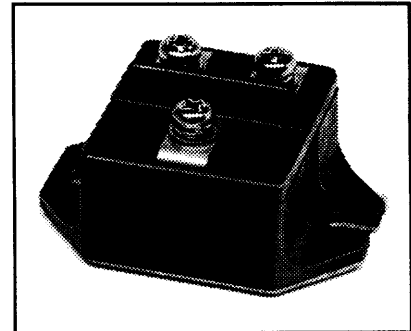
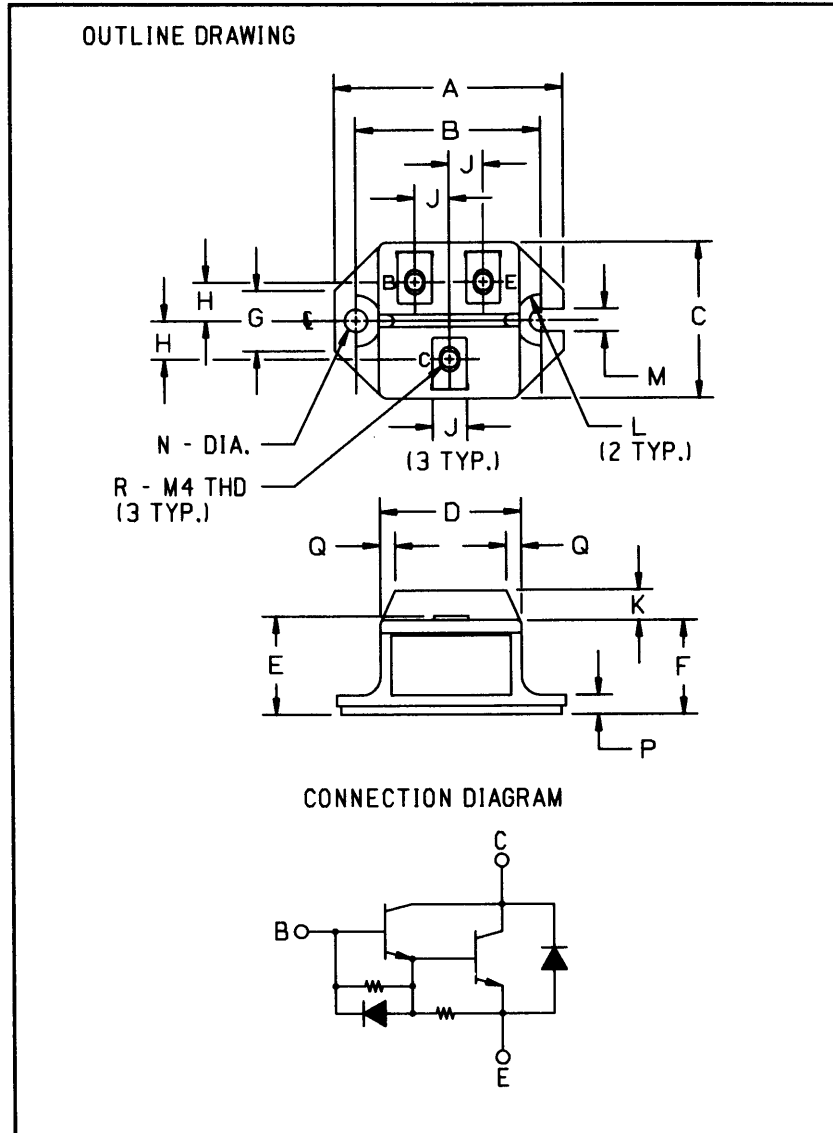


Single Darlington Transistor Module 30 Amperes/600 Volts



Description:

The Powerex Single Darlington Transistor Modules are high power devices designed for use in switching applications. The modules are isolated, consisting of one Darlington Transistor with a reverse parallel connected high-speed diode and base-to-emitter speed-up diode.

Features:

- Isolated Mounting
- Planar Chips
- Discrete Fast Recovery Feedback 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. KS524503 is a 450 $V_{CE0(sus)}$ (600 V_{CEV}), 30 Ampere Single Darlington Module.

Outline Drawing

Dimensions	Inches	Millimeters
A	2.106	53.5
B	1.705 ± 0.008	43.3 ± 0.02
C	1.437	36.5
D	1.299	33
E	0.925	23.5
F	0.866	22
G	0.551	14
H	0.354	9

Dimensions	Inches	Millimeters
J	0.315	8
K	0.276	7
L	0.236 Rad.	6 Rad.
M	0.209	5.3
N	0.209 Dia.	5.3 Dia.
P	0.177	4.5
Q	0.138	3.5
R	M4 Metric	M4

