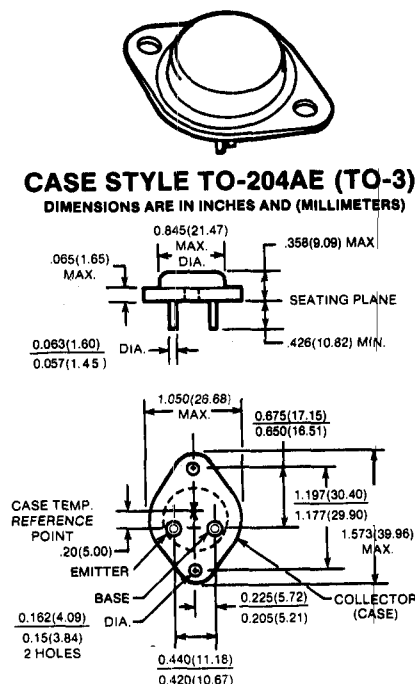
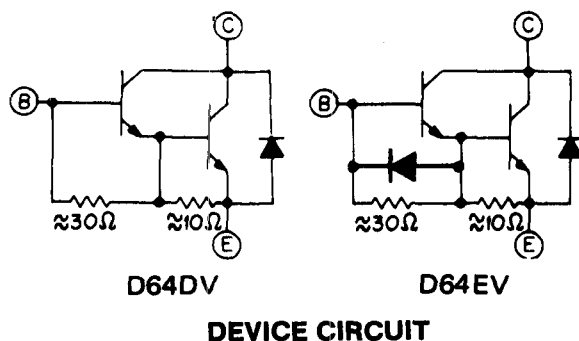




400-500 VOLTS
50 AMP. 180 WATTS

- High Speed: $t_s < 5.0 \mu\text{sec.}$, $t_r < 3.0 \mu\text{sec.}$
- High Voltage: 400-500 V_{CEO}
- High Gain: h_{FE} 50 Minimum @ 50 Amperes, I_C
- High Current: 75 Amperes, I_C (Peak)



RATING	SYMBOL	D64DV5/EV5	D64DV6/EV6	D64DV7/EV7	UNITS
Collector-Emitter Voltage	V_{CEO}	400	450	500	Volts
Collector-Base Voltage	V_{CBO}	500	600	700	Volts
Emitter Base Voltage	V_{EBO}	8	8	8	Volts
	D64DV D64EV	5	5	5	
Collector Current — Continuous	I_C	50	50	50	A
Peak (Repetitive)	I_{CM}	75	75	75	
Peak (Non-Repetitive)	I_{CSM}	125	125	125	
Base Current — Continuous	I_B	10	10	10	A
Peak (Non-Repetitive)	I_{BM}	20	20	20	
Total Power Dissipation @ $T_C = 25^\circ C$	P_D	180	180	180	Watts
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-65 to +150	-65 to +150	-65 to +150	$^\circ C$

Thermal Resistance, Junction to Case	$R_{\theta JC}$	0.7	0.7	0.7	°C/W
Maximum Lead Temperature for Soldering Purposes: 1/8" from Case for 5 Seconds	T_L	300	300	300	°C

electrical characteristics ($T_C = 25^\circ\text{C}$) (unless otherwise specified)

CHARACTERISTIC	SYMBOL	MIN	TYP	MAX	UNIT
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off characteristics

Collector-Emitter Sustaining Voltage ($I_C = .5\text{A}$) ($V_{\text{clamp}} = V_{\text{CEO}} \text{ Rated}$)	D64DV5/EV5 D64DV6/EV6 D64DV6/EV7	$V_{\text{CEO(sus)}}$	400 450 500	— — —	— — —	Volts
Collector Cutoff Current ($V_{\text{CE}} = \text{Rated Value}$, $V_{\text{BE}} = -1.5\text{V}$)	$T_J = 25^\circ\text{C}$ $T_J = 150^\circ\text{C}$	I_{CEV}	— —	— —	1.0 2.5	mA
Emitter Cutoff Current ($V_{\text{EB}} = 4.5\text{V}$, $I_C = 0$) ($V_{\text{EB}} = 1.5\text{V}$, $I_C = 0$)	D64DV D64EV	I_{EBO}	— —	— —	350 350	mA

second breakdown

Second Breakdown with Base Forward Biased	FBSOA	SEE FIGURE 23
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on characteristics

DC Current Gain ($I_C = 75\text{A}$, $V_{\text{CE}} = 5\text{V}$) ($I_C = 50\text{A}$, $V_{\text{CE}} = 5\text{V}$) ($I_C = 20\text{A}$, $V_{\text{CE}} = 5\text{V}$)	h_{FE}	25 50 100	60 135 250	— — —	—
Collector-Emitter Saturation Voltage ($I_C = 75\text{A}$, $I_B = 5\text{A}$) ($I_C = 50\text{A}$, $I_B = 4\text{A}$) ($I_C = 20\text{A}$, $I_B = 2\text{A}$)	$V_{\text{CE(sat)}}$	— — —	2.2 1.7 1.15	3.0 2.0 1.5	V
Base-Emitter Saturation Voltage ($I_C = 75\text{A}$, $I_B = 5\text{A}$) ($I_C = 50\text{A}$, $I_B = 4\text{A}$) ($I_C = 20\text{A}$, $I_B = 2\text{A}$)	$V_{\text{BE(sat)}}$	— — —	2.8 2.45 1.95	3.5 3.0 2.5	V

