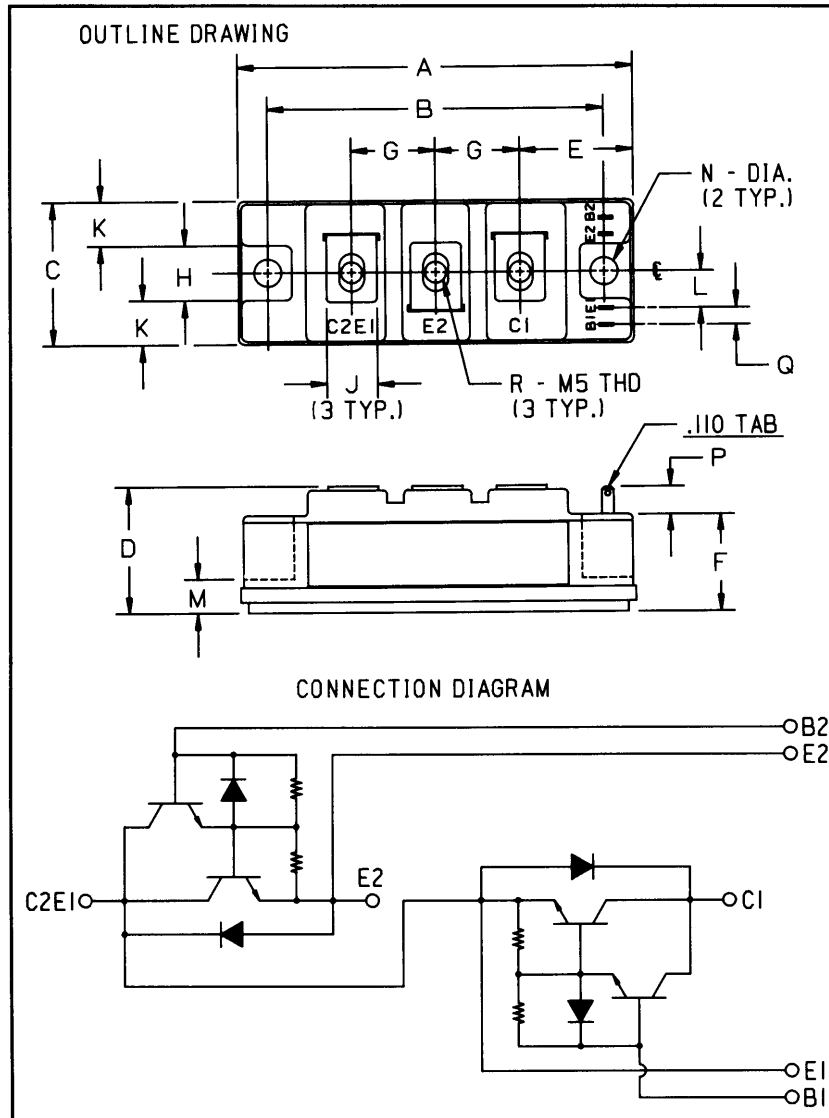


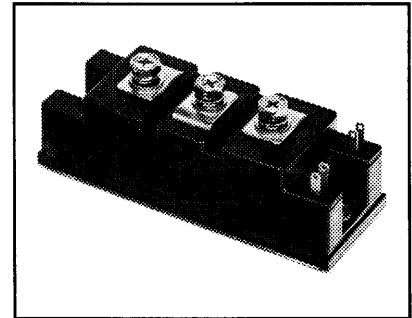
Dual Darlington Transistor Module 50 Amperes/600 Volts



Outline Drawing

Dimensions	Inches	Millimeters
A	3.701 Max.	94 Max.
B	3.150 ± 0.010	80 ± 0.25
C	1.339 Max.	34 Max.
D	1.181 Max.	30 Max.
E	1.063	27
F	0.906	23
G	0.787	20
H	0.512	13

Dimensions	Inches	Millimeters
J	0.472	12
K	0.413	10.5
L	0.344	8.75
M	0.315	8
N	0.256 Dia.	6.5 Dia.
P	0.256 Min.	6.5 Min.
Q	0.157	4
R	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. KD224505 is a 450 $V_{CE(sus)}$ (600 V_{CEV}), 50 Ampere Dual Darlington Module.

