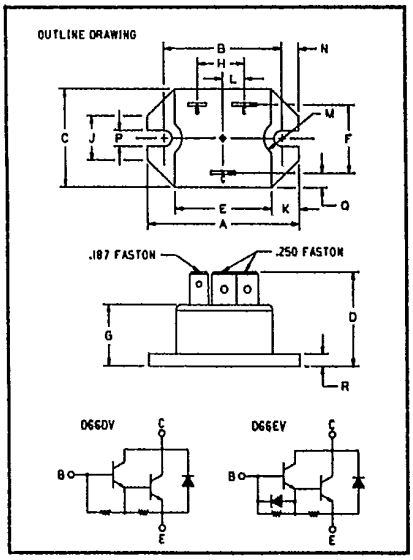
D66DV
D66EV

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

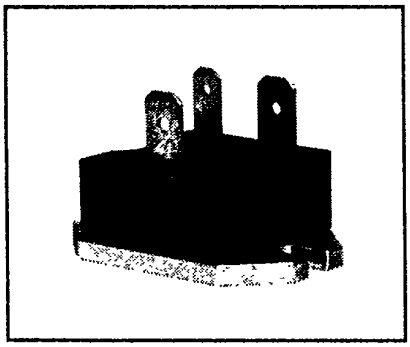
Fast Switching Single Darlington Transistor Module

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.

POWEREX

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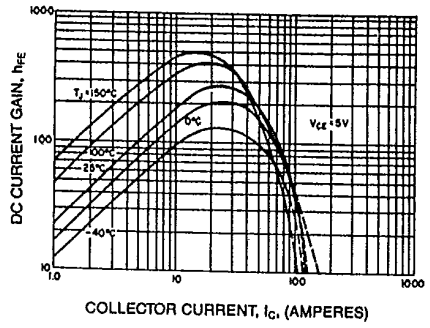
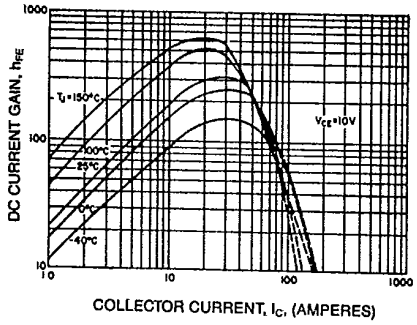
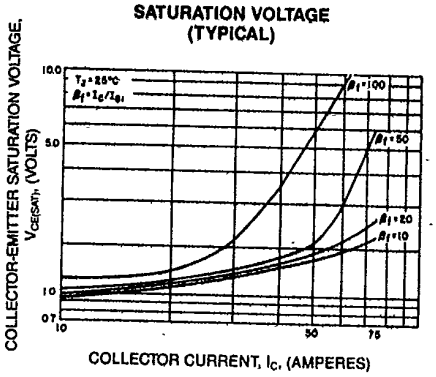
DC CURRENT GAIN (TYPICAL)



DC CURRENT GAIN (TYPICAL)



SATURATION VOLTAGE (TYPICAL)



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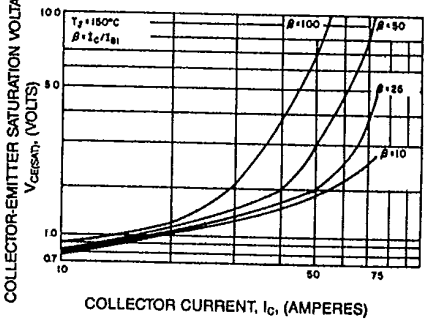

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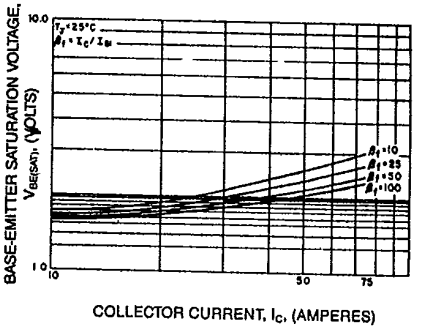

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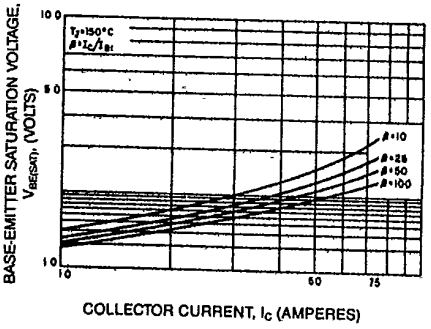
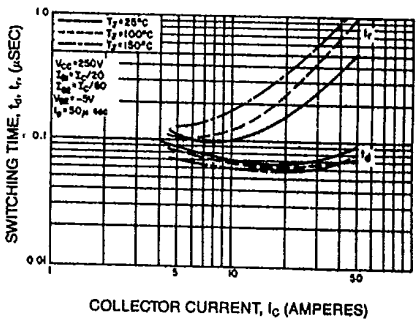


