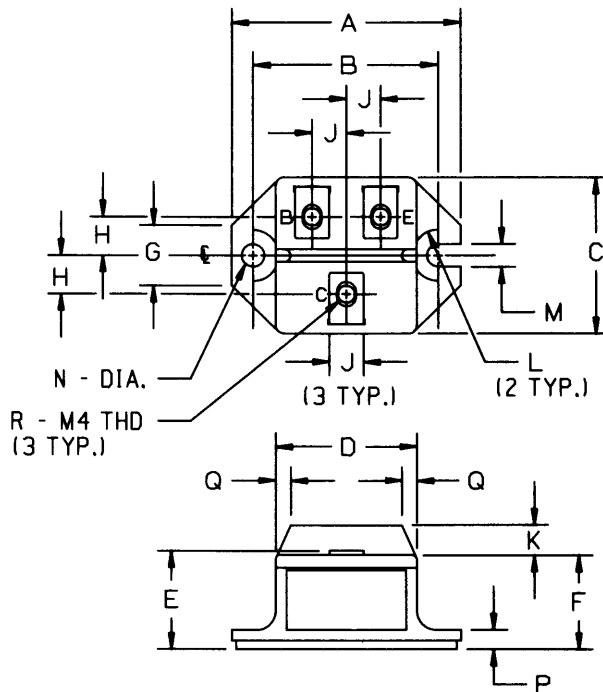
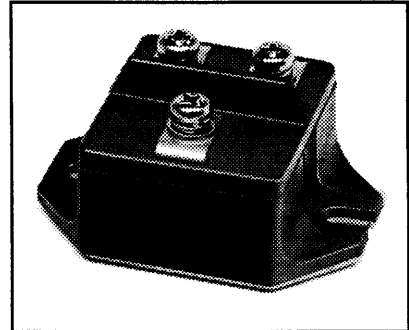
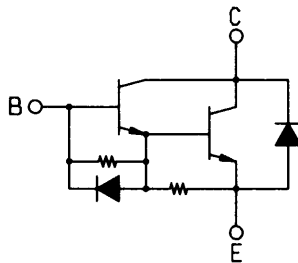


Single Darlington Transistor Module 75 Amperes/600 Volts

OUTLINE DRAWING



CONNECTION DIAGRAM



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. KS524575 is a 450 V_{CEO(sus)} (600 V_{CEV}), 75 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 _{CEO(sus)} Volts (X 10)	Current Rating Amperes (75)
KS52	45	75



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

KS524575
Single Darlington Transistor Module
75 Amperes/600 Volts

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

Ratings	Symbol	KS524575	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	$V_{\text{CEO(sus)}}$	450	Volts
Collector-Emitter Sustaining Voltage, $V_{\text{BE}} = -2\text{V}$	$V_{\text{CEV(sus)}}$	600	Volts
Collector-Base Voltage	V_{CBO}	600	Volts
Emitter-Base Voltage	V_{EBO}	7	Volts
Continuous Collector Current	I_C	75	Amperes
Diode Forward Current	I_{FM}	75	Amperes
Continuous Base Current	I_B	4.5	Amperes
Diode Surge Current	I_{FSM}	750	Amperes
Power Dissipation	P_t	350	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

