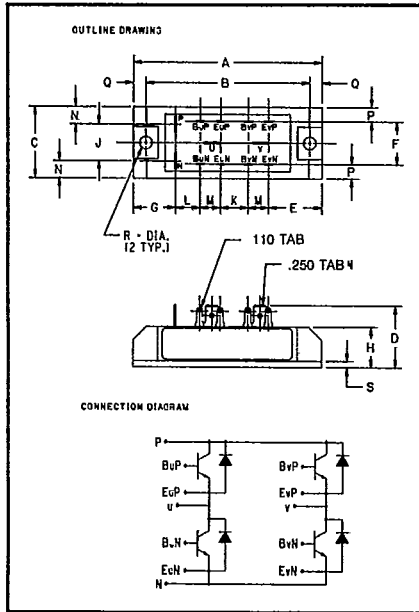


**KB724502**

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

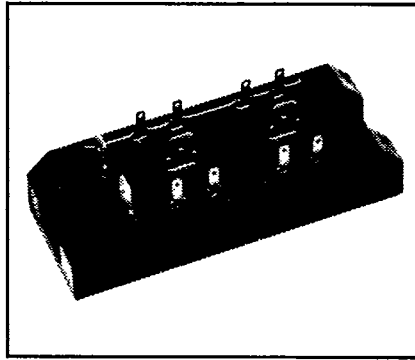
Quad Darlington Transistor Module

20 Amperes/600 Volts



600 Volt KB724502
Outline Drawing

Dimension	Inches	Millimeters
A	3.622 ± .016	92 ± 0.4
B	3.150	80
C	1.378 ± .016	35 ± 0.4
D	1.181 Max.	30 Max.
E	1.024	26
F	.827	21
G	.807	20.5
H	.768	19.5
J	.709	18
K	.531	13.5
L	.472	12
M	.394	10
N	.335	8.5
P	.276	7
Q	.236	6
R	.216 Dia.	5.5 Dia.
S	.118	3



KB724502
Quad Darlington Transistor Module
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Description

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

Features:

- ☐ Isolated Mounting
- ☐ Planar Chips
- ☐ Discrete Fast Recovery Feed-Back Diode
- ☐ High Gain (h_{FE})
- ☐ Quick Connect Terminals
- ☐ 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. KB724502 is a 450 Volt, (600 V_{CEX}), 20 Ampere Quad Darlington Module.

Type	$V_{CE(SUS)}$ Volts ($\times 10$)	Current Rating Amperes ($\times 10$)
KB72	45	02



T-33-35

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KB724502
Quad Darlington Transistor Modules
 20 Amperes/600 Volts

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

	Symbol	KB724502	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	$V_{CEO(SUS)}$	450	Volts
Collector-Base Voltage	V_{CBO}	600	Volts
Emitter-Base Voltage	V_{EBO}	7	Volts
Collector-Emitter Voltage	V_{CEV}	600	Volts
Continuous Collector Current	I_C	20	Amperes
Diode Forward Current	I_{FM}	20	Amperes
Continuous Base Current	I_B	1.0	Amperes
Diode Surge Current	I_{FSM}	160	Amperes
Power Dissipation, Each Transistor	P_T	160	Watts
Max. Mounting Torque M5 Mounting Screws	—	17	in.-lb.
Module Weight (typical)	—	6	Oz
Module Weight (typical)	—	170	Grams
V isolation	V_{RMS}	2000	Volts

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

Characteristics	Symbol	Test Conditions	Min.	KB724502 Typ.	Max.	Units
Collector Cutoff Current	I_{CEV}	$V_{CE} = 600\text{V}, V_{BE} = -2\text{V}$	—	—	1	mA
Collector Cutoff Current	I_{CEV}	$V_{CE} = 600\text{V}, V_{BE} = -2\text{V}$ $T_C = 125^\circ\text{C}$	—	—	5	mA
Emitter Cutoff Current	I_{EBO}	$V_{EB} = 7\text{V}$	—	—	150	mA
DC Current Gain	h_{FE}	$I_C = 20\text{A}, V_{CE} = 2\text{V}$	70	—	—	—
DC Current Gain	h_{FE}	$I_C = 20\text{A}, V_{CE} = 5\text{V}$	100	—	—	—
Diode Forward Voltage	V_{FM}	$I_{FM} = 20\text{A}$	—	—	1.5	V
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C = 20\text{A}, I_B = .28\text{A}$	—	—	2.0	V
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	$I_C = 20\text{A}, I_B = .28\text{A}$	—	—	2.5	V
Resistive Turn On	t_{on}	$V_{CC} = 300\text{V}$	—	—	1.5	μs
Load Storage Time	t_s	$I_C = 20\text{A}$	—	—	12	μs
Switch Times Fall Time	t_f	$I_{B1} = .4\text{A}, I_{B2} = -.4\text{A}$	—	—	2.0	μs
Thermal Resistance, Case to Sink Lubricated	$R_{\theta CS}$	—	—	—	0.08	$^\circ\text{C/W}$
Thermal Resistance, Junction to Case	$R_{\theta JC}$	Transistor Part	—	—	.8	$^\circ\text{C/W}$
Thermal Resistance, Junction to Case	$R_{\theta JC}$	Diode Part	—	—	2.2	$^\circ\text{C/W}$