switching characteristics

switching characteristics				TYP.		MAX.		μs
Resistive Load				DV	EV	DV	EV	
Delay Time	$V_{CC} = 250\text{V}$	t_d	—	0.09	.09	.5	.5	
Rise Time	$I_C = 50\text{A}$	t_r	—	.5	.5	1	1	
Storage Time	$I_{B1} = 2.5\text{A}, I_{B2} = 5\text{A}$	t_s	—	2.55	2	5	3	
Fall Time	$t_p = 50 \mu\text{sec}$	t_f	—	1.4	.64	3	1	

emitter-collector diode characteristics

Power Dissipation ($I_{B1} = 0$)	P_D	—	—	125	Watts
Forward Voltage ($I_F = 25\text{A}$) ($I_F = 50\text{A}$) ($I_F = 50\text{A}$, $T_J = 150^\circ\text{C}$)	V_F V_F V_F	— — —	1.95 2.60 2.30	3.20 3.80 3.50	Volts Volts Volts
Reverse Recovery Time ($I_F = 50\text{A}$, $di/dt = 25\text{A}/\mu\text{sec}$, $R_{B1E} = .25\Omega$)	T_{rr}	—	3.85	10.0	μsec
Forward Turn-On Time ($I_F = 100\text{A}$, $di/dt = 100\text{A}/\mu\text{sec}$)	T_{ON}	—	0.75	1.5	μsec
Single Cycle Surge Current (60Hz)	I_{FSM}	—	—	150	Amps
Thermal Resistance	$R_{\theta\text{JC}}$	—	—	1.0	$^\circ\text{C}/\text{Watt}$

TYPICAL CHARACTERISTICS

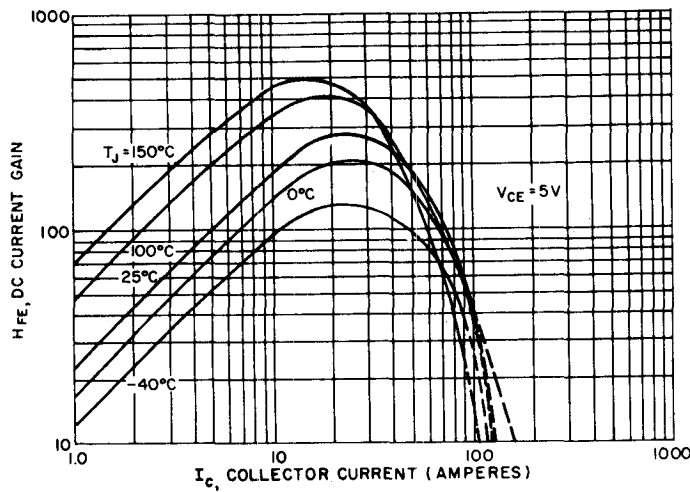


FIGURE 1. DC CURRENT GAIN ($V_{CE} = 5V$)

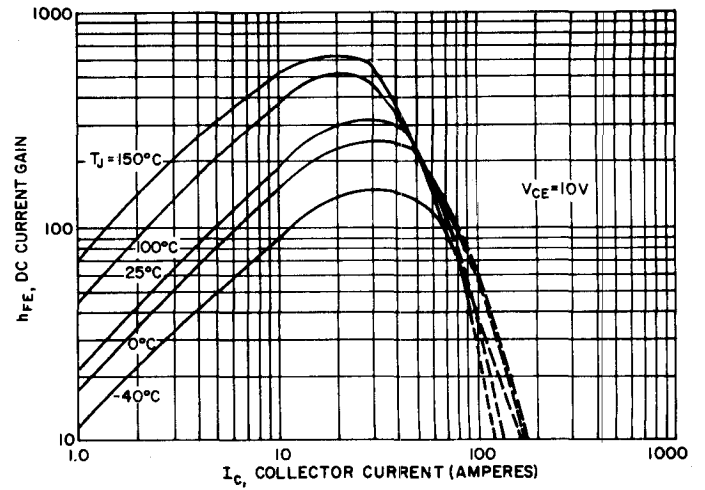


FIGURE 2. DC CURRENT GAIN ($V_{CE} = 10V$)

