

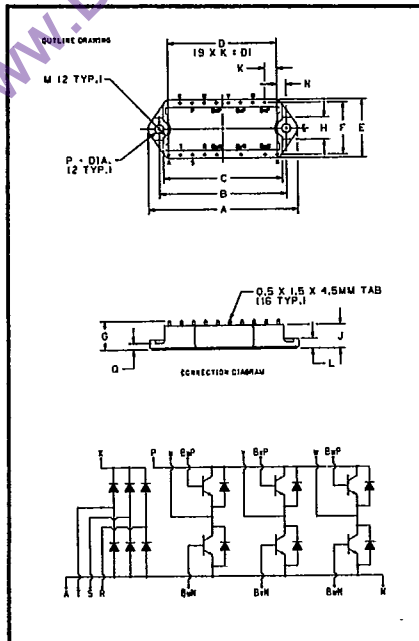


**KMG24501HB**

T-33-35

Powerex, Inc., Hillis Street, Youngwood, Pennsylvania 15697 (412) 925-7272  
 Powerex Europe, S.A., 428 Avenue G. Durand, BP107, 72003 Le Mans, France (43) 41.14.14

**Diode Bridge Input,  
 High Gain Darlington  
 Transistor Output  
 Converter Module  
 10 Amperes/600 Volts**



**600 Volt KMG24501HB  
 Outline Drawing**

Dimension	Inches	Millimeters
A	3.70	94.0
B	3.15	80.0
C	2.95	75.0
D	2.700	68.58
E	1.46	37.0
F	1.30	33.0
G	.71	18.0
H	.55	14.0
J	.53	13.5
K	.300	7.62
L	.24	6.0
M	.24 R	R 6.0
N	.225	5.71
P	.216 Dia.	Dia. 5.50
Q	.16	4.0

**Description**

Powerex Converter Modules are designed for use in switching type of converter and inverter applications. Each module consists of a six-Diode Input Rectifying Bridge, and a six-Darlington Transistor, Three Phase Output Inverter with each transistor having a reverse parallel connected high-speed diode. All chips and interconnect are isolated from the heat sinking baseplate, offering simplified system assembly and thermal management.

**Features:**

- Diode Input Bridge and Darlington Transistor Output Bridge in One Module
- 30A DC Output from Diode Bridge
- 10A Darlington Collector Current
- Isolated Mounting
- Planar Processes
- Discrete Fast Recovery Feed-Back Diode Around Darlington
- High Gain Darlington Transistors (hFE = 250)
- Terminal Compatible for P.C. Board Mounting
- Base Emitter Speed Up Diodes

**Applications:**

- DC Brushless Motor Control
- DC Converters
- DC Motor Control
- AC Motor Control
- Inverters
- Switching Power Supplies

**Ordering Information**

Example: Select the complete ten digit module part number from the table below — i.e. KMG24501HB is a 450 Volt  $V_{CE0(SUS)}$ , 600 Volt  $V_{CEV(SUS)}$ , 10 Ampere Collector Current Converter Module.

Type	$V_{CE0(SUS)}$ 450 Volts	Current Rating 10 Amperes	High Gain
KMG2	45	01	HB



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High Gain Darlington Transistor Output Converter Module

10 Amperes/600 Volts

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

	Symbol	KMG24501HB	Units
Junction Temperature	$T_J$	-40 to +150	$^\circ\text{C}$
Storage Temperature	$T_{\text{STG}}$	-40 to +125	$^\circ\text{C}$
Mounting Torque, Mounting Screws (M5)		12	in-lb
Module Weight (Typical)		—	Grams
V isolation	$V_{\text{isol}}$	2500	Volts
<b>Transistor Inverter Section</b>			
Collector-Emitter Sustaining Voltage	$V_{\text{CEO(sus)}}$	450	Volts
Emitter-Base Voltage	$V_{\text{EBO}}$	7	Volts
Collector-Emitter Voltage ( $V_{\text{BE}} = -2\text{V}$ )	$V_{\text{CEV}}$	600	Volts
Collector-Base Voltage	$V_{\text{CBO}}$	600	Volts
Collector Current	$I_C$	10	Amperes
Base Current	$I_b$	1	Amperes
Free Wheel Diode DC Current	$I_{\text{FM}}$	10	Amperes
Free Wheel Diode Surge Current	$I_{\text{FSM}}$	100	Amperes
<b>Diode Bridge Rectifier Section</b>			
Repetitive Peak Blocking Voltage	$V_{\text{RRM}}$	800	Volts
Transient Peak Reverse Blocking Voltage	$V_{\text{RSM}}$	900	Volts
DC Current	$I_{\text{FM}}$	30	Amperes
Peak Half Cycle Surge Current ( $T_J = 125^\circ\text{C}$ )	$I_{\text{FSM}}$	400	Amperes
$I^2t$ for Fusing for One Cycle	$I^2t$	670	$\text{A}^2\text{-sec}$

