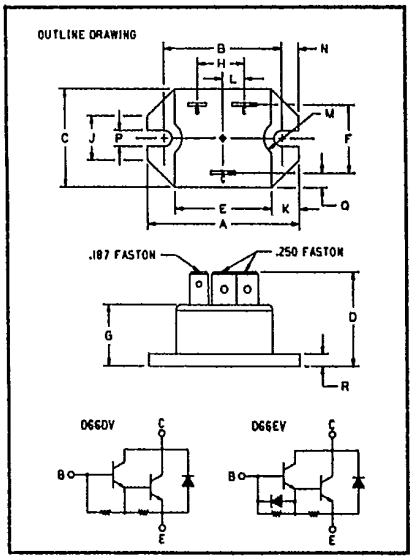
POWEREX

D66DV
D66EV

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

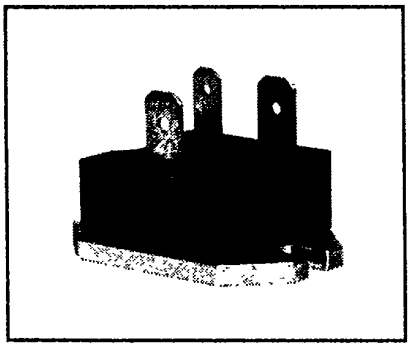
Fast Switching Single Darlington Transistor Module

50 Amperes
500-600-700 Volts



500-600-700 Volts D66DV, D66EV Outline Drawing

Dimension	Inches	Millimeters
A	1.52	38.6
B	1.186±.006	30±0.15
C	1.000±.015	25.4±0.4
D	.97	24.6
E	.96	24.4
F	.694±.010	17.6±0.25
G	.625±.020	15.9±0.5
H	.474±.010	12±0.25
J	.450	11.4
K	.275	7
L	.220±.010	5.6±0.25
M	.180 R	4.6 R
N	.167±.010	4.2±0.25
P	.160±.010	4.1±0.25
Q	.15	3.8
R	.126±.006	3.2±0.15



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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 monolithic reverse parallel connected free-wheel diode.

Features:
- ☐ Isolated Mounting
- ☐ High Gain (h_{FE})
- ☐ Quick Connect Terminals
- ☐ Base Emitter Speed-up Diode (D66EV)

Applications:
- ☐ UPS 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. D66EV7 is a 700 Volt, 50 Ampere Fast Switching Single Darlington Module without speed-up diode and D66DV7 is a 700 Volt, 50 Ampere Fast Switching Darlington Module with speed-up diode.

Type	V_{CEV} Volts (×100)	Current Rating Amperes (50)
D66DV/D66EV	5	50
D66DV/D66EV	6	50
D66DV/D66EV	7	50

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Maximum Ratings T_J = 25°C unless otherwise specified

