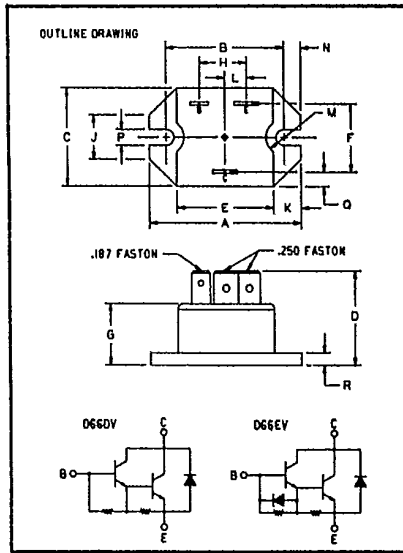
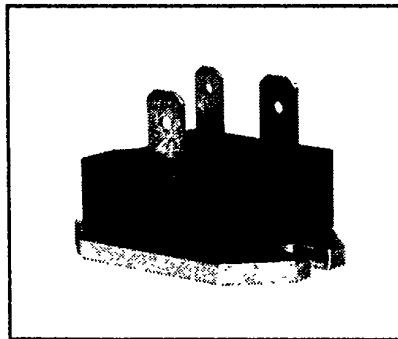


**POWEREX****D66DV**  
**D66EV**

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

**D66DV**  
**D66EV**  
**Fast Switching Single Darlington  
Transistor Module**  
50 Amperes/500-600-700 Volts**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 ( $\times 100$ )	Current Rating Amperes (50)
D66DV/D66EV	5	50
D66DV/D66EV	6	50
D66DV/D66EV	7	50



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

D66DV

D66EV

Fast Switching Single Darlington Transistor Module

50 Amperes/500-600-700 Volts

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

	Symbol	D66DV/D66EV	Units
Junction Temperature	$T_J$	- 40 to 150	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	- 40 to 150	$^\circ\text{C}$
Collector-Emitter Sustaining Voltage D66DV5/EV5	$V_{CEO(SUS)}$	400	Volts
Collector-Emitter Voltage $V_{BE} = -1.5\text{V}$ D66DV5/EV5	$V_{CEV}$	500	Volts
Collector-Emitter Sustaining Voltage D66DV6/EV6	$V_{CEO(SUS)}$	450	Volts
Collector-Emitter Voltage $V_{BE} = -1.5\text{V}$ D66DV6/EV6	$V_{CEV}$	600	Volts
Collector-Emitter Sustaining Voltage D66DV7/EV7	$V_{CEO(SUS)}$	500	Volts
Collector-Emitter Voltage $V_{BE} = -1.5\text{V}$ 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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D66DV

