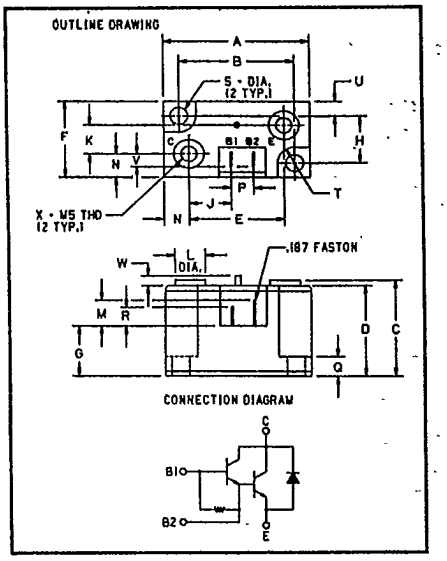
POWEREX

D67FP

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

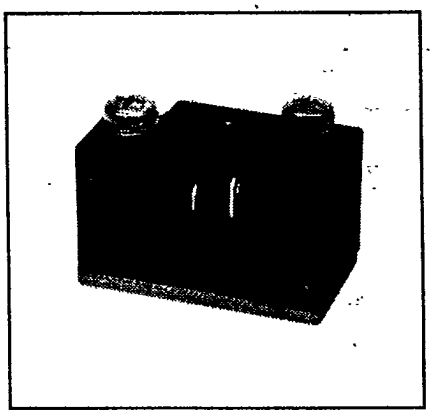
Fast Switching Single Darlington Transistor Module

100 Amperes
500-600-700 Volts



500-600-700 Volt D67FP Outline Drawing

Dimension	Inches	Millimeters
A	1.800±.015	45.7±0.4
B	1.420±.010	36±0.25
C	1.242±.030	31.55±0.8
D	1.173±.025	29.8±0.6
E	1.170	29.7
F	1.000±.015	25.4±0.4
G	.650±.035	16.5±0.9
H	.620±.010	15.7±0.25
J	.518	13.2
K	.380±.010	9.6±0.25
L	.375 Dia.	9.5 Dia.
M	.335	8.5
N	.310±.010	7.9±0.25
P	.275±.015	7±0.4
Q	.250±.015	6.4±0.4
R	.245	6.2
S	.22 Dia.	5.6 Dia.
T	.21 R	5.3 R
U	.180	4.6
V	.170	4.3
W	.120	3.1
X	M5 Metric	M5



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Description
Powerex Fast Switching Single Darlington Transistor Modules are designed for use in switching applications. The modules are isolated consisting of one Darlington Transistor with a reverse parallel connected high-speed diode.

Features:
- ☐ Isolated Mounting
- ☐ Fast Switching
- ☐ Discrete Fast Recovery Feed-Back Diode
- ☐ High Gain (h_{FE})
- ☐ Base 1 and 2 Accessible

Applications:
- ☐ PWM Inverters
- ☐ DC Motor Control
- ☐ Switching Power Supplies
- ☐ AC Motor Control

Ordering Information
Example: Select the complete six digit module part number you desire from the table - i.e. D67FP7 is a 700 Volt, 100 Ampere Fast Switching Single Darlington Module.

Type	V_{CEV} Volts (×100)	Current Rating Amperes (100)
D67FP	5	100
D67FP	6	100
D67FP	7	100

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Maximum Ratings T_J =25°C unless otherwise specified