	Symbol	D66DV/D66EV	Units
Junction Temperature	T_J	−40 to 150	°C
Storage Temperature	T_{STG}	−40 to 150	°C
Collector-Emitter Sustaining Voltage D66DV5/EV5	$V_{CEO(SUS)}$	400	Volts
Collector-Emitter Voltage V_{BE} = −1.5V D66DV5/EV5	V_{CEV}	500	Volts
Collector-Emitter Sustaining Voltage D66DV6/EV6	$V_{CEO(SUS)}$	450	Volts
Collector-Emitter Voltage V_{BE} = −1.5V D66DV6/EV6	V_{CEV}	600	Volts
Collector-Emitter Sustaining Voltage D66DV7/EV7	$V_{CEO(SUS)}$	500	Volts
Collector-Emitter Voltage V_{BE} = −1.5V D66DV7/EV7	V_{CEV}	700	Volts
Emitter-Base Voltage D66DV	V_{EBO}	8	Volts
Emitter-Base Voltage D66EV	V_{EBO}	5	Volts
Continuous Collector Current	I_C	50	Amperes
Peak (Repetitive) Collector Current	I_{CM}	75	Amperes
Peak (Non-Repetitive) Collector Current	I_{CSM}	125	Amperes
Diode Forward Current	I_{FM}	50	Amperes
Continuous Base Current	I_B	10	Amperes
Peak (Non-Repetitive) Base Current	I_{BM}	20	Amperes
Power Dissipation	P_T	125	Watts
Max. Mounting Torque (M3) Mounting Screws	—	8	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	D66DV, D66EV 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	D66DV	I_{EBO}	$V_{EB}=4.5V$	—	—	350	mA
	D66EV		$V_{EB}=1.5V$	—	—	350	mA
DC Current Gain		h_{FE}	$I_C=75A$, $V_{CE}=5.0V$	25	60	—	—
			$I_C=50A$, $V_{CE}=5.0V$	50	135	—	—
			$I_C=20A$, $V_{CE}=5.0V$	100	250	—	—
Collector-Emitter Saturation Voltage		$V_{CE(SAT)}$	$I_C=75A$, $I_B=5.0A$	—	2.2	3.0	V
			$I_C=50A$, $I_B=4.0A$	—	1.7	2.0	V
			$I_C=20A$, $I_B=2.0A$	—	1.15	1.5	V
Base-Emitter Saturation Voltage		$V_{BE(SAT)}$	$I_C=75A$, $I_B=5.0A$	—	2.8	3.5	V
			$I_C=50A$, $I_B=4.0A$	—	2.45	3.0	V
			$I_C=20A$, $I_B=2.0A$	—	1.95	2.5	V
Delay Time*		t_d	$V_{CC}=250V$, $I_C=50A$, $I_{B1}=2.5A$, $-I_{B2}=5A$, $t_p=50\ \mu sec$	—	0.09	0.5	μs
Rise Time*		t_r		—	0.5	1.0	μs
Storage Time*	D66DV	t_s		—	2.55	5.0	μs
	D66EV			—	2.0	3.0	μs
Fall Time*	D66DV	t_f		—	1.4	3.0	μs
	D66EV			—	.64	1.0	μs
Diode Forward Voltage		V_{FM}	$I_{FM}=25A$	—	1.95	3.20	V
			$I_{FM}=50A$	—	2.6	3.80	V
			$I_{FM}=50A$, $T_J=150°C$	—	2.3	3.50	V
Reverse Recovery Time		t_{rr}	$I_{FM}=50A$, $di/dt=25A/\mu sec$, $R_{B1E}=.25\Omega$	—	3.85	10.0	μs
Forward Turn-On Time		t_{ON}	$I_{FM}=50A$, $di/dt=100A/\mu sec$	—	0.75	1.5	μs
Thermal Resistance, Junction to Case		$R_{\theta JC}$	Transistor Part	—	—	1.0	°C/W
Thermal Resistance, Junction to Case		$R_{\theta JC}$	Diode Part	—	—	1.0	°C/W

* Resistive Load.

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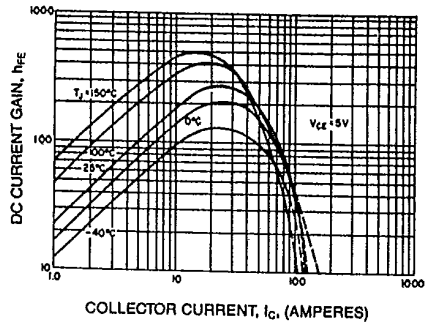
DC CURRENT GAIN (TYPICAL)



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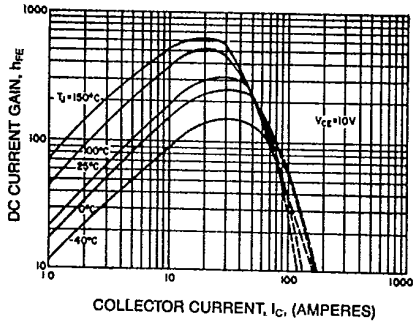
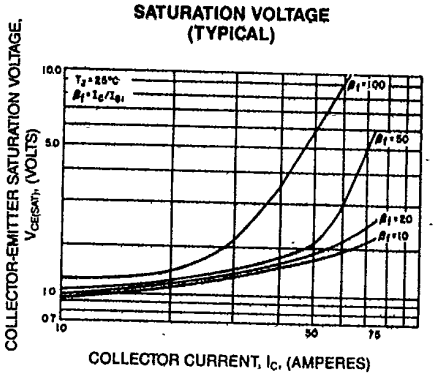