Type	$V_{CE0(sus)}$ Volts (X 10)	Current Rating Amperes (x 10)
KS52	45	03



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

KS524503
Single Darlington Transistor Module
 30 Amperes/600 Volts

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

Ratings	Symbol	KS524503	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, $V_{BE} = -2\text{V}$	$V_{CEV(sus)}$	600	Volts
Collector-Base Voltage	V_{CBO}	600	Volts
Emitter-Base Voltage	V_{EBO}	7	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	P_t	250	Watts
Max. Mounting Torque M4 Terminal Screws	-	12	in.-lb.
Max. Mounting Torque M5 Mounting Screws	-	17	in.-lb.
Module Weight (Typical)	-	90	Grams
V Isolation	V_{RMS}	2500	Volts

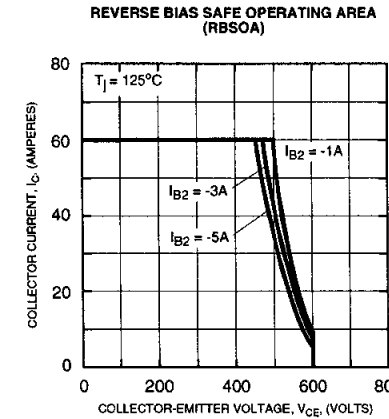
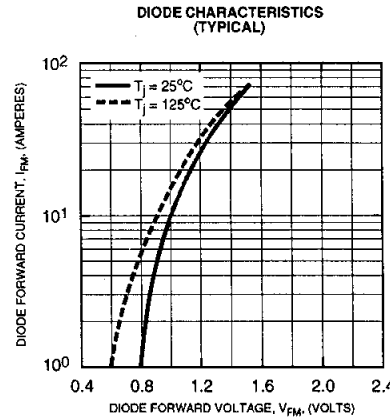
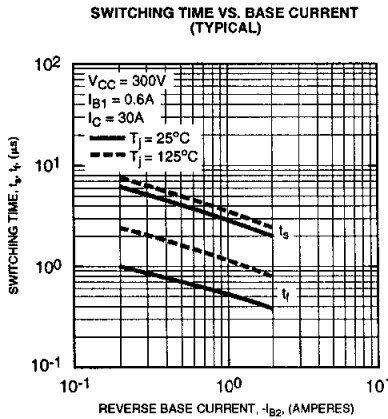
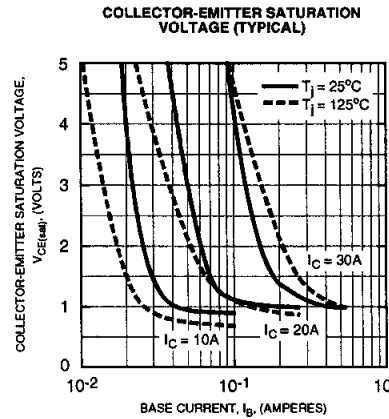
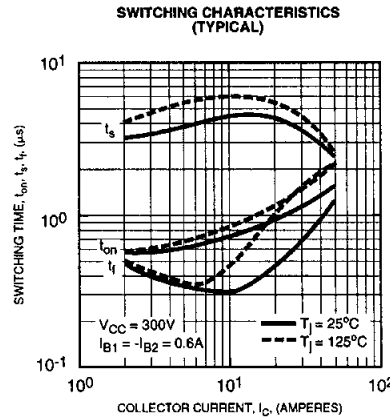
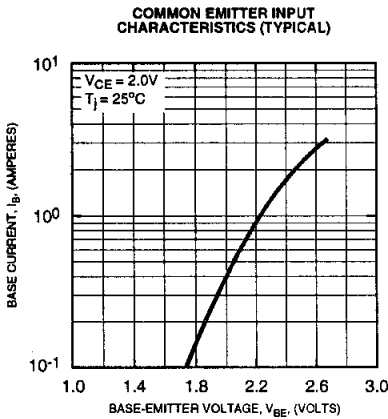
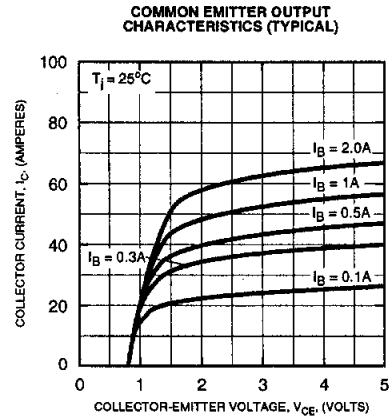
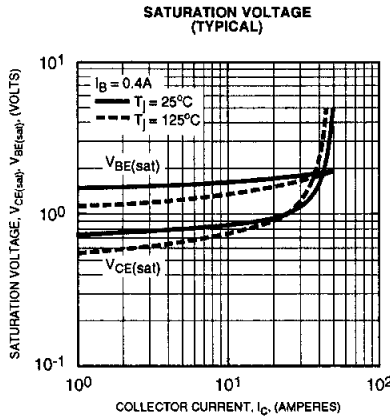
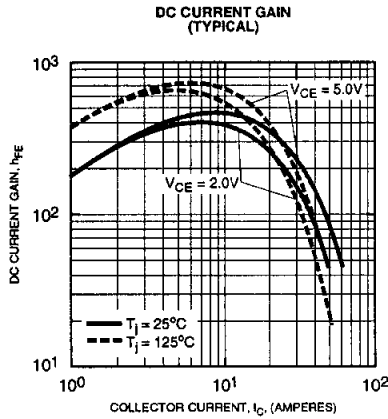
Electrical Characteristics, $T_j = 25\text{ }^\circ\text{C}$ unless otherwise specified