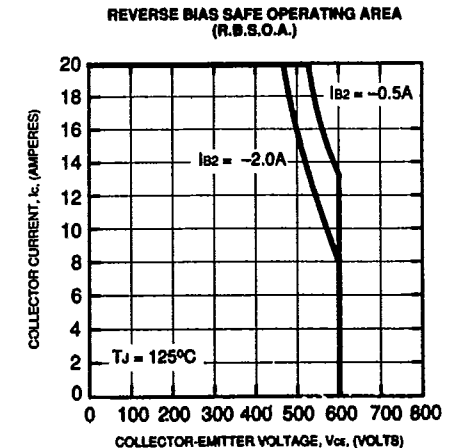
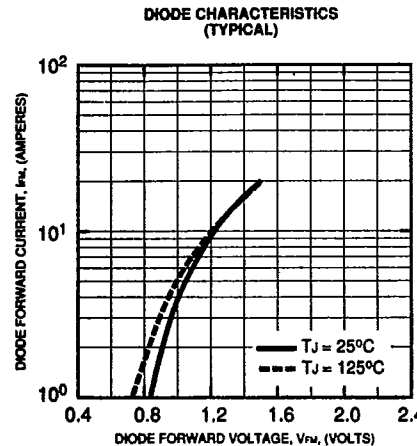
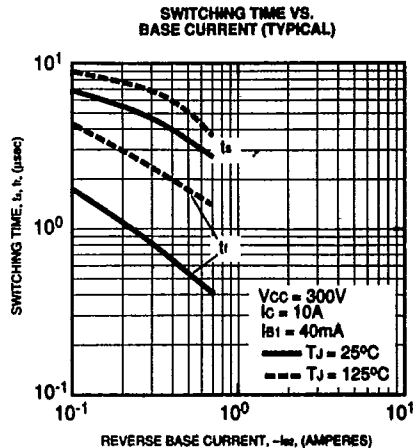
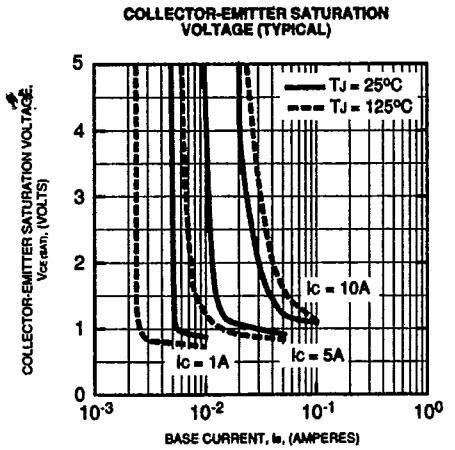
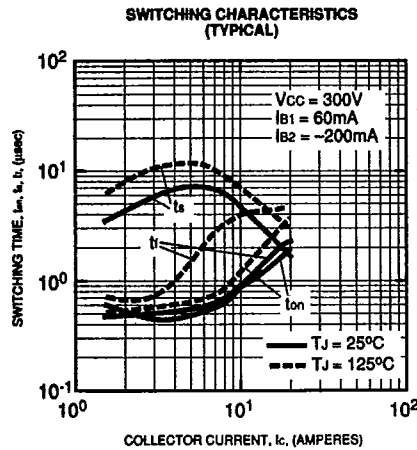
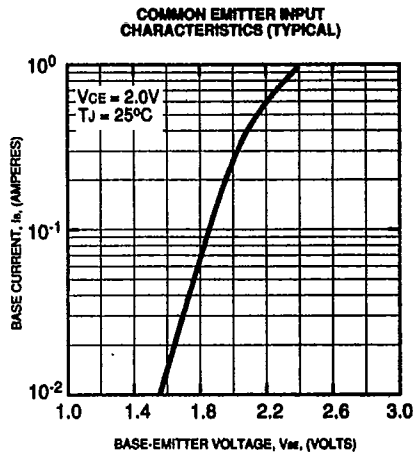
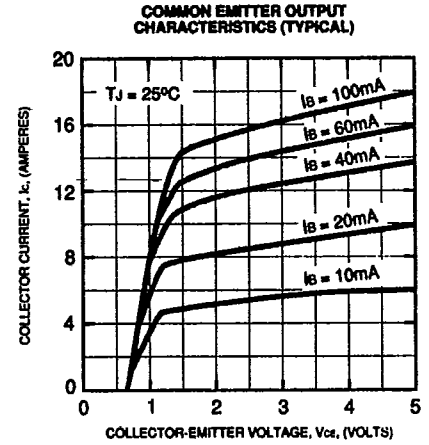
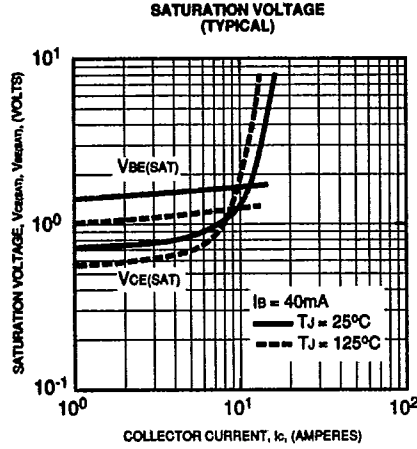
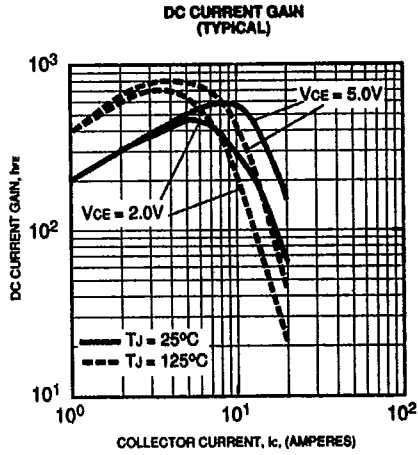
**Electrical and Mechanical Characteristics,  $T_J=25^\circ\text{C}$  unless otherwise specified**