		Symbol	D67FP	Units
Junction Temperature		T_J	−40 to 150	°C
Storage Temperature		T_{STG}	−40 to 125	°C
Collector-Emitter Sustaining Voltage	D67FP5	$V_{CEO(SUS)}$	400	Volts
Collector-Emitter Voltage V_{BE} = −1.5V	D67FP5	V_{CEV}	500	Volts
Collector-Emitter Sustaining Voltage	D67FP6	$V_{CEO(SUS)}$	450	Volts
Collector-Emitter Voltage V_{BE} = −1.5V	D67FP6	V_{CEV}	600	Volts
Collector-Emitter Sustaining Voltage	D67FP7	$V_{CEO(SUS)}$	500	Volts
Collector-Emitter Voltage V_{BE} = −1.5V	D67FP7	V_{CEV}	700	Volts
Emitter-Base Voltage		V_{EBO}	7	Volts
Continuous Collector Current		I_C	100	Amperes
Peak (Repetitive) Collector Current		I_{CM}	150	Amperes
Peak (Non-repetitive) Collector Current		I_{CSM}	250	Amperes
Diode Forward Current		I_{FM}	100	Amperes
Continuous Base Current		I_B	10	Amperes
Peak (Non-repetitive) Base Current		I_{BM}	20	Amperes
Power Dissipation		P_T	312.5	Watts
Max. Mounting Torque (M5) Terminal Screws		—	28	in.-lb.
Max. Mounting Torque (M5) Mounting Screws		—	25	in.-lb.
V isolation		V_{RMS}	2500	Volts

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Electrical and Mechanical Characteristics T_j=25°C unless otherwise specified

Characteristics	Symbol	Test Conditions	D67FP Min.	Typ.	Max.	Units
Collector Cutoff Current	I_{CEV}	$V_{CE}=V_{CEV}$(rated), $V_{BE}=-1.5V$	—	—	1	mA
Collector Cutoff Current	I_{CEV}	$V_{CE}=V_{CEV}$(rated), $V_{BE}=-1.5V$, T_C=150°C	—	—	2.5	mA
Emitter Cutoff Current	I_{EBO}	V_{EB}=5V	—	—	10	mA
DC Current Gain	h_{FE}	I_C=150A, V_{CE}=5.0V	25	150	—	—
		I_C=100A, V_{CE}=5.0V	50	300	—	—
		I_C=40A, V_{CE}=5.0V	100	350	—	—
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	I_C=150A, I_B=10.0A	—	1.9	3.0	V
		I_C=100A, I_B=8.0A	—	1.3	2.0	V
		I_C=40A, I_B=4.0A	—	0.8	1.5	V
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	I_C=150A, I_B=10.0A	—	2.75	3.5	V
		I_C=100A, I_B=8.0A	—	2.3	3.0	V
Delay Time*	t_d	V_{CC}=250V	—	0.1	0.5	μs
Rise Time*	t_r	I_C=100A	—	0.45	1.0	μs
Storage Time*	t_s	I_{B1}=5A, $-I_{B2}$=10.0A	—	3.2	5.0	μs
Fall Time*	t_f	t_p=50 μsec	—	1.0	3.0	μs
Diode Forward Voltage	V_{FM}	I_{FM}=100A	—	1.3	2.0	V
Reverse Recovery Time	t_{rr}	I_{FM}=100A, di/dt=100A/μsec, $V_{BE}=-1.5V$	—	0.5	1.0	μs
Thermal Resistance, Junction to Case	$R_{\theta JC}$	Transistor Part	—	—	.4	°C/W
Thermal Resistance, Junction to Case	$R_{\theta JC}$	Diode Part	—	—	1.5	°C/W

