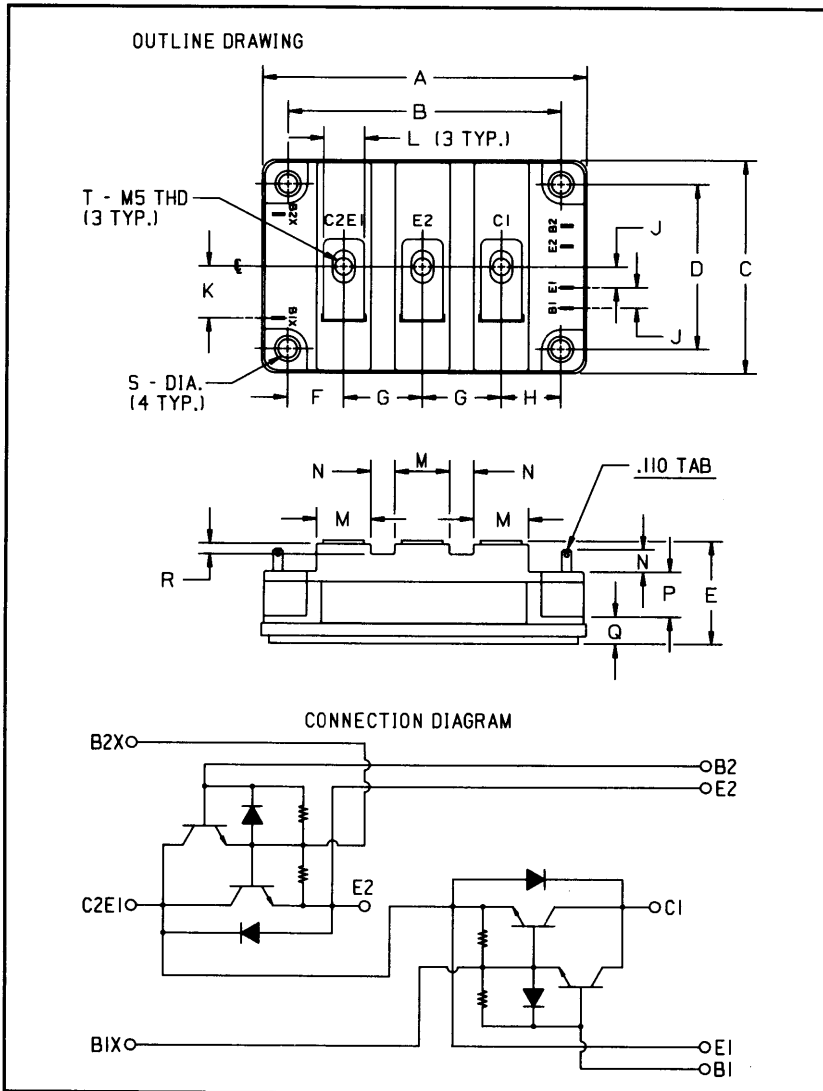


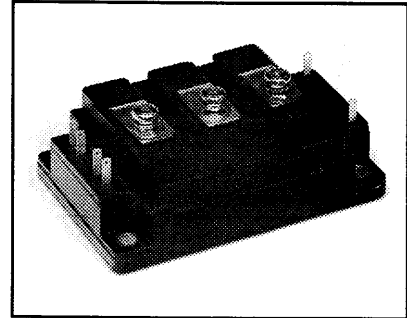
Dual Darlington Transistor Module 150 Amperes/600 Volts



Outline Drawing

Dimensions	Inches	Millimeters
A	3.740 Max.	95 Max.
B	3.150 ± 0.01	80 ± 0.25
C	2.441 Max.	62 Max.
D	1.890 ± 0.01	48 ± 0.25
E	1.181 Max.	30 Max.
F	0.650	16.5
G	0.906	23
H	0.689	17.5
J	0.236	6

Dimensions	Inches	Millimeters
K	0.596	15
L	0.472	12
M	0.630	16
N	0.276	7
P	0.512	13
Q	0.315	8
R	0.118	3
S	0.216 Dia.	5.5 Dia.
T	M5 Metric	M5