D66EV

Fast Switching Single Darlington Transistor Module

50 Amperes/500-600-700 Volts

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

Characteristics	Symbol	Test Conditions	D66DV, D66EV			Units	
			Min.	Typ.	Max.		
Collector Cutoff Current	$I_{CEV}$	$V_{CE} = V_{CEV}(\text{rated}), V_{BE} = -1.5\text{V}$	—	—	1	mA	
Collector Cutoff Current	$I_{CEV}$	$V_{CE} = V_{CEV}(\text{rated}), V_{BE} = -1.5\text{V}$ $T_C = 150^\circ\text{C}$	—	—	2.5	mA	
Emitter Cutoff Current	D66DV D66EV	$I_{EBO}$	$V_{EB} = 4.5\text{V}$	—	—	350	mA
			$V_{EB} = 1.5\text{V}$	—	—	350	mA
DC Current Gain	$h_{FE}$	$I_C = 75\text{A}, V_{CE} = 5.0\text{V}$ $I_C = 50\text{A}, V_{CE} = 5.0\text{V}$ $I_C = 20\text{A}, V_{CE} = 5.0\text{V}$	25	60	—	—	
			50	135	—	—	
			100	250	—	—	
Collector-Emitter Saturation Voltage	$V_{CE(\text{SAT})}$	$I_C = 75\text{A}, I_B = 5.0\text{A}$ $I_C = 50\text{A}, I_B = 4.0\text{A}$ $I_C = 20\text{A}, I_B = 2.0\text{A}$	—	2.2	3.0	V	
			—	1.7	2.0	V	
			—	1.15	1.5	V	
Base-Emitter Saturation Voltage	$V_{BE(\text{SAT})}$	$I_C = 75\text{A}, I_B = 5.0\text{A}$ $I_C = 50\text{A}, I_B = 4.0\text{A}$ $I_C = 20\text{A}, I_B = 2.0\text{A}$	—	2.8	3.5	V	
			—	2.45	3.0	V	
			—	1.95	2.5	V	
Delay Time*	$t_d$		—	0.09	0.5	$\mu\text{s}$	
Rise Time*	$t_r$	$V_{CC} = 250\text{V}, I_C = 50\text{A}$	—	0.5	1.0	$\mu\text{s}$	
Storage Time*	D66DV D66EV	$I_{B1} = 2.5\text{A}, -I_{B2} = 5\text{A}$	—	2.55	5.0	$\mu\text{s}$	
			—	2.0	3.0	$\mu\text{s}$	
Fall Time*	D66DV D66EV	$t_p = 50 \mu\text{sec}$	—	1.4	3.0	$\mu\text{s}$	
			—	.64	1.0	$\mu\text{s}$	
Diode Forward Voltage	$V_{FM}$	$I_{FM} = 25\text{A}$ $I_{FM} = 50\text{A}$ $I_{FM} = 50\text{A}, T_J = 150^\circ\text{C}$	—	1.95	3.20	V	
			—	2.6	3.80	V	
			—	2.3	3.50	V	
Reverse Recovery Time	$t_{rr}$	$I_{FM} = 50\text{A}, di/dt = 25\text{A}/\mu\text{sec}$ $R_{B1E} = .25\Omega$	—	3.85	10.0	$\mu\text{s}$	
Forward Turn-On Time	$t_{ON}$	$I_{FM} = 50\text{A}, di/dt = 100\text{A}/\mu\text{sec}$	—	0.75	1.5	$\mu\text{s}$	
Thermal Resistance, Junction to Case	$R_{\theta JC}$	Transistor Part	—	—	1.0	$^\circ\text{C}/\text{W}$	
Thermal Resistance, Junction to Case	$R_{\theta JC}$	Diode Part	—	—	1.0	$^\circ\text{C}/\text{W}$	