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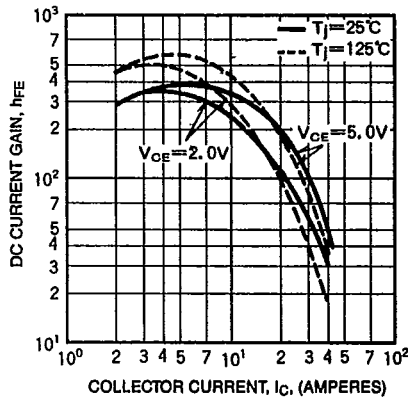
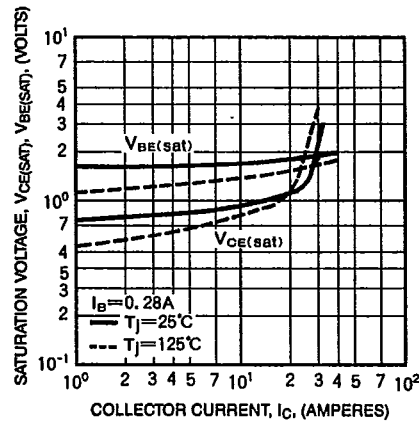
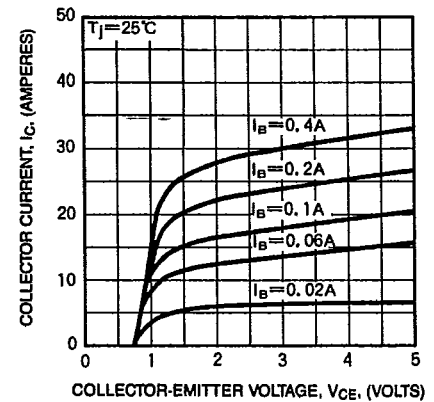
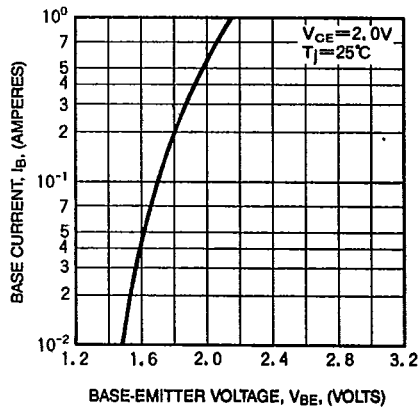
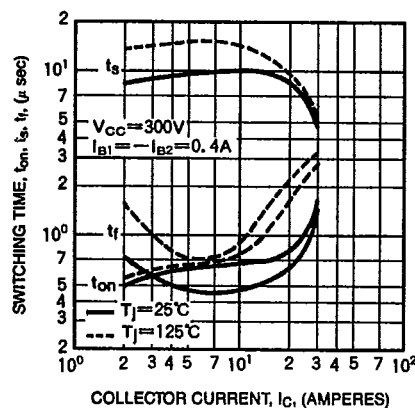
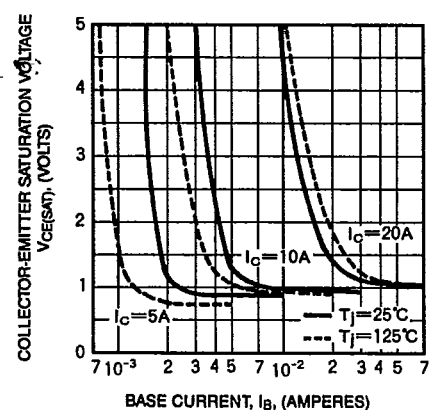
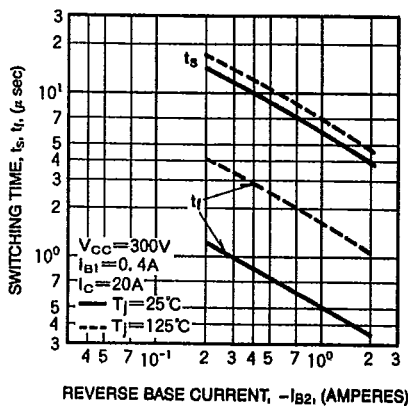
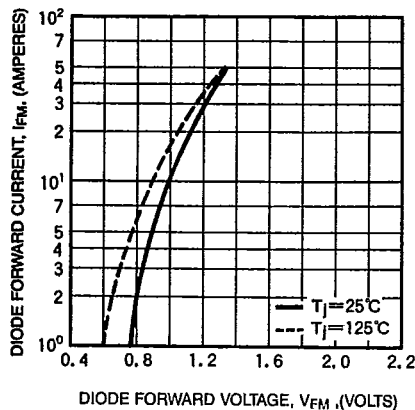
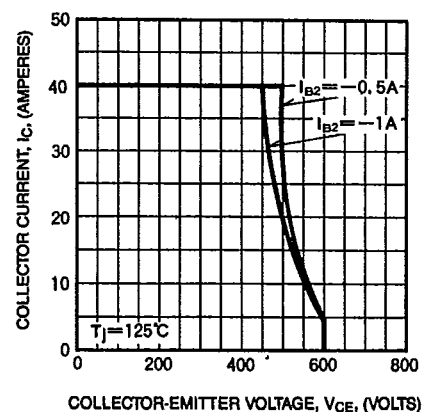
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DC CURRENT GAIN
(TYPICAL)SATURATION VOLTAGE
(TYPICAL)COMMON EMITTER OUTPUT
CHARACTERISTICS (TYPICAL)COMMON EMITTER INPUT
CHARACTERISTICS (TYPICAL)SWITCHING CHARACTERISTICS
(TYPICAL)COLLECTOR-EMITTER SATURATION
VOLTAGE (TYPICAL)SWITCHING TIME VS. BASE CURRENT
(TYPICAL)DIODE CHARACTERISTICS
(TYPICAL)REVERSE BIAS SAFE OPERATING AREA
(R.B.S.O.A.)