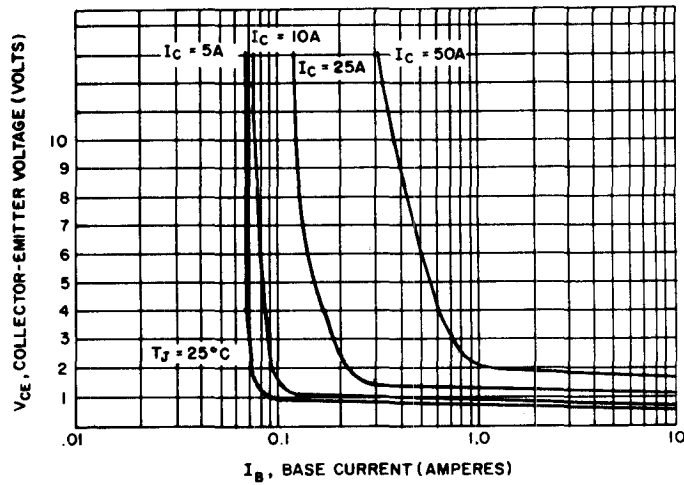


FIGURE 3. COLLECTOR SATURATION REGION

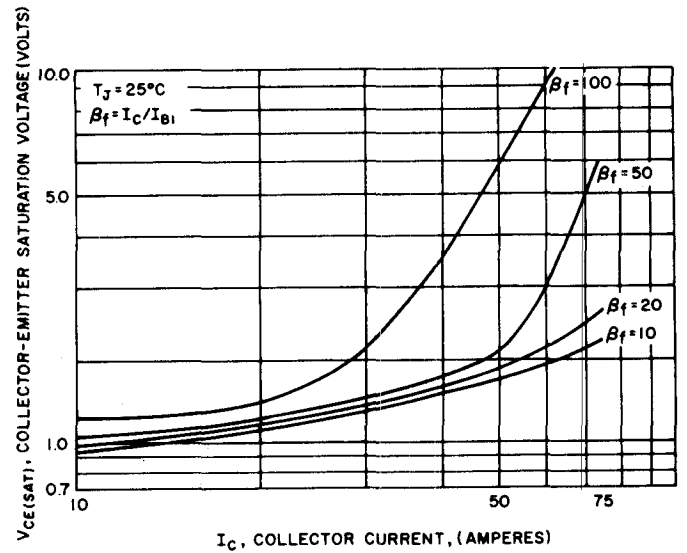


FIGURE 4. $V_{CE(SAT)}$ VS I_C , $T_J = 25^\circ C$

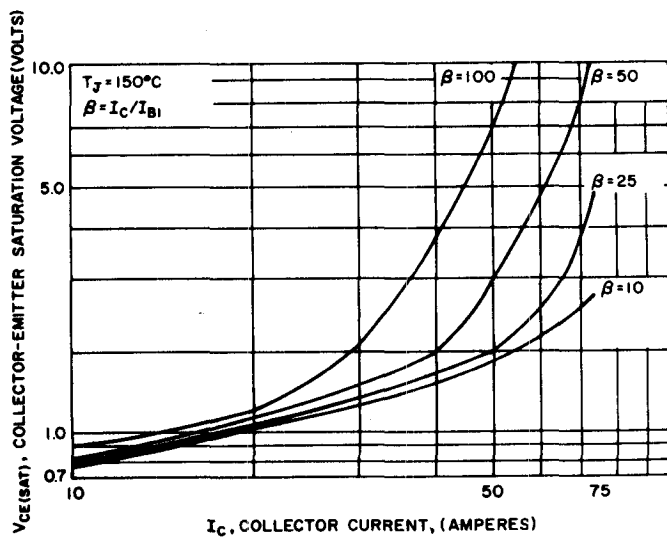


FIGURE 5. $V_{CE(SAT)}$ VS I_C , $T_J = 150^\circ C$

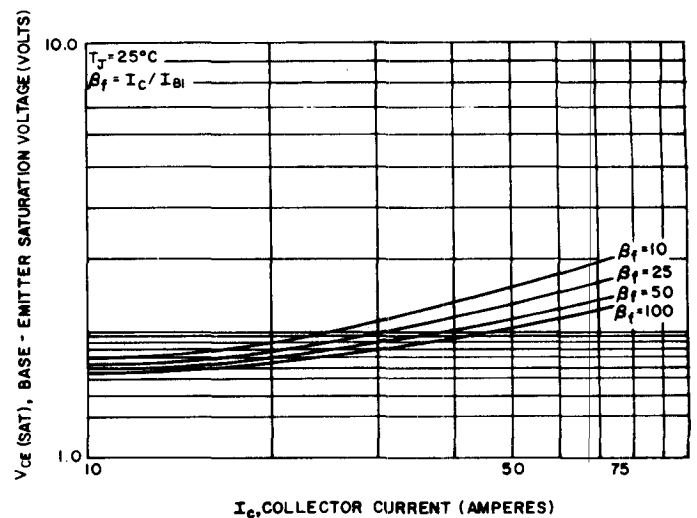


FIGURE 6. $V_{BE(SAT)}$ VS I_C , $T_J = 25^\circ C$

TYPICAL CHARACTERISTICS

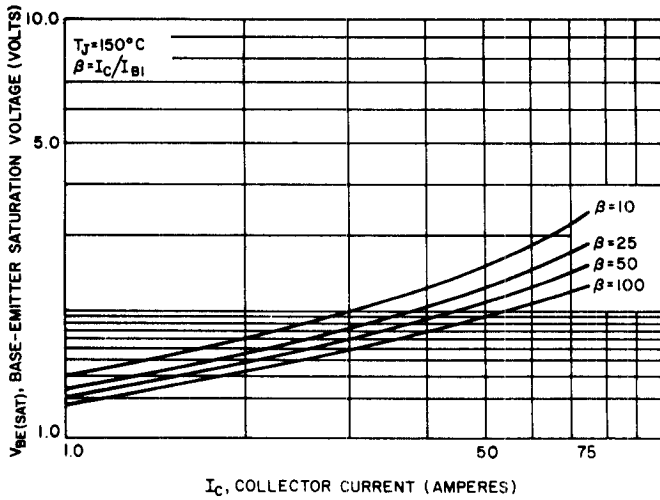