Description:

The Powerex Dual Darlington Transistor Modules are high power devices 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 Feedback Diode
- ☐ High Gain (h_{FE})
- ☐ Quick Connect Base-Emitter Signal Terminals
- ☐ Base-Emitter Speed-up Diodes

Applications:

- ☐ AC Motor Control
- ☐ DC Motor Control
- ☐ Switching Power Supplies
- ☐ Inverters

Ordering Information:

Example: Select the complete eight digit module part number you desire from the table - i.e. KD324515 is a 450 $V_{CE0(sus)}$ (600 V_{CEV}), 150 Ampere Dual Darlington Module.

Type	$V_{CE0(sus)}$ Volts (X 10)	Current Rating Amperes (X 10)
KD32	45	15



Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (412) 925-7272

KD324515
Dual Darlington Transistor Module
 150 Amperes/600 Volts

Absolute Maximum Ratings, $T_j = 25^\circ\text{C}$ unless otherwise specified

Ratings	Symbol	KD324515	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	$V_{CE(sus)}$	450	Volts
Collector-Emitter Sustaining Voltage, $V_{BE} = -2\text{V}$	$V_{CEV(sus)}$	600	Volts
Collector-Base Voltage	V_{CBO}	600	Volts
Emitter-Base Voltage	V_{EBO}	7	Volts
Collector-Emitter Voltage, $V_{BE} = -2\text{V}$	V_{CEV}	600	Volts
Continuous Collector Current	I_C	150	Amperes
Diode Forward Current	I_{FM}	150	Amperes
Continuous Base Current	I_B	9	Amperes
Diode Surge Current	I_{FSM}	1500	Amperes
Power Dissipation (Each Transistor)	P_t	690	Watts
Max. Mounting Torque M5 Terminal Screws	—	17	in.-lb.
Max. Mounting Torque M5 Mounting Screws	—	17	in.-lb.
Module Weight (Typical)	—	420	Grams
V Isolation	V_{RMS}	2500	Volts

Electrical Characteristics, $T_j = 25^\circ\text{C}$ unless otherwise specified

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Collector Cutoff Current	I_{CEV}	$V_{CE} = 600\text{V}, V_{BE} = -2\text{V}$	—	—	2	mA
		$V_{CE} = 600\text{V}, V_{BE} = -2\text{V}, T_C = 125^\circ\text{C}$	—	—	15	mA
Emitter Cutoff Current	I_{EBO}	$V_{EB} = 7\text{V}$	—	—	300	mA
DC Current Gain	h_{FE}	$I_C = 150\text{A}, V_{CE} = 2\text{V}$	75	—	—	—
		$I_C = 150\text{A}, V_{CE} = 5\text{V}$	100	—	—	—
Diode Forward Voltage	V_{FM}	$I_{FM} = 150\text{A}$	—	—	1.85	Volts
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 150\text{A}, I_B = 2\text{A}$	—	—	2.0	Volts
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 150\text{A}, I_B = 2\text{A}$	—	—	2.5	Volts
Resistive	Turn-on	t_{on}	$V_{CC} = 300\text{V}$	—	—	2.5 μs
Load	Storage Time	t_s	$I_C = 150\text{A}$	—	—	12 μs
Switch Times	Fall Time	t_f	$I_{B1} = 2\text{A}, I_{B2} = -2\text{A}$	—	—	3.0 μs

Thermal and Mechanical Characteristics, $T_j = 25^\circ\text{C}$ unless otherwise specified

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal Resistance, Case-to-Sink	$R_{\theta(c-s)}$	Per 1/2 Module	—	—	0.1	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Case	$R_{\theta(j-c)}$	Transistor Part	—	—	0.18	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Case	$R_{\theta(j-c)}$	Diode Part	—	—	0.6	$^\circ\text{C/W}$