Characteristics	Symbol	Test Conditions	Min.	KMG24501HB Typ.	Max.	Units
<b>Transistor Inverter Section</b>						
Collector-Cutoff Current	$I_{\text{CEV}}$	$V_{\text{CE}} = V_{\text{CEV}}, V_{\text{BE}} = -2\text{V}$	—	—	1	mA
Collector-Cutoff Current	$I_{\text{CBO}}$	$V_{\text{CB}} = V_{\text{CBO}}, \text{Emitter Open}$	—	—	1	mA
Emitter-Cutoff Current	$I_{\text{EBO}}$	$V_{\text{EB}} = V_{\text{EBO}}, \text{Collector Open}$	—	—	40	mA
DC Current Gain	$h_{\text{FE}}$	$I_C = 10\text{A}, V_{\text{CE}} = 2\text{V}$	250	—	—	
Diode Forward Voltage	$V_{\text{FM}}$	$I_C = -10\text{A}$	—	—	1.5	Volts
Collector-Emitter Saturation Voltage	$V_{\text{CE(sat)}}$	$I_C = 10\text{A}, I_b = 40\text{mA}$	—	—	2.0	Volts
Base-Emitter Saturation Voltage	$V_{\text{BE(sat)}}$	$I_C = 10\text{A}, I_b = 40\text{mA}$	—	—	2.5	Volts
Resistive Turn On	$t_{\text{on}}$	$V_{\text{CC}} = 300\text{V}$	—	—	1.5	$\mu\text{s}$
Load Storage Time	$t_s$	$I_C = 10\text{A}$	—	—	10	$\mu\text{s}$
Switch Times Fall Time	$t_f$	$I_{\text{B1}} = 60\text{mA}, -I_{\text{B2}} = 200\text{mA}$	—	—	2.0	$\mu\text{s}$
Thermal Resistance	$R_{\theta\text{JC}}$	per Transistor	—	—	1.7	$^\circ\text{C/W}$
Junction to Case	$R_{\theta\text{JC}}$	per Free Wheel Diode	—	—	2.8	$^\circ\text{C/W}$
Thermal Resistance Case to Sink, Lubricated	$R_{\theta\text{CS}}$		—	—	0.9	$^\circ\text{C/W}$
<b>Diode Bridge Rectifier Section</b>						
Repetitive Peak Reverse Current	$I_{\text{RRM}}$	$V_{\text{RM}} = V_{\text{RRM}}, T_J = 150^\circ\text{C}$	—	—	1.5	mA
Peak Forward Voltage	$V_{\text{FM}}$	$I_{\text{FM}} = 30\text{A}, T_J = 25^\circ\text{C}$	—	—	1.1	Volts
Thermal Resistance Junction to Case	$R_{\theta\text{JC}}$		—	—	0.9	$^\circ\text{C/W}$
Thermal Resistance Case to Sink, Lubricated	$R_{\theta\text{CS}}$		—	—	0.9	$^\circ\text{C/W}$



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