FIGURE 7. $V_{BE(SAT)}$ VS I_C , $T_J = 150^\circ\text{C}$

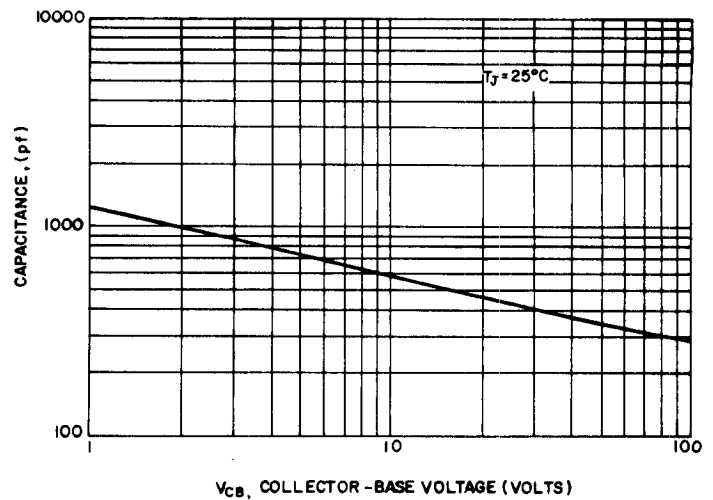


FIGURE 8. CAPACITANCE (C_{CBO})

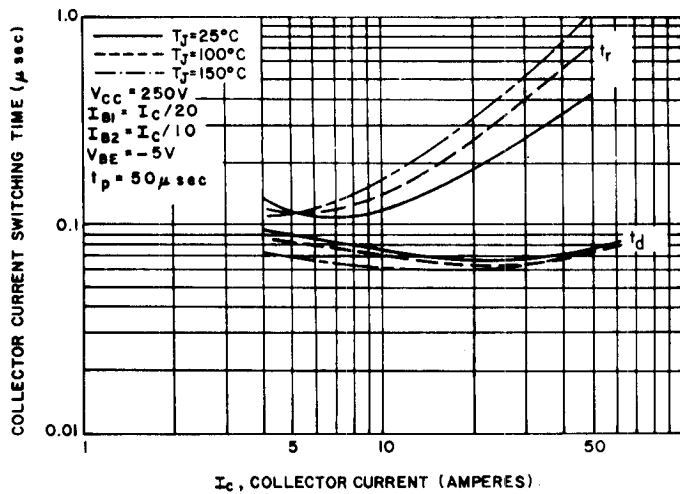


FIGURE 9. TURN-ON TIME (RESISTIVE LOAD)
(D64DV ONLY)

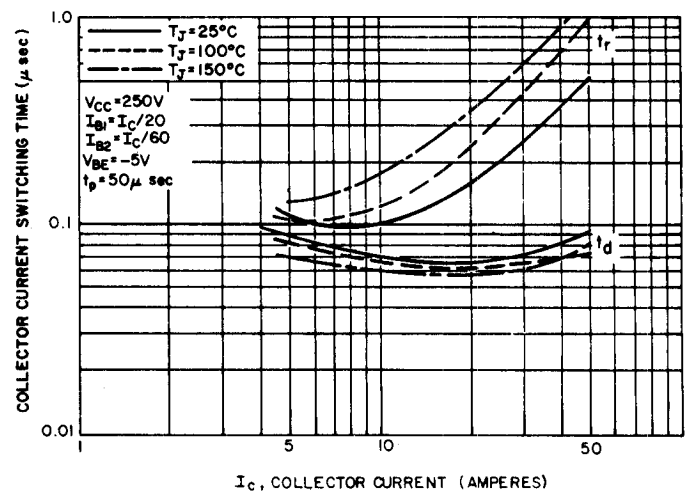


FIGURE 10. TURN-ON TIME (RESISTIVE LOAD)
(D64EV ONLY)

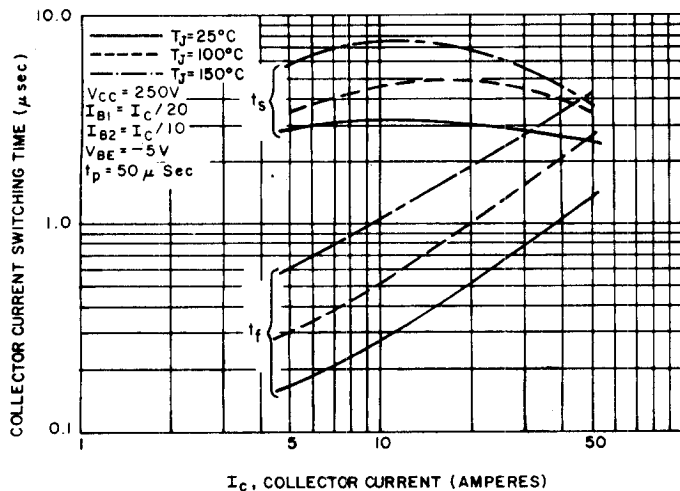


FIGURE 11. TURN-OFF TIME (RESISTIVE LOAD)
(D64DV ONLY)

