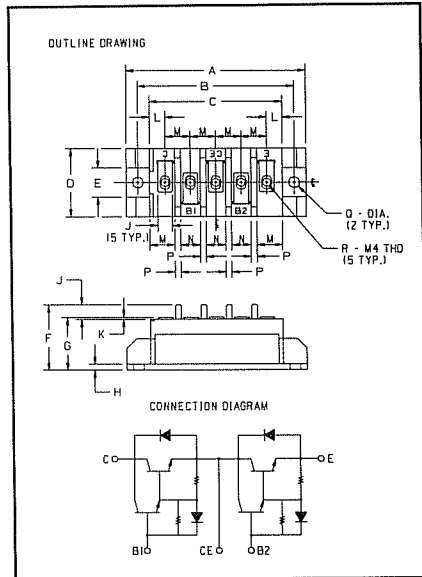
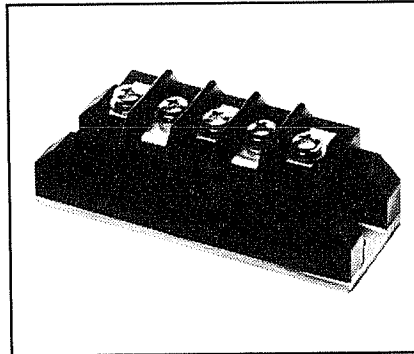


### Dual Darlington Transistor Module 30 Amperes/600 Volts



600 Volt KD524503  
Outline Drawing

Dimension	Inches	Millimeters
A	3.622 ± .016	92 ± 0.4
B	3.150 ± .012	80 ± 0.3
C	2.677 + .00/- .02	68 + 0.0/- 0.5
D	1.378 ± .016	35 ± 0.4
E	.590 ± .016	15 ± 0.4
F	1.319 Max.	33.5 Max.
G	1.063 + .02/- .00	27 + 0.5/- 0.0
H	.122 Max.	3.1 Max.
J	.295 ± .004	7.5 ± 0.1
K	.039	1
L	.315	8
M	.512	13
N	.394	10
P	.118	3
Q	.216 + .000/ - .006 Dia.	5.5 + 0.00/ - 0.15 Dia.
R	M4 Metric	M4



KD524503  
Dual Darlington  
Transistor Module  
30 Amperes/600 Volts

#### Description

Powerex Dual Darlington Transistor Modules are medium power devices which 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. KD524503 is a 450  $V_{CE0(SUS)}$  (600  $V_{CEV}$ ), 30 Ampere Dual Darlington Module.

Type	$V_{CE0(SUS)}$ Volts ( $\times 10$ )	Current Rating Amperes ( $\times 10$ )
KD52	45	03



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

KD524503

Dual Darlington Transistor Module

30 Amperes/600 Volts

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

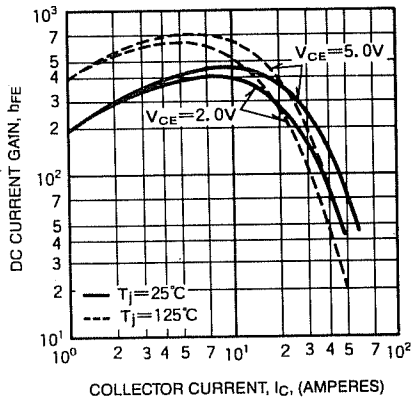
	Symbol	KD524503	Units
Junction Temperature	$T_J$	- 40 to 150	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	- 40 to 125	$^\circ\text{C}$
Collector-Emitter Sustaining Voltage	$V_{CE(SUS)}$	450	Volts
Collector-Emitter Sustaining Voltage $V_{BE} = -2\text{V}$	$V_{CEV(SUS)}$	600	Volts
Collector-Base Voltage	$V_{CBO}$	600	Volts
Emitter-Base Voltage	$V_{EBO}$	7	Volts
Collector-Emitter Voltage $V_{BE} = -2\text{V}$	$V_{CEV}$	600	Volts
Continuous Collector Current	$I_C$	30	Amperes
Diode Forward Current	$I_{FM}$	30	Amperes
Continuous Base Current	$I_B$	1.8	Amperes
Diode Surge Current	$I_{FSM}$	300	Amperes
Power Dissipation, Each Transistor	$P_T$	250	Watts
Max. Mounting Torque M4 Terminal Screw	—	12	in-lb.
Max. Mounting Torque M5 Mounting Screw	—	17	in-lb.
Module Weight	—	7	Oz
Module Weight	—	200	Grams
V isolation	$V_{RMS}$	2000	Volts