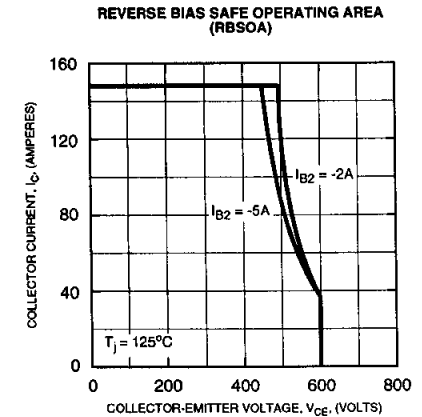
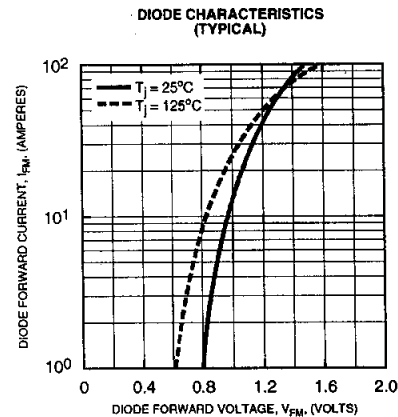
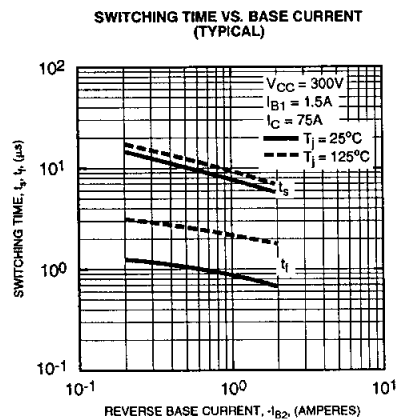
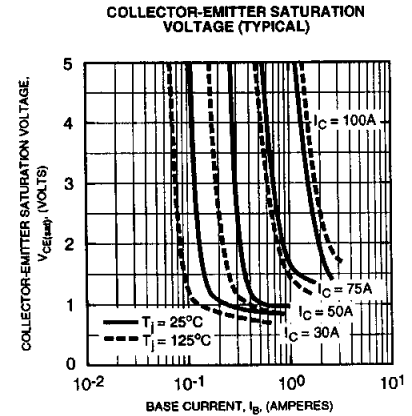
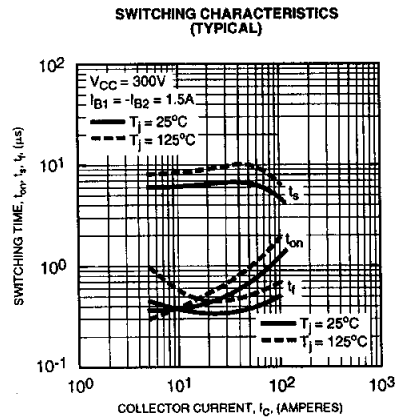
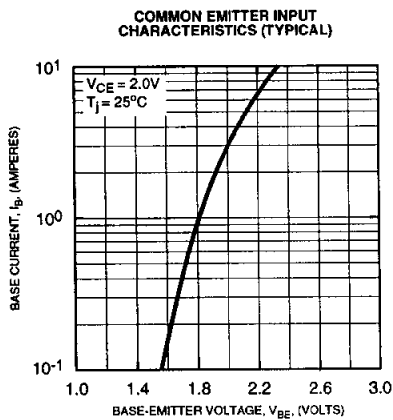
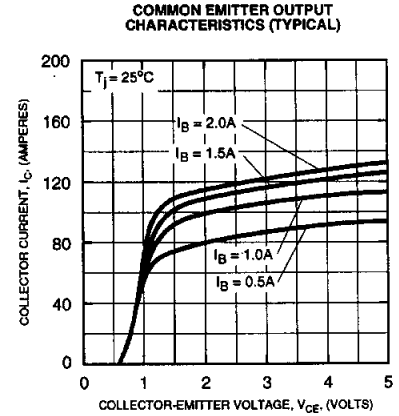
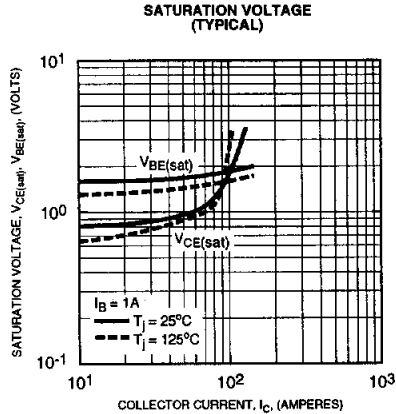
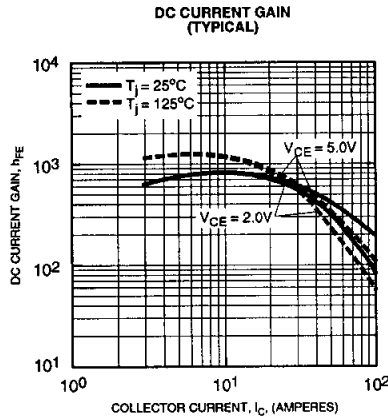
Electrical Characteristics, $T_j = 25^\circ\text{C}$ unless otherwise specified