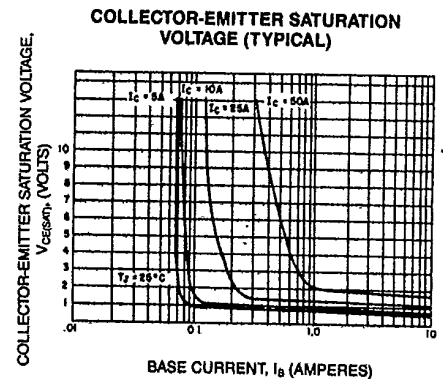
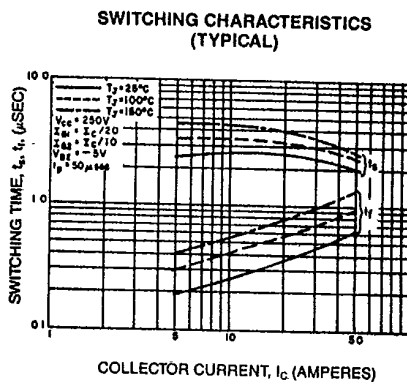
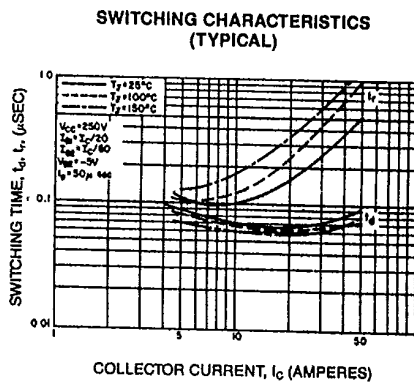
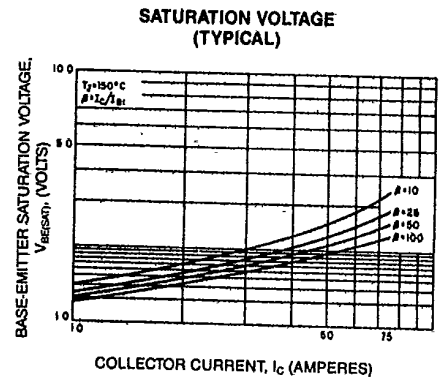
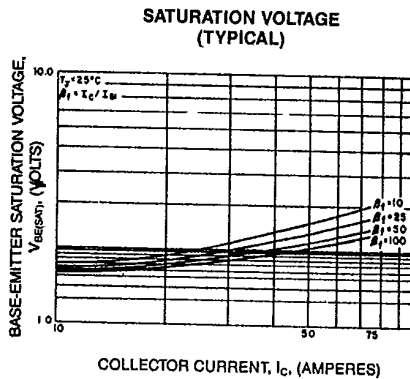
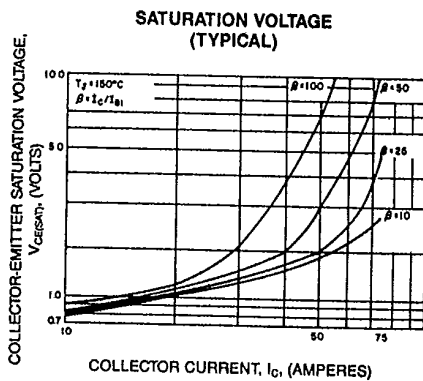
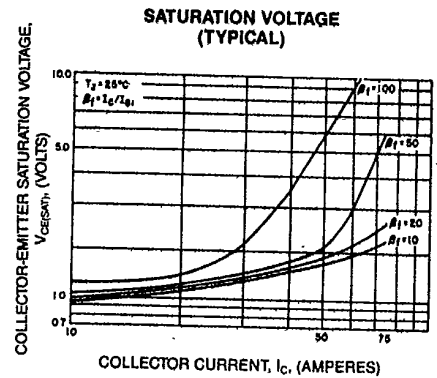
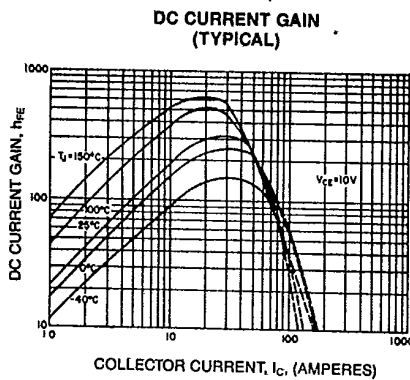
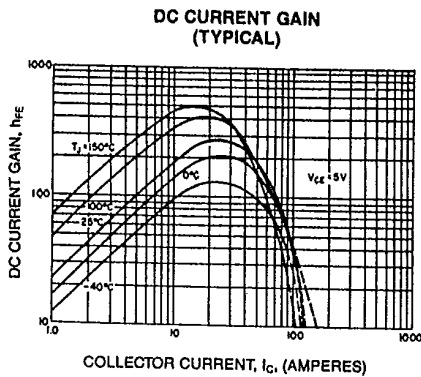
\* Resistive Load.



