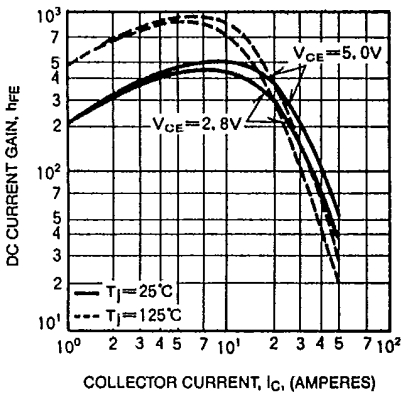
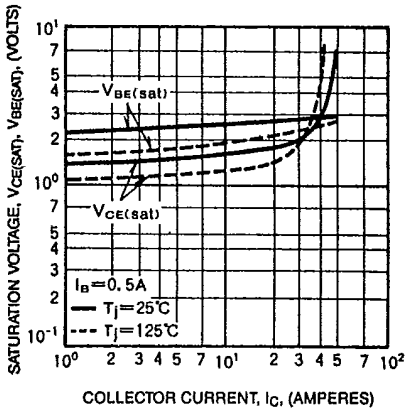
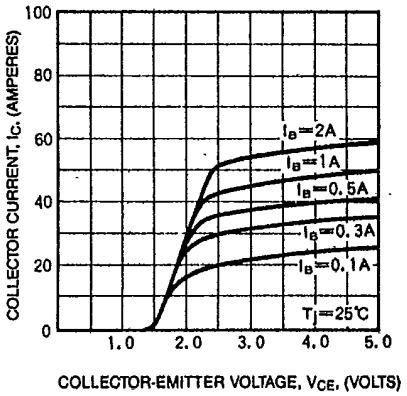
DC CURRENT GAIN (TYPICAL)



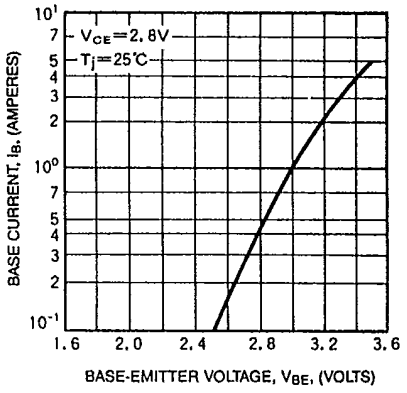
SATURATION VOLTAGE (TYPICAL)



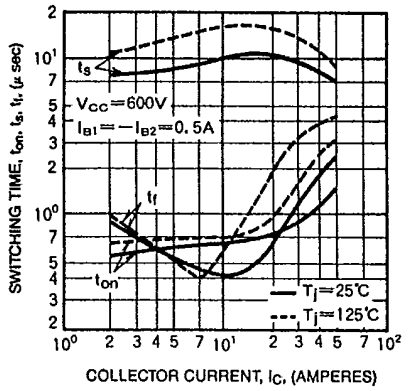
COMMON EMITTER OUTPUT CHARACTERISTICS (TYPICAL)



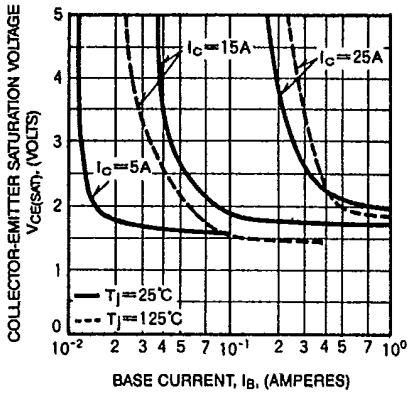
COMMON EMITTER INPUT CHARACTERISTICS (TYPICAL)



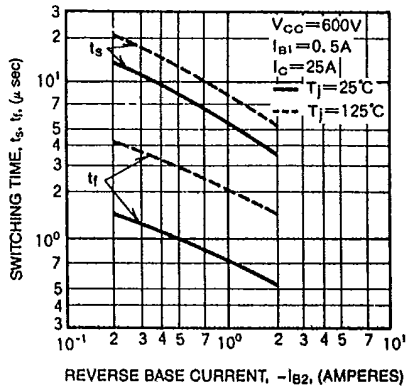
SWITCHING CHARACTERISTICS (TYPICAL)