SATURATION VOLTAGE (TYPICAL)



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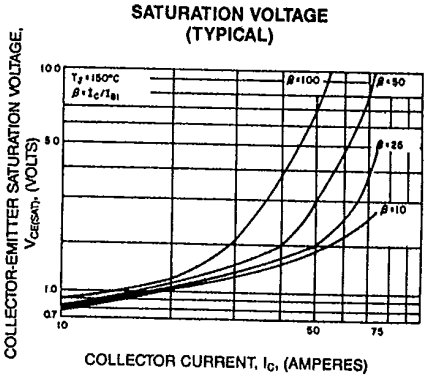

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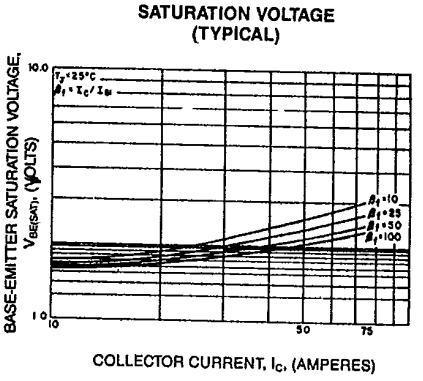

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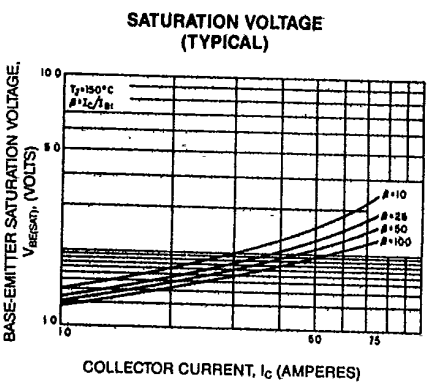
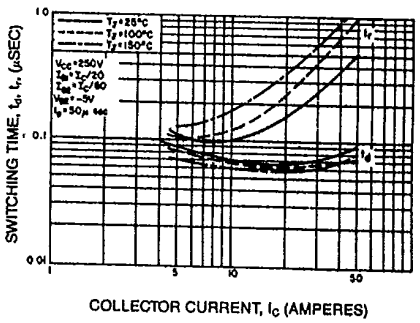


SWITCHING CHARACTERISTICS (TYPICAL)



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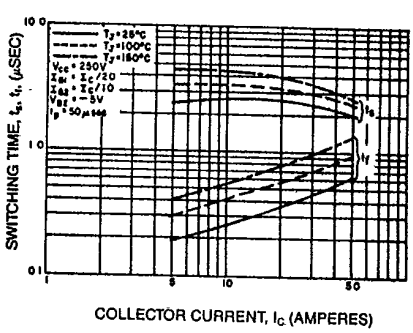
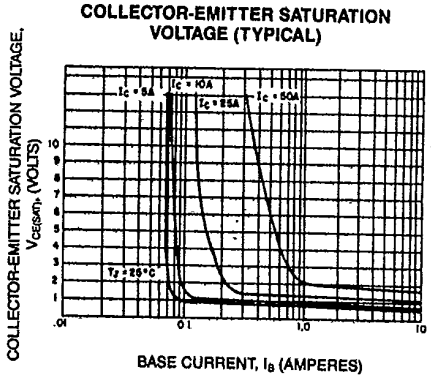


COLLECTOR-EMITTER SATURATION VOLTAGE (TYPICAL)