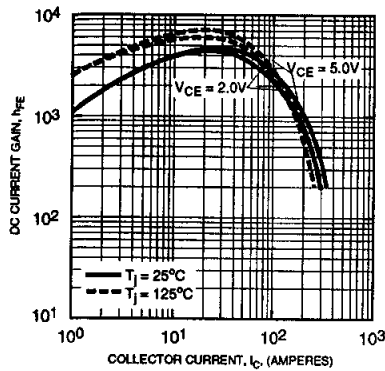
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KD324515

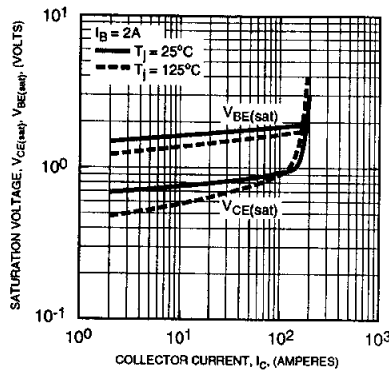
Dual Darlington Transistor Module

150 Amperes/600 Volts

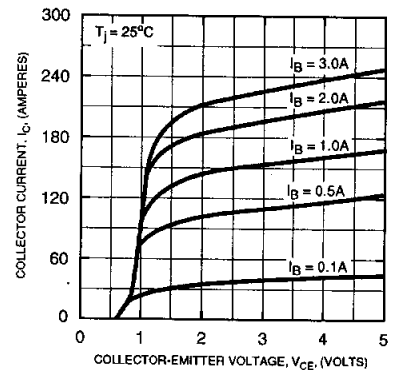
DC CURRENT GAIN
(TYPICAL)



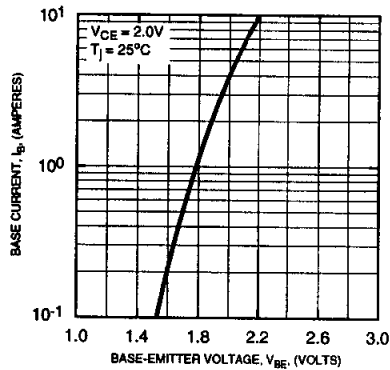
SATURATION VOLTAGE
(TYPICAL)



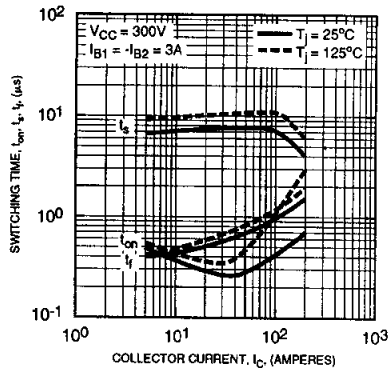
COMMON EMITTER OUTPUT
CHARACTERISTICS (TYPICAL)



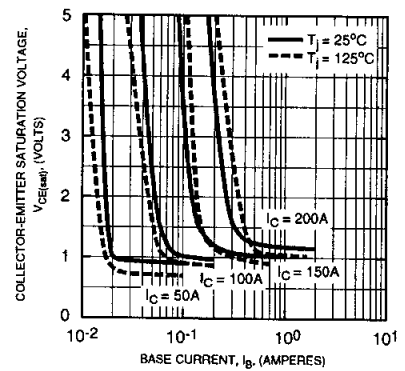
COMMON EMITTER INPUT
CHARACTERISTICS (TYPICAL)



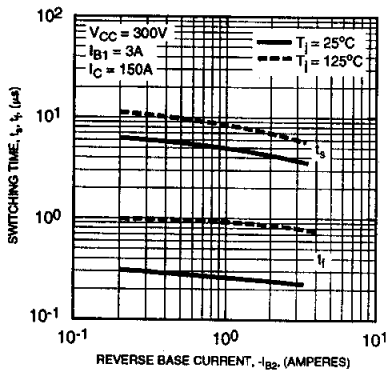
SWITCHING CHARACTERISTICS
(TYPICAL)



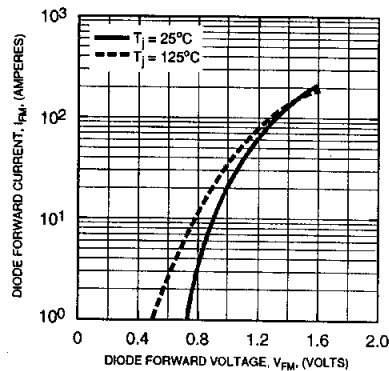
COLLECTOR-EMITTER SATURATION
VOLTAGE (TYPICAL)