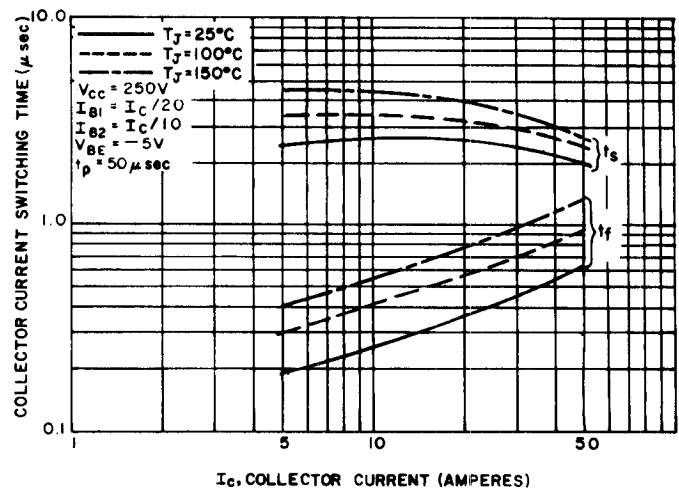


FIGURE 12. TURN-OFF TIME (RESISTIVE LOAD)
(D64EV ONLY)

TYPICAL CHARACTERISTICS

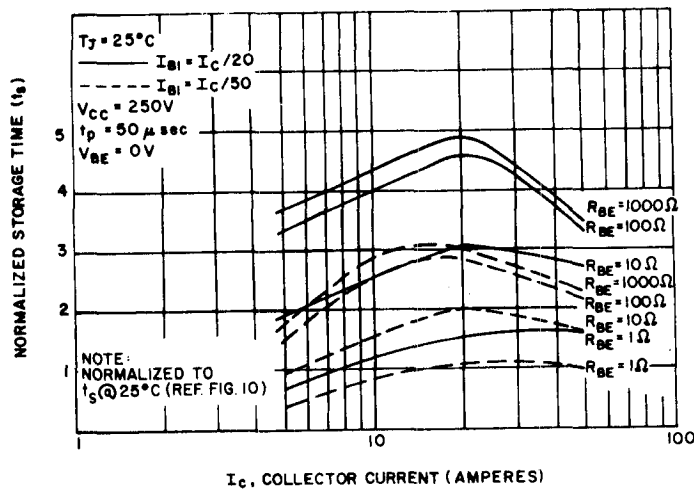


FIGURE 13. NORMALIZED RESISTIVE SWITCHING STORAGE TIME (R_{BE} VARIATIONS) VS COLLECTOR CURRENT (D64DV ONLY)

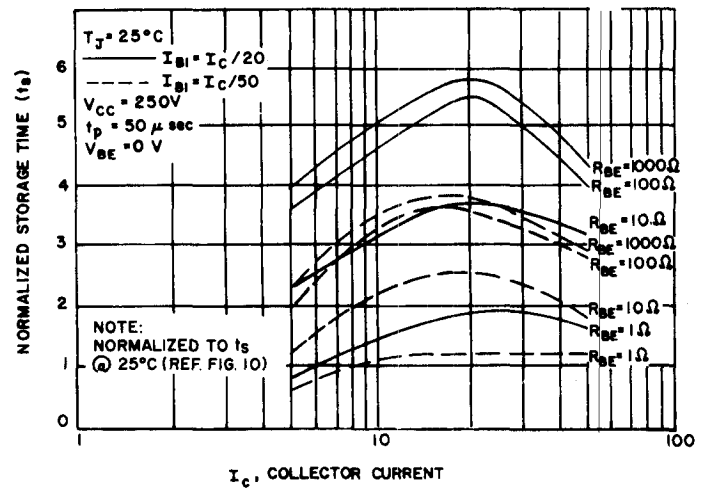


FIGURE 14. NORMALIZED RESISTIVE SWITCHING STORAGE TIME (R_{BE} VARIATIONS) VS COLLECTOR CURRENT (D64EV ONLY)

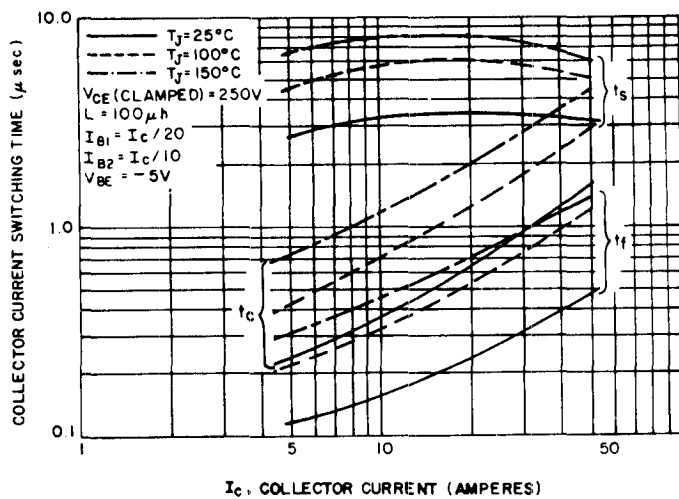


FIGURE 15. CLAMPING INDUCTIVE TURN-OFF TIME (D64DV ONLY)

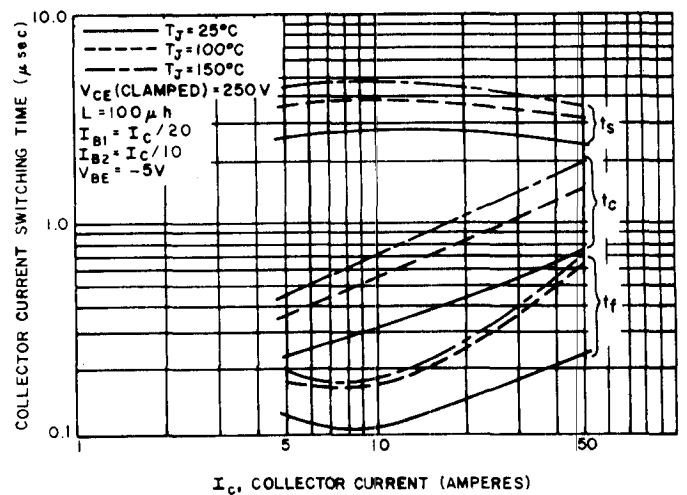


FIGURE 16. CLAMPING INDUCTIVE TURN-OFF TIME (D64EV ONLY)