SWITCHING CHARACTERISTICS (TYPICAL)



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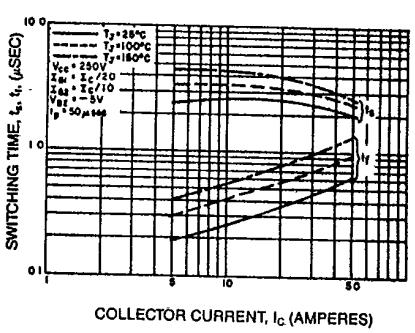
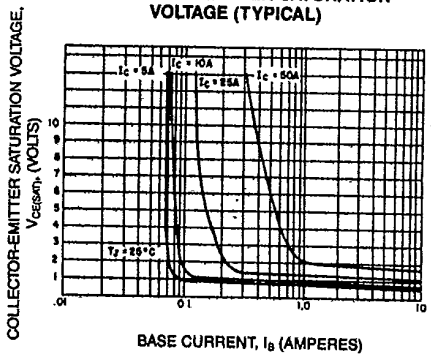


COLLECTOR-EMITTER SATURATION VOLTAGE (TYPICAL)



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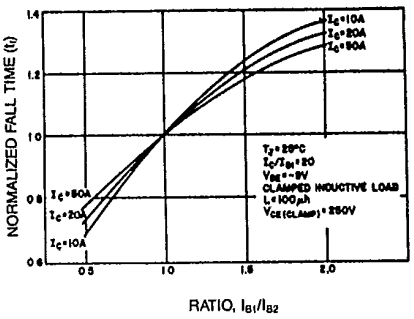
SWITCHING TIME VS. BASE CURRENT (TYPICAL)



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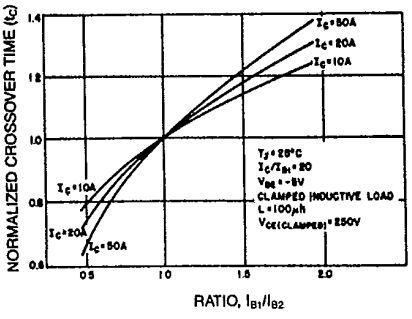
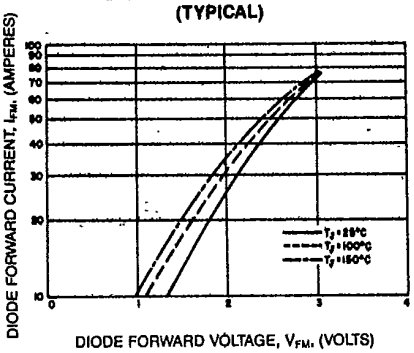
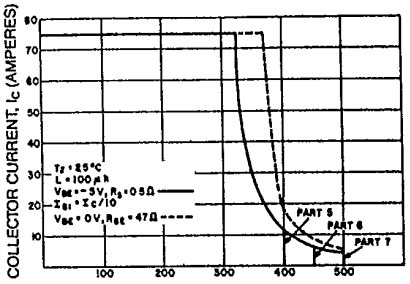


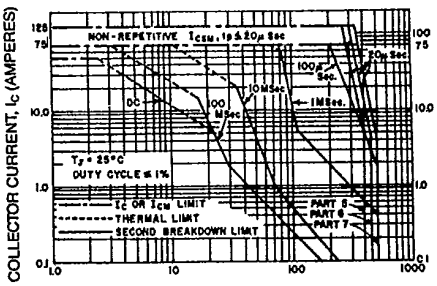
DIODE CHARACTERISTICS (TYPICAL)



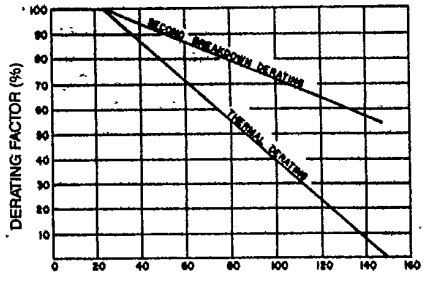
REVERSE BIAS SAFE OPERATING AREA (R.B.S.O.A.)



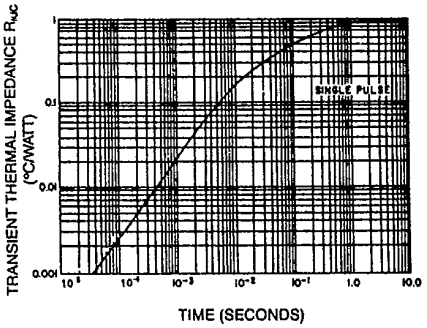
FORWARD BIAS SAFE OPERATING AREA (S.O.A.)



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



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (TRANSISTOR)



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Switching Time Test Circuit