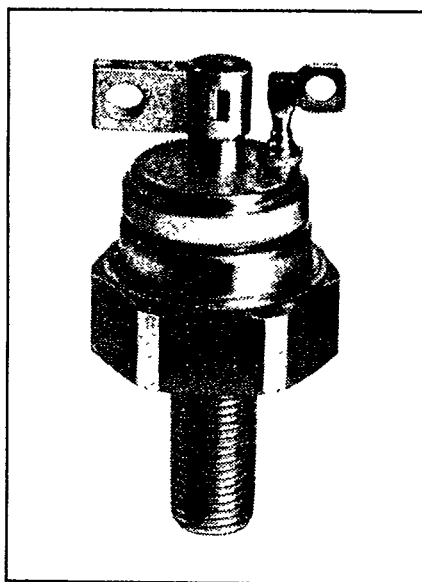
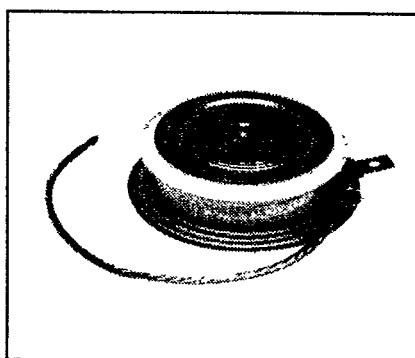


POWEREX**D60T/D62T___75****D60T/D62T___90**

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

NPN**Power Switching
Transistors****75-90 Amperes****250-500 Volts****D60T___75/90****NPN Power Switching Transistors**
75-90 Amperes/250-500 Volts**D62T___75/90****NPN Power Switching Transistors**
75-90 Amperes/250-500 Volts**Features:**

- ☐ Triple Diffused Design
- ☐ Compression Bonded Construction/No Solder
- ☐ Double Sided Cooling on D62T
- ☐ Fast Switching
- ☐ 100 kHz Operation
- ☐ 200 Amperes Peak

Applications:

- ☐ High Frequency Inverters
- ☐ Motor Controls
- ☐ Switching Regulators
- ☐ VLF Transmitters
- ☐ Induction Heating Power Supplies

Ordering Information

Example: Select the complete ten digit part number you desire from the table—i.e. a D60T307510 describes a stud mount transistor rated at 300 Volts, 75 Amperes, and a gain of 10 at rated current (75 Amperes). A D62T307510 is the same transistor in a disc package.

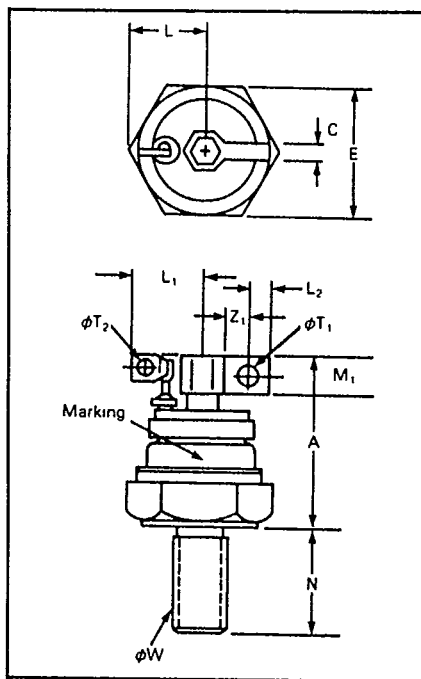
Type	V _{CEO} (SUS) Volts(x10)	Current Rating Amperes	Gain
D60T	25	75	10
D62T	30	90	
	35		
	40		
	45		
	50		

NOTE: All voltage classes not available in all current ranges.

POWEREX

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

D60T/D62T ___75, D60T/D62T ___90
NPN Power Switching Transistors
75-90 Amperes/250-500 Volts



D60T ___75/90, 250-500 Volts
Outline Drawing

Dimension	Inches		Millimeters	
	Min.	Max.	Min.	Max.
A		1.80		45.72
C	.160	.180	4.06	4.57
E	1.212	1.252	30.78	31.75
L		.812		20.62
L ₁		.64		16.26
L ₂	.155		3.94	
M ₁	.350	.450	8.88	11.42
N	1.040	1.077	24.89	27.69
phi T ₁	.193	.203	4.90	5.16
phi T ₂	.145	.160	3.68	4.06
Z ₁	.22		5.59	
phi W	1/2-20 UNF 3A			