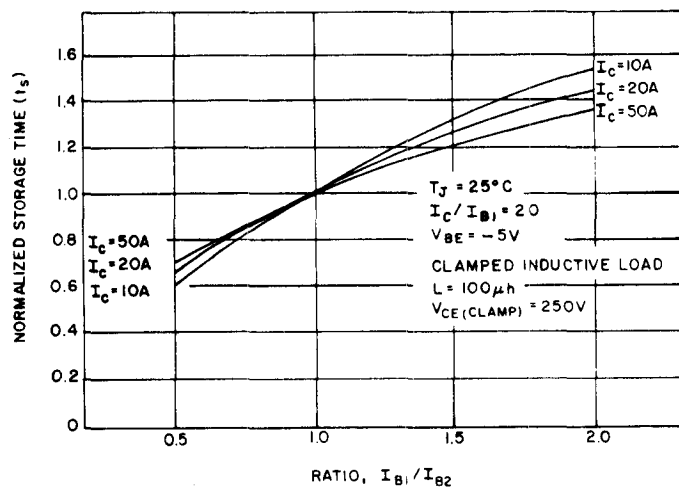


FIGURE 17. STORAGE TIME VARIATION WITH I_{B2} (D64DV ONLY)

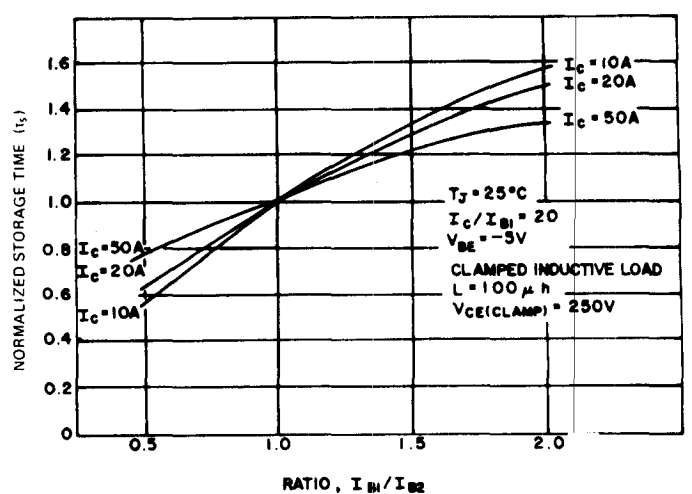
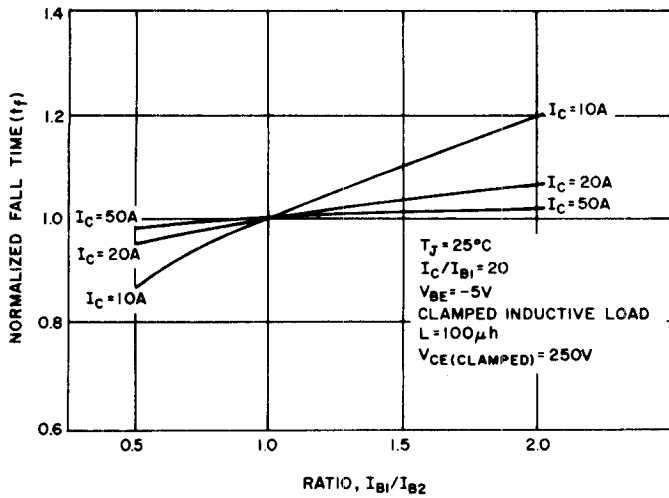
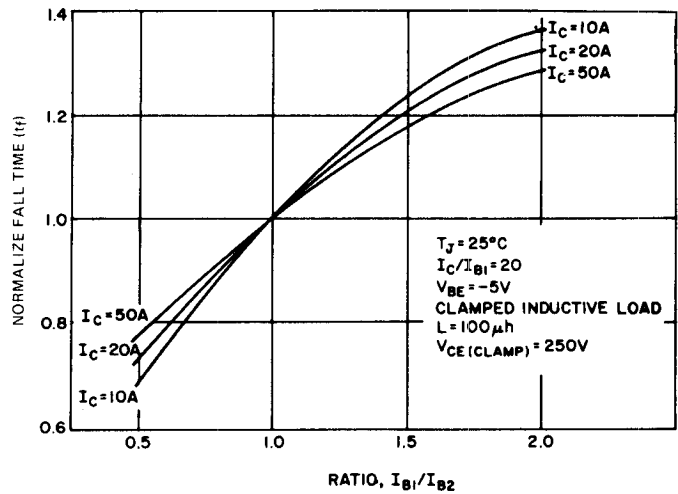


FIGURE 18. STORAGE TIME VARIATION WITH I_{B2} (D64EV ONLY)