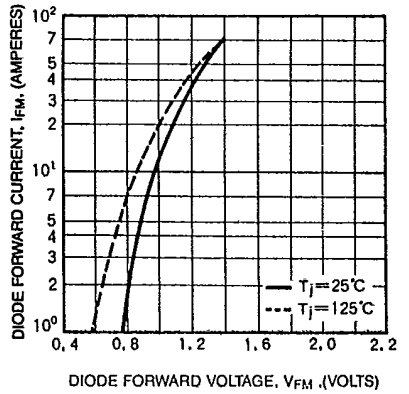
COLLECTOR-EMITTER SATURATION VOLTAGE (TYPICAL)



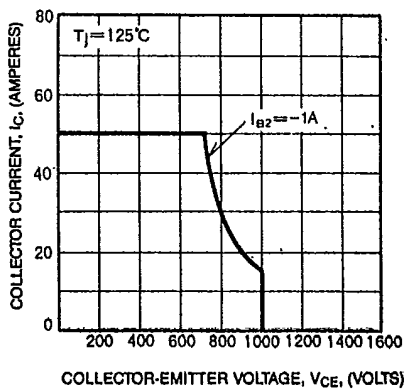
SWITCHING TIME VS. BASE CURRENT (TYPICAL)



DIODE CHARACTERISTICS (TYPICAL)



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



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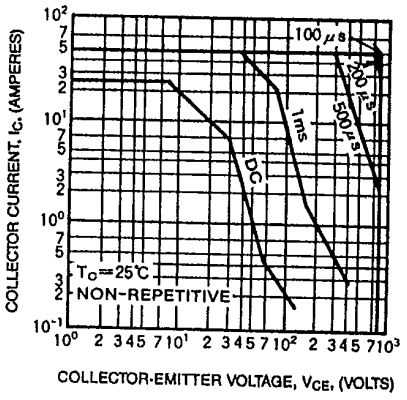
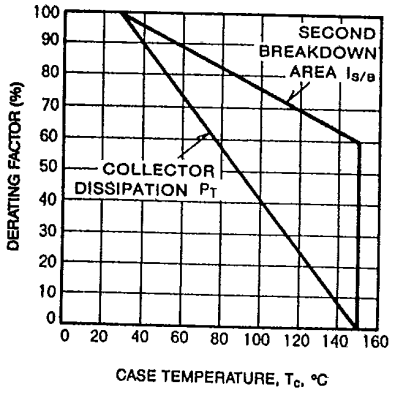
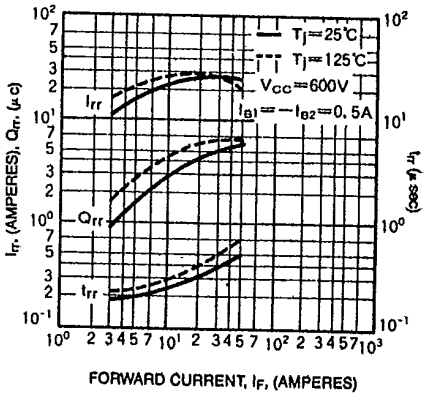
FORWARD BIAS SAFE OPERATING AREA (S.O.A.)



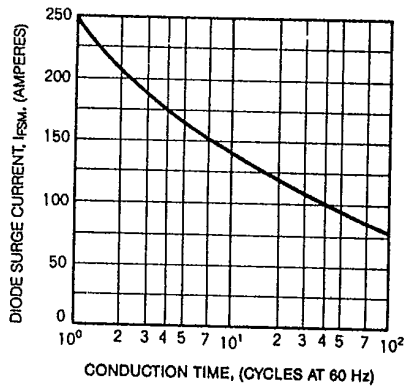
DERATING FACTOR OF SAFE OPERATING AREA (S.O.A.)



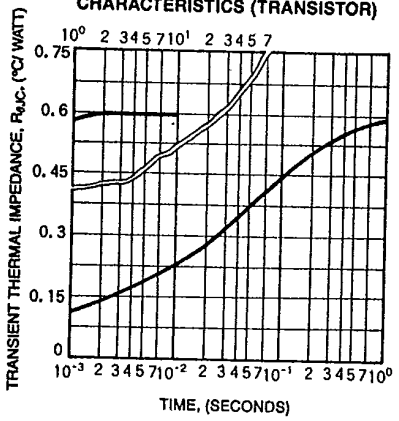
REVERSE RECOVERY CHARACTERISTICS OF FREE-WHEEL DIODE (TYPICAL)



DIODE FORWARD SURGE CURRENT



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (TRANSISTOR)



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (DIODE)