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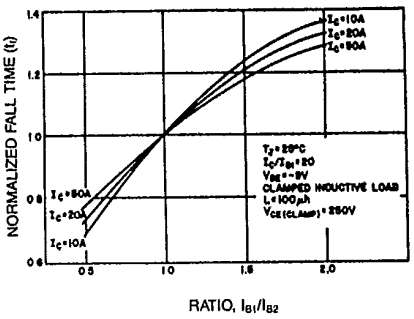
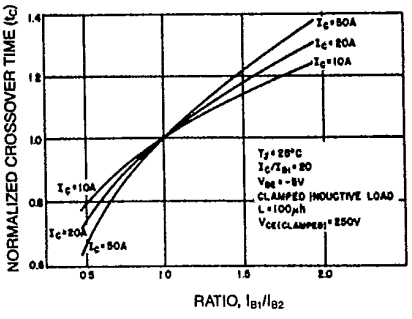
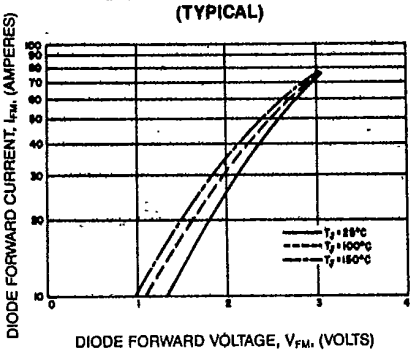
SWITCHING TIME VS. BASE CURRENT (TYPICAL)



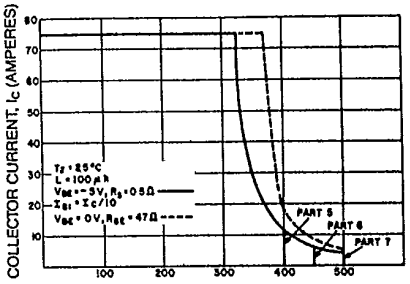
SWITCHING TIME VS. BASE CURRENT (TYPICAL)



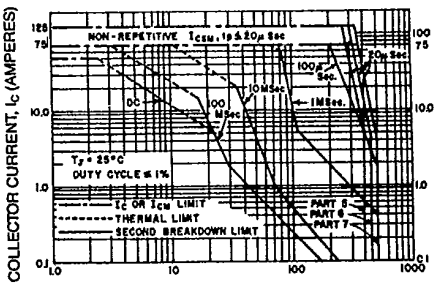
DIODE CHARACTERISTICS (TYPICAL)



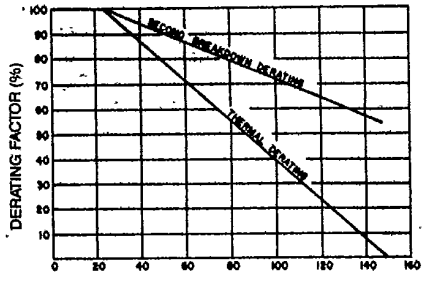
REVERSE BIAS SAFE OPERATING AREA (R.B.S.O.A.)



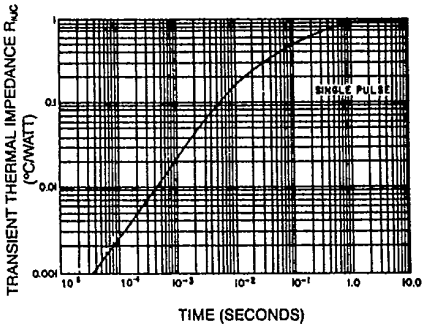
FORWARD BIAS SAFE OPERATING AREA (S.O.A.)



DERATING FACTOR OF SAFE OPERATING AREA (S.O.A.)



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (TRANSISTOR)



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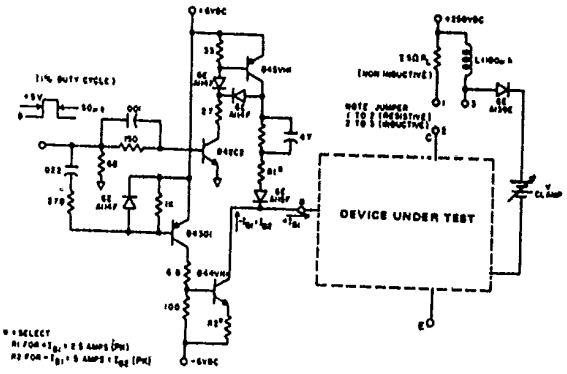
Switching Time Test Circuit



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