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D66DV  
D66EV

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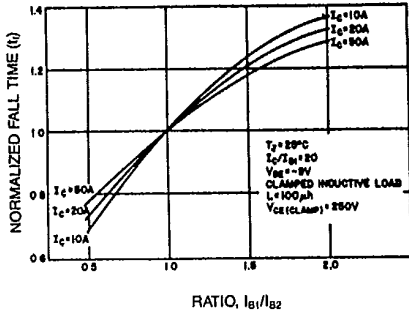




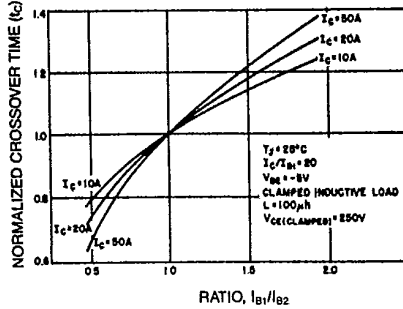
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D66DV  
D66EV  
Fast Switching Single Darlington Transistor Module  
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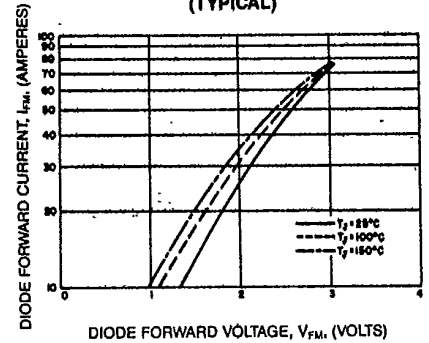
SWITCHING TIME VS. BASE CURRENT (TYPICAL)



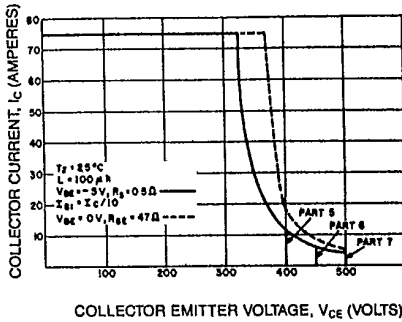
SWITCHING TIME VS. BASE CURRENT (TYPICAL)



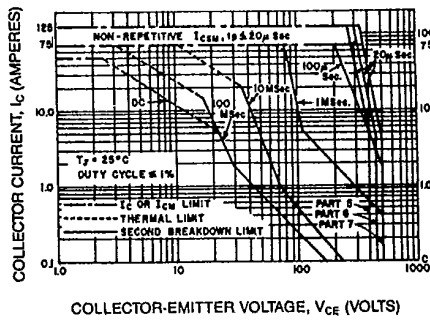
DIODE CHARACTERISTICS (TYPICAL)



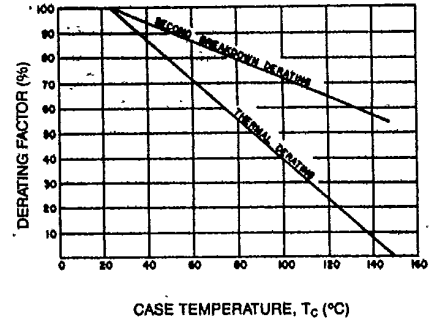
REVERSE BIAS SAFE OPERATING AREA (R.B.S.O.A.)



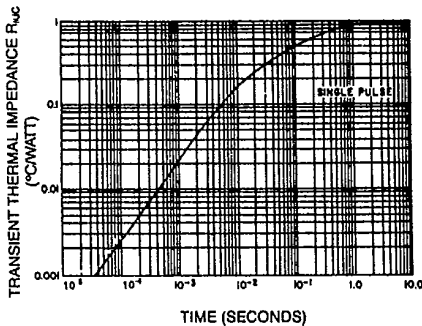
FORWARD BIAS SAFE OPERATING AREA (S.O.A.)



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



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (TRANSISTOR)





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D66DV

D66EV

Fast Switching Single Darlington Transistor Module

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Switching Time Test Circuit