Type	$V_{CE(sus)}$ Volts (X 10)	Current Rating Amperes (X 10)
KD22	45	05



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

KD224505
Dual Darlington Transistor Module
50 Amperes/600 Volts

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

Ratings	Symbol	KD224505	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
Collector-Emitter Voltage, $V_{\text{BE}} = -2\text{V}$	V_{CEV}	600	Volts
Continuous Collector Current	I_{C}	50	Amperes
Diode Forward Current	I_{FM}	50	Amperes
Continuous Base Current	I_{B}	3	Amperes
Diode Surge Current	I_{FSM}	500	Amperes
Power Dissipation (Each Transistor)	P_{t}	310	Watts
Max. Mounting Torque M5 Terminal Screws	—	17	in.-lb.
Max. Mounting Torque M6 Mounting Screws	—	26	in.-lb.
Module Weight (Typical)	—	200	Grams
V Isolation	V_{RMS}	2000	Volts

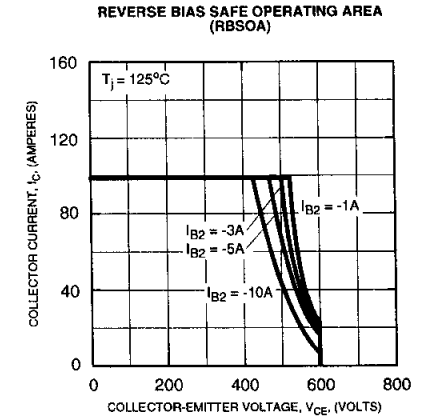
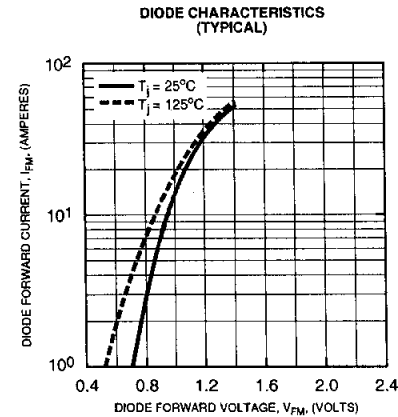
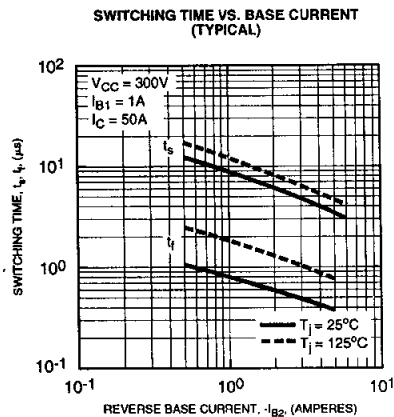
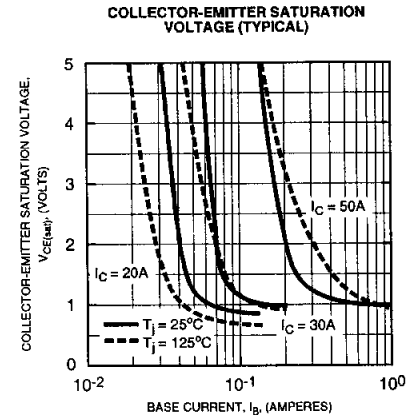
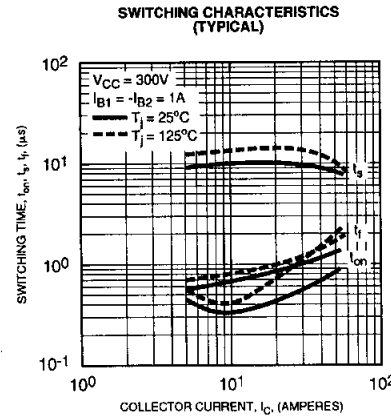
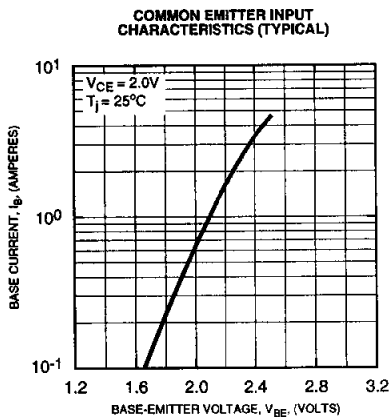
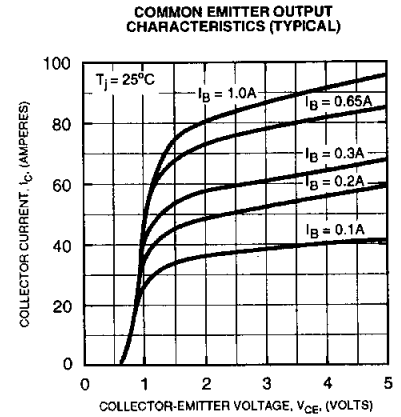
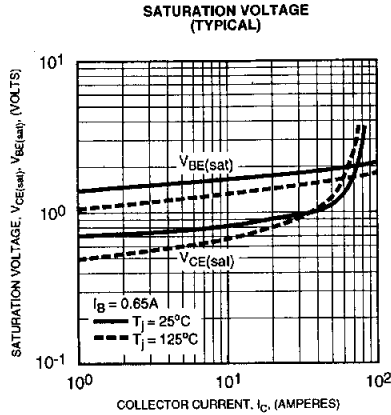
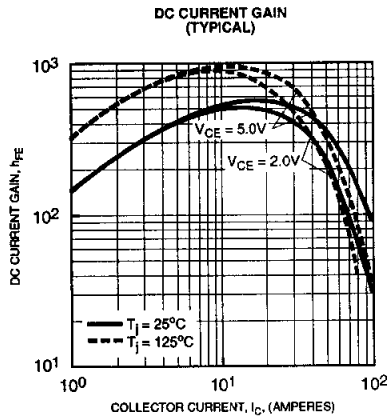
Electrical Characteristics, $T_j = 25^\circ\text{C}$ unless otherwise specified