*Resistive Load

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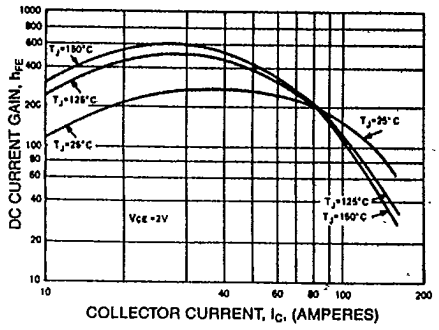
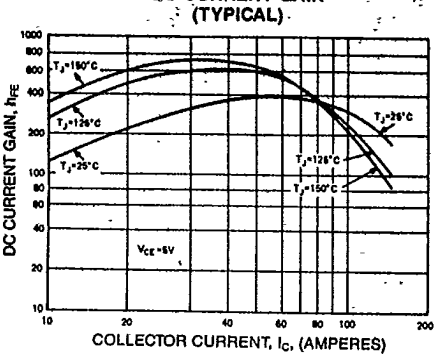
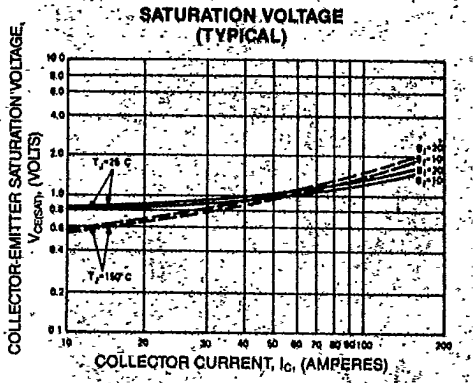
DC CURRENT GAIN (TYPICAL)



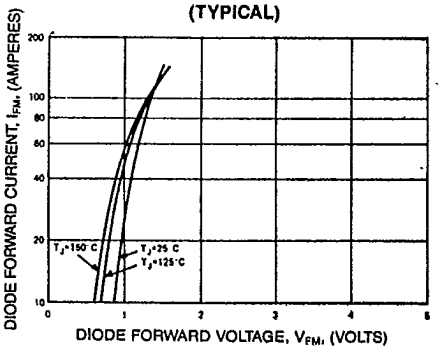
DC CURRENT GAIN (TYPICAL)



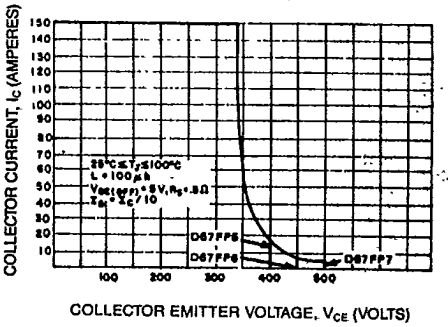
SATURATION VOLTAGE (TYPICAL)



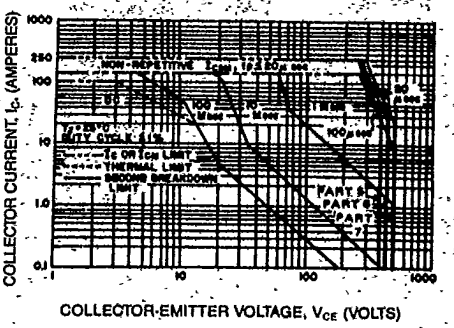
DIODE CHARACTERISTICS (TYPICAL)



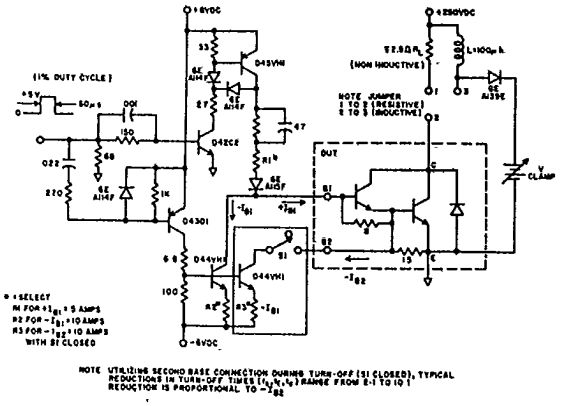
REVERSE BIAS SAFE OPERATING AREA (R.B.S.O.A.)



FORWARD BIAS SAFE OPERATING AREA (S.O.A.)



Switching Time Test Circuit



NOTE: UTILIZING SECOND BASE CONNECTION DURING TURN-OFF (S1 CLOSED), TYPICAL REDUCTIONS IN TURN-OFF TIMES (t_s, t_f, t_r) RANGE FROM 0-1 TO 10-1 REDUCTION IS PROPORTIONAL TO $-I_{B2}$