T-33-35

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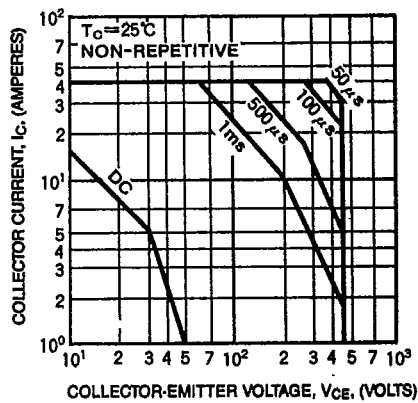
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KB724502

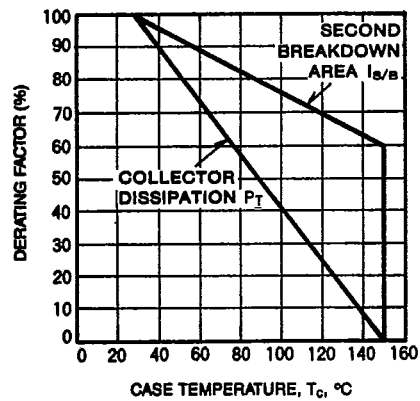
Quad Darlington Transistor Module

20 Amperes/600 Volts

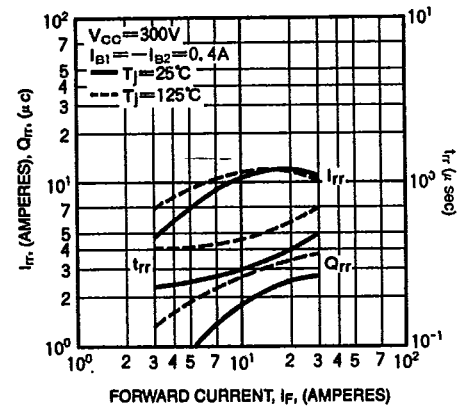
FORWARD BIAS SAFE OPERATING AREA (S.O.A.)



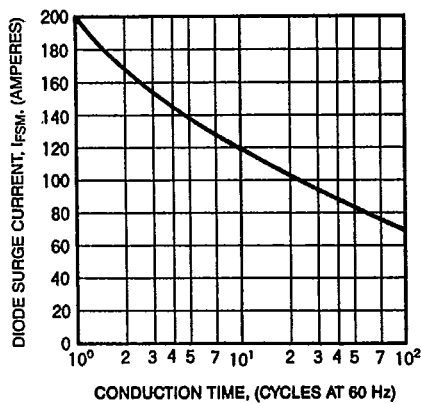
DERATING FACTOR OF SAFE OPERATING AREA (S.O.A.)



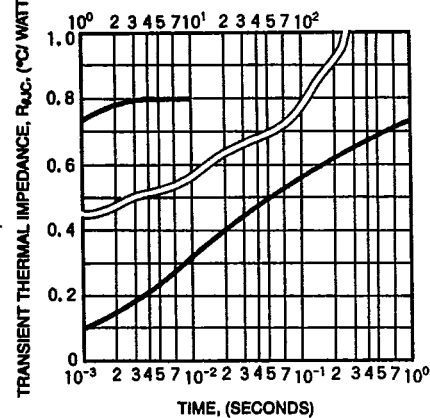
REVERSE RECOVERY CHARACTERISTICS OF FREE-WHEEL DIODE (TYPICAL)



DIODE FORWARD SURGE CURRENT



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (TRANSISTOR)



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (DIODE)