Characteristics		Symbol	Test Conditions	Min.	Typ.	Max.	Units	
Collector Cutoff Current		I_{CEV}	$V_{\text{CE}} = V_{\text{CEV}}, V_{\text{BE}} = -2\text{V}$	—	—	1	mA	
Emitter Cutoff Current		I_{EBO}	$V_{\text{EB}} = 7\text{V}$	—	—	200	mA	
DC Current Gain		h_{FE}	$I_{\text{C}} = 75\text{A}, V_{\text{CE}} = 2\text{V}$	75	—	—	—	
			$I_{\text{C}} = 30\text{A}, V_{\text{CE}} = 5\text{V}$	100	—	—	—	
Diode Forward Voltage		V_{FM}	$I_{\text{FM}} = 75\text{A}$	—	—	1.85	Volts	
Collector-Emitter Saturation Voltage		$V_{\text{CE(sat)}}$	$I_{\text{C}} = 75\text{A}, I_{\text{B}} = 1\text{A}$	—	—	2.0	Volts	
Base-emitter Saturation Voltage		$V_{\text{BE(sat)}}$	$I_{\text{C}} = 75\text{A}, I_{\text{B}} = 1\text{A}$	—	—	2.5	Volts	
Resistive Load	Turn-on	t_{on}	$V_{\text{CC}} = 300\text{V}$	—	—	2.5	μs	
	Storage Time	t_{s}	$I_{\text{C}} = 75\text{A}$	—	—	12	μs	
Switch Times		Fall Time	t_{f}	$I_{\text{B1}} = I_{\text{B2}} = -1.5\text{A}$	—	—	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	$R_{\theta(\text{c-s})}$	—	—	—	0.3	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Case	$R_{\theta(\text{j-c})}$	Transistor Part	—	—	0.35	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Case	$R_{\theta(\text{j-c})}$	Diode Part	—	—	1.3	$^\circ\text{C/W}$

KS524575
Single Darlington Transistor Module
 75 Amperes/600 Volts



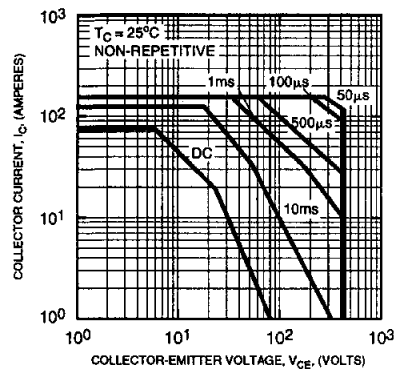


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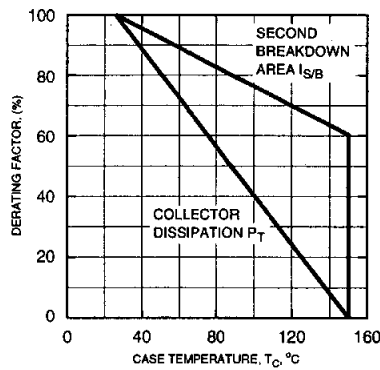
KS524575

Single Darlington Transistor Module
75 Amperes/600 Volts

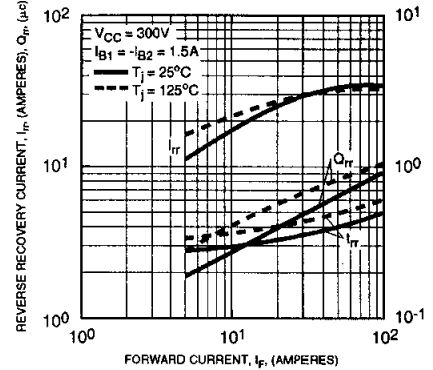
FORWARD BIAS SAFE OPERATING AREA (SOA)



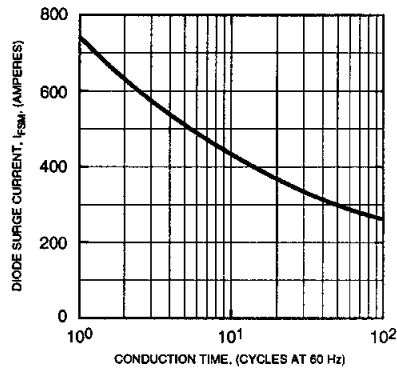
DERATING FACTOR OF SAFE OPERATING AREA (SOA)



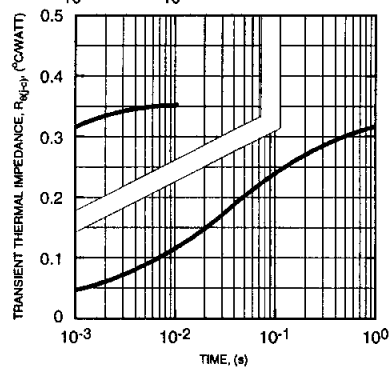
REVERSE RECOVERY CHARACTERISTICS OF FREE-WHEEL DIODE (TYPICAL)



DIODE FORWARD SURGE CURRENT



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (TRANSISTOR)



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (DIODE)