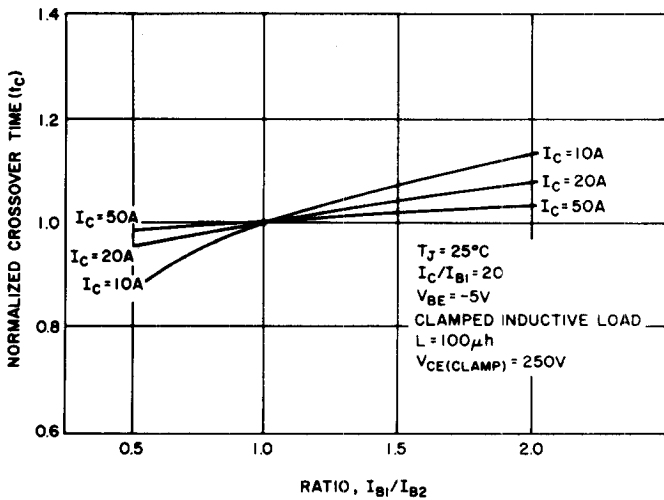
TYPICAL CHARACTERISTICS



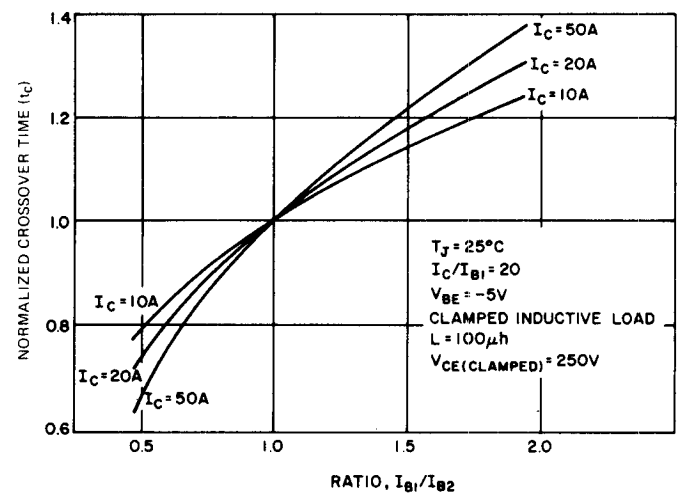
**FIGURE 19. FALL TIME VARIATION WITH I_{B2}
(D64DV ONLY)**



**FIGURE 20. FALL TIME VARIATION WITH I_{B2}
(D64EV ONLY)**



**FIGURE 21. CROSSOVER TIME VARIATION WITH I_{B2}
(D64DV ONLY)**



**FIGURE 22. CROSSOVER TIME VARIATION WITH I_{B2}
(D64EV ONLY)**

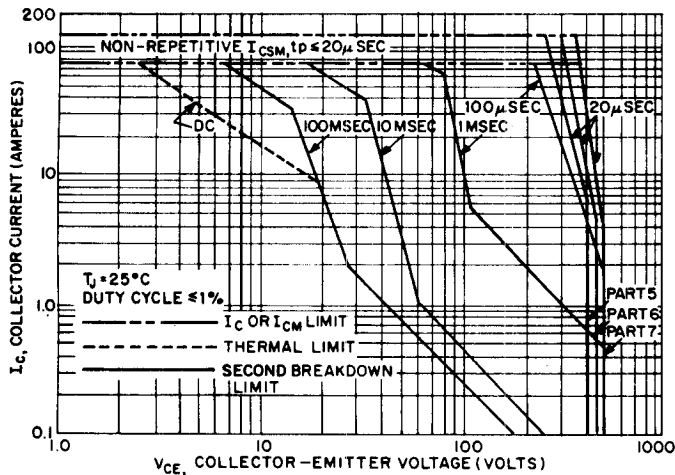
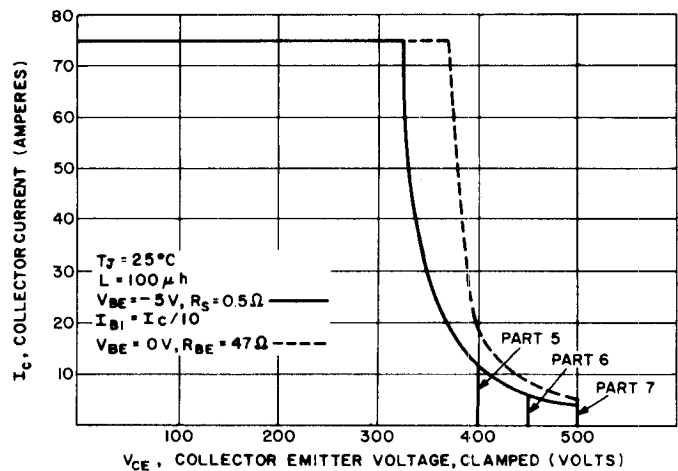