Characteristics		Symbol	Test Conditions	Min.	Typ.	Max.	Units
Collector Cutoff Current		I_{CEV}	$V_{\text{CE}} = 600\text{V}, V_{\text{BE}} = -2\text{V}$	—	—	1	mA
			$V_{\text{CE}} = 600\text{V}, V_{\text{BE}} = -2\text{V}, T_{\text{C}} = 125^{\circ}\text{C}$	—	—	5	mA
Emitter Cutoff Current		I_{EBO}	$V_{\text{EB}} = 7\text{V}$	—	—	200	mA
DC Current Gain		h_{FE}	$I_{\text{C}} = 50\text{A}, V_{\text{CE}} = 2\text{V}$	75	—	—	—
			$I_{\text{C}} = 50\text{A}, V_{\text{CE}} = 5\text{V}$	100	—	—	—
Diode Forward Voltage		V_{FM}	$I_{\text{FM}} = 30\text{A}$	—	—	1.75	Volts
Collector-Emitter Saturation Voltage		$V_{\text{CE(sat)}}$	$I_{\text{C}} = 50\text{A}, I_{\text{B}} = 0.65\text{A}$	—	—	2.0	Volts
Base-Emitter Saturation Voltage		$V_{\text{BE(sat)}}$	$I_{\text{C}} = 50\text{A}, I_{\text{B}} = 0.65\text{A}$	—	—	2.5	Volts
Resistive	Turn-on	t_{on}	$V_{\text{CC}} = 300\text{V}$	—	—	1.5	μs
Load	Storage Time	t_{s}	$I_{\text{C}} = 50\text{A}$	—	—	12	μs
Switch Times	Fall Time	t_{f}	$I_{\text{B1}} = 1\text{A}, I_{\text{B2}} = -1\text{A}$	—	—	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	$R_{\theta(\text{c-s})}$	Per 1/2 Module	—	—	0.15	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Case	$R_{\theta(\text{j-c})}$	Transistor Part	—	—	0.4	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Case	$R_{\theta(\text{j-c})}$	Diode Part	—	—	1.3	$^\circ\text{C/W}$

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