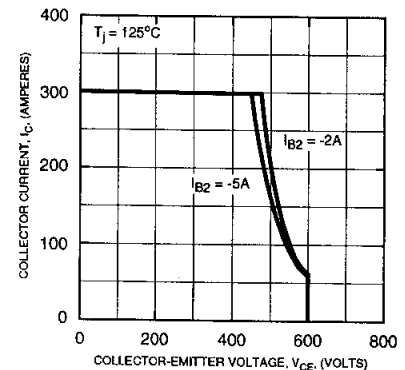
SWITCHING TIME VS. BASE CURRENT
(TYPICAL)



DIODE CHARACTERISTICS
(TYPICAL)

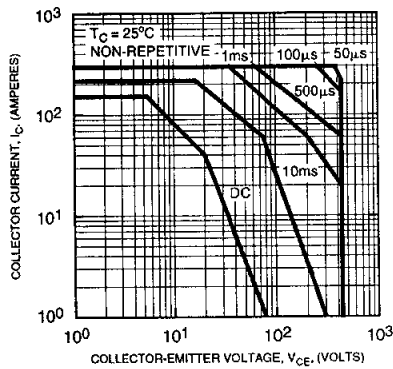


REVERSE BIAS SAFE OPERATING AREA
(RBSOA)

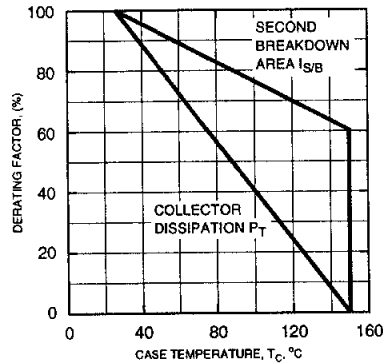


KD324515
Dual Darlington Transistor Module
 150 Amperes/600 Volts

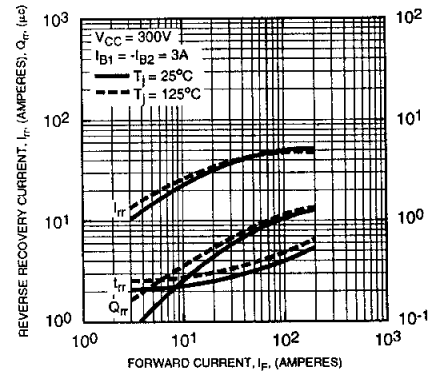
FORWARD BIAS SAFE OPERATING AREA (SOA)



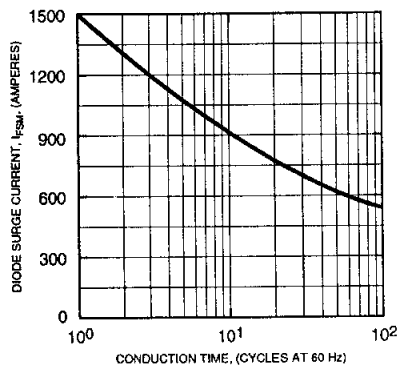
DERATING FACTOR OF SAFE OPERATING AREA (SOA)



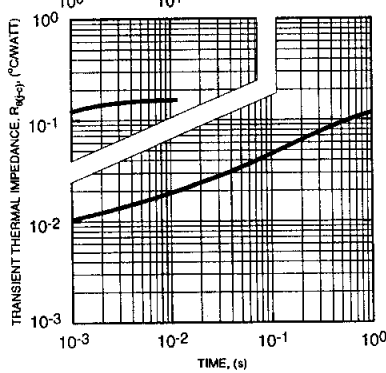
REVERSE RECOVERY CHARACTERISTICS OF FREE-WHEEL DIODE (TYPICAL)



DIODE FORWARD SURGE CURRENT



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (TRANSISTOR)



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (DIODE)