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

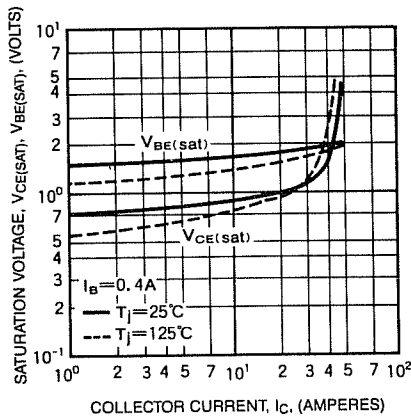
Characteristics	Symbol	Test Conditions	KD524503			Units	
			Min.	Typ.	Max.		
Collector Cutoff Current	$I_{CEV}$	$V_{CE} = 600\text{V}, V_{BE} = -2\text{V}$	—	—	1	mA	
Collector Cutoff Current	$I_{CEV}$	$V_{CE} = 600\text{V}, V_{BE} = -2\text{V}$ $T_C = 125^\circ\text{C}$	—	—	5	mA	
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = 7\text{V}$	—	—	200	mA	
DC Current Gain	$h_{FE}$	$I_C = 30\text{A}, V_{CE} = 2\text{V}$	75	—	—	—	
DC Current Gain	$h_{FE}$	$I_{CE} = 30\text{A}, V_{CE} = 5\text{V}$	100	—	—	—	
Diode Forward Voltage	$V_{FM}$	$I_{FM} = 30\text{A}$	—	—	1.85	V	
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C = 30\text{A}, I_B = .4\text{A}$	—	—	2.0	V	
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	$I_C = 30\text{A}, I_B = .4\text{A}$	—	—	2.5	V	
Resistive	Turn On	$t_{on}$	$V_{CC} = 300\text{V}$	—	—	1.5	$\mu\text{s}$
Load	Storage Time	$t_s$	$I_C = 30\text{A}$	—	—	12	$\mu\text{s}$
Switch Times	Fall Time	$t_f$	$I_{B1} = .5\text{A}, I_{B2} = -.5\text{A}$	—	—	3.0	$\mu\text{s}$
Thermal Resistance, Case to Sink Lubricated	$R_{\theta CS}$	Per Half Module	—	—	0.15	$^\circ\text{C}/\text{W}$	
Thermal Resistance, Junction to Case	$R_{\theta JC}$	Transistor Part	—	—	0.5	$^\circ\text{C}/\text{W}$	
Thermal Resistance, Junction to Case	$R_{\theta JC}$	Diode Part	—	—	2.0	$^\circ\text{C}/\text{W}$	

**KD524503**  
**Dual Darlington Transistor Module**  
 30 Amperes/600 Volts

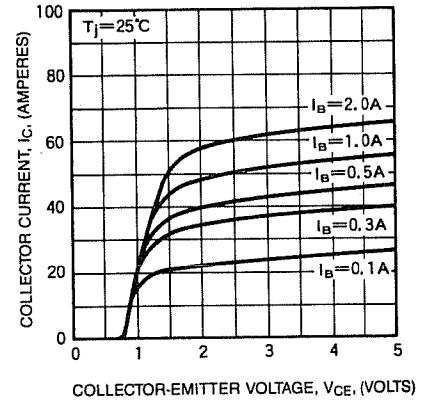
**DC CURRENT GAIN (TYPICAL)**



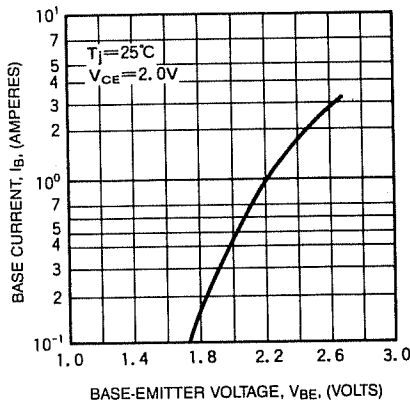
**SATURATION VOLTAGE (TYPICAL)**



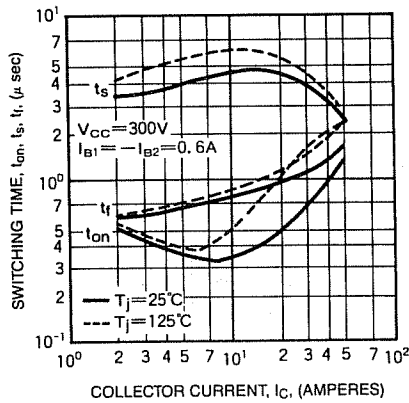
**COMMON EMITTER OUTPUT CHARACTERISTICS (TYPICAL)**



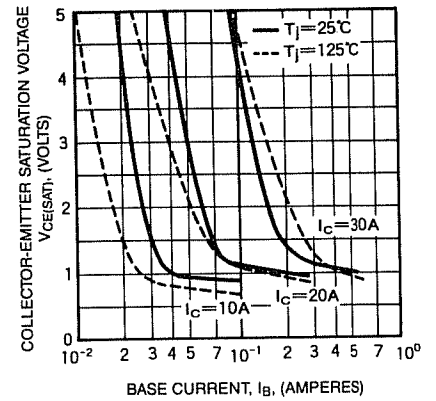
**COMMON EMITTER INPUT CHARACTERISTICS (TYPICAL)**



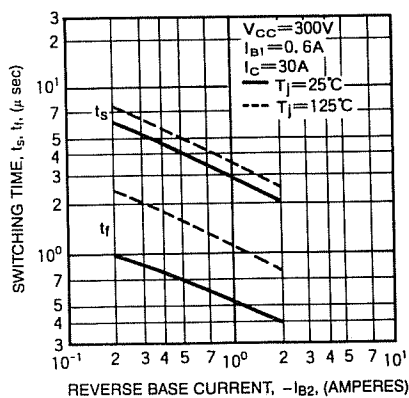
**SWITCHING CHARACTERISTICS (TYPICAL)**



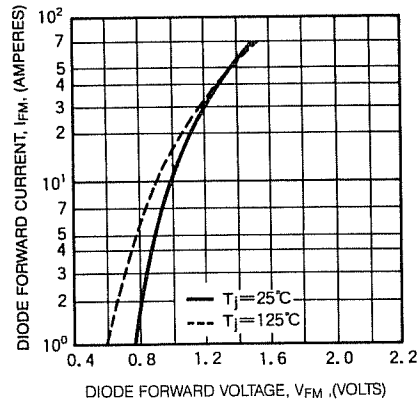
**COLLECTOR-EMITTER SATURATION VOLTAGE (TYPICAL)**



**SWITCHING TIME VS. BASE CURRENT (TYPICAL)**



**DIODE CHARACTERISTICS (TYPICAL)**



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