FIGURE 23. FORWARD BIAS SAFE OPERATING AREA



**FIGURE 24. REVERSE BIAS SAFE OPERATING AREA
(CLAMPED)**

TYPICAL CHARACTERISTICS

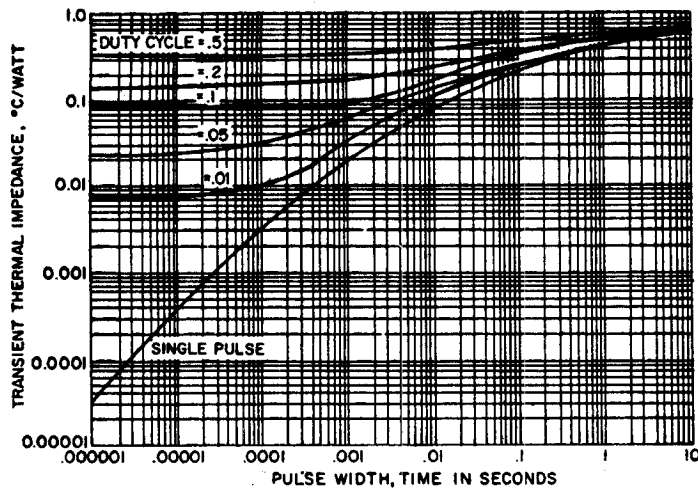


FIGURE 25. TRANSIENT THERMAL RESPONSE

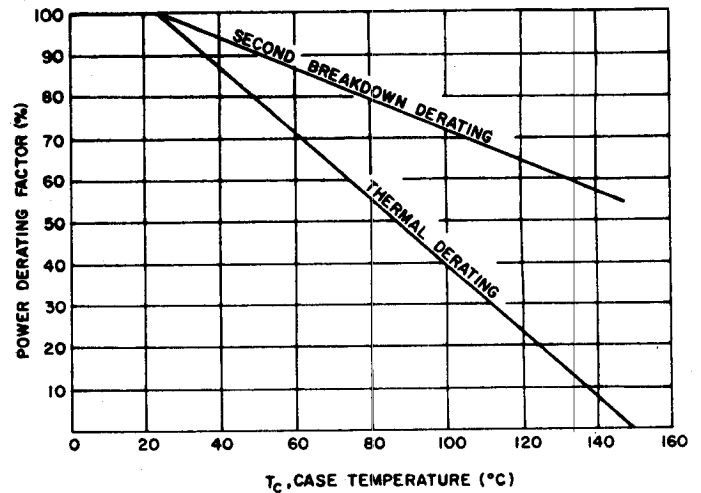


FIGURE 26. POWER DERATING

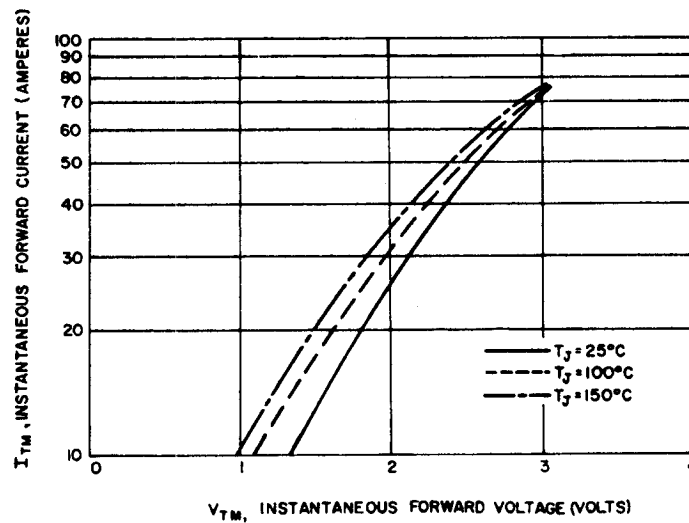


FIGURE 27. FORWARD CHARACTERISTICS

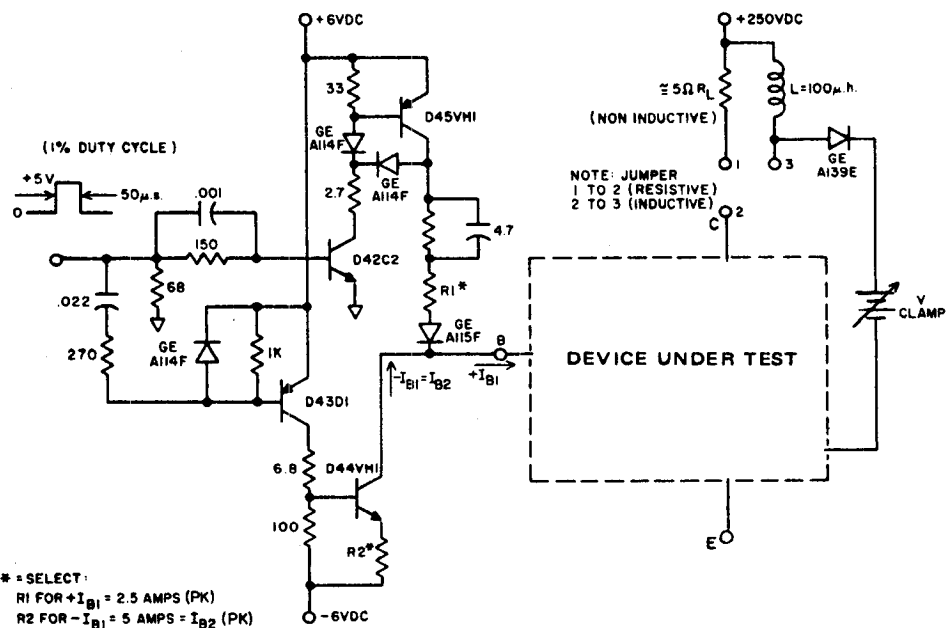


FIGURE 28.
SWITCHING TIME
TEST CIRCUIT