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units	
Collector Cutoff Current	I_{CEV}	$V_{CE} = V_{CEV}, V_{BE} = -2\text{V}$	-	-	1	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	-	-	-	
		$I_C = 30\text{A}, V_{CE} = 5\text{V}$	100	-	-	-	
Diode Forward Voltage	V_{FM}	$I_{FM} = 30\text{A}$	-	-	1.85	Volts	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 30\text{A}, I_B = 0.4\text{A}$	-	-	2.0	Volts	
Base-emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 30\text{A}, I_B = 0.4\text{A}$	-	-	2.5	Volts	
Resistive	Turn-on	t_{on}	$V_{CC} = 300\text{V}$	-	-	1.5	μs
Load	Storage Time	t_s	$I_C = 30\text{A}$	-	-	12	μs
Switch Times	Fall Time	t_f	$I_{B1} = -I_{B2} = 0.6\text{A}$	-	-	3.0	μs

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

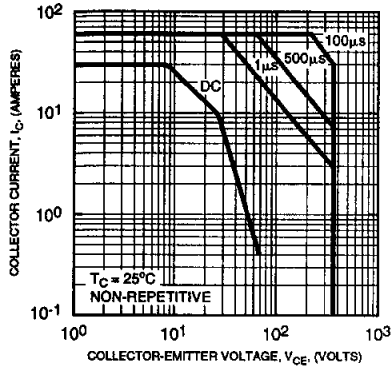
Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal Resistance, Case-to-Sink	$R_{\theta(c-s)}$	-	-	-	0.15	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Case	$R_{\theta(j-c)}$	Transistor Part	-	-	0.5	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Case	$R_{\theta(j-c)}$	Diode Part	-	-	2.0	$^\circ\text{C/W}$

KS524503
Single Darlington Transistor Module
30 Amperes/600 Volts

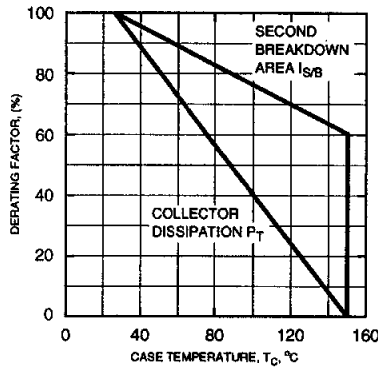


KS524503
Single Darlington Transistor Module
30 Amperes/600 Volts

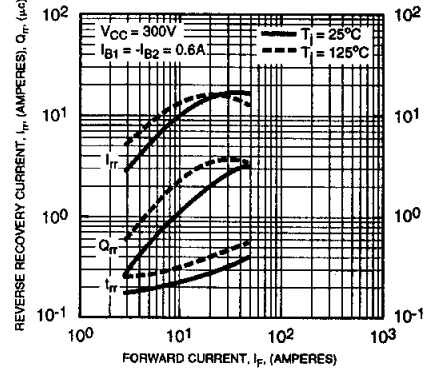
FORWARD BIAS SAFE OPERATING AREA (SOA)



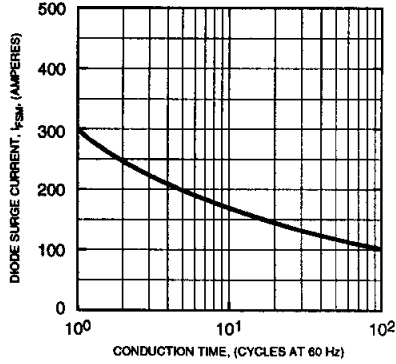
DERATING FACTOR OF SAFE OPERATING AREA (SOA)



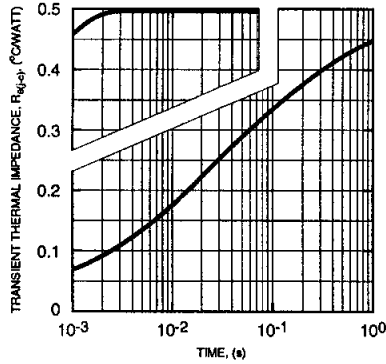
REVERSE RECOVERY CHARACTERISTICS OF FREE-WHEEL DIODE (TYPICAL)



DIODE FORWARD SURGE CURRENT



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (TRANSISTOR)



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (DIODE)