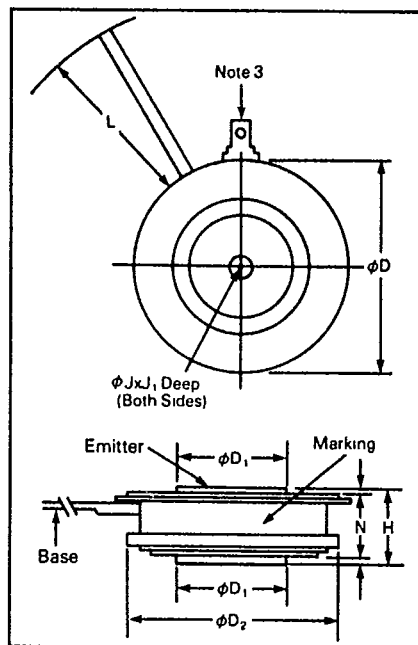
Creep and Strike Distance:
D60T- 17 in. min. (4.3mm).

(In accordance with NEMA standards.)

Finish—Nickel Plate.

Approx. Weight—4.9 oz. (140 g).

1. Complete threads to extend to within 2½ threads of seating plane.
2. Angular orientation of terminals is undefined.
3. Pitch diameter of 1/2-20 UNF 3A (COATED) threads (ASA B1.1-1960).



D62T ___75/90, 250-500 Volts
Outline Drawing

Dimension	Inches		Millimeters	
	Min.	Max.	Min.	Max.
phi D	1.610	1.650	40.89	41.91
phi D ₁	.745	.755	18.92	19.18
phi D ₂	1.420	1.460	36.07	37.08
H	.500	.560	12.70	14.22
phi J	.135	.145	3.43	3.68
J ₁	.072	.082	1.83	2.08
L	4.000		101.6	
N	.030		.76	

Creep Distance—.34 in. min. (8.64mm)

Strike Distance—.52 in. min. (13.21mm)

(In accordance with NEMA standards.)

Finish—Nickel Plate.

Approx. Weight—2.1 oz. (60g).

1. Dimension "H" is a clamped dimension.

2. Base Lead is No. 14 uninsulated flexible stranded wires.

3. Emitter tab for 3/16 inch fast-on terminal.



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D60T/D62T __75, D60T/D62T __90
NPN Power Switching Transistors
75-90 Amperes/250-500 Volts

D60T Maximum Ratings

Characteristics	Symbol	D60T __75/90	Units
Operating and Storage Temperature	T_J/T_{STG}	-65 to 200	°C
Emitter Base Voltage	V_{EBO}	7	Volts
Peak Collector Current	I_C Peak	200	Amperes
Continuous Collector Current ^①	I_C Cont.	—	Amperes
Continuous Base Current	I_B	20	Amperes
Linear Power Derating Factor from $T_C=25^\circ\text{C}$ to $T_C=175^\circ\text{C}$	—	5.88	W/°C
Thermal Resistance Case to Sink, Lubricated	$R_{\theta CS}$	0.12	°C/W
Thermal Resistance, Junction to Case	$R_{\theta JC}$	0.17	°C/W
Power Dissipation $T_C=25^\circ\text{C}$	P_T	885	Watts
Power Dissipation $T_C=75^\circ\text{C}$	P_T	590	Watts
Mounting Torque Non-Lubricated Threads	—	130	in.-lb.
Mounting Torque Non-Lubricated Threads	—	14.46	N-M

		D60T2575 D60T2590	D60T3075 D60T3090	D60T3575 D60T3590	D60T4075 D60T4090	D60T4575 D60T4590	D60T5075	
Collector Emitter Sustaining Voltage ^②	$V_{CE(SUS)}$	250	300	350	400	450	500	Volts
Collector Base Voltage	V_{CBO}	300	350	400	450	500	550	Volts
Collector Emitter Voltage $V_{BE} = -1.5\text{V}$	V_{CEV}	300	350	400	450	500	550	Volts

D62T Maximum Ratings

Characteristics	Symbol	D62T __75/90	Units
Operating and Storage Temperature	T_J/T_{STG}	-65 to 200	°C
Emitter Base Voltage	V_{EBO}	7	Volts
Peak Collector Current	I_C Peak	200	Amperes
Continuous Collector Current ^①	I_C Cont.	—	Amperes
Continuous Base Current	I_B	20	Amperes
Linear Power Derating Factor from $T_C=25^\circ\text{C}$ to $T_C=175^\circ\text{C}$	—	11.11	W/°C
Thermal Resistance, Double Sided Cooling Case to Sink, Lubricated	$R_{\theta CS}$	0.05	°C/W
Thermal Resistance, Junction to Case	$R_{\theta JC}$	0.09	°C/W
Power Dissipation $T_C=25^\circ\text{C}$	P_T	1650	Watts
Power Dissipation $T_C=75^\circ\text{C}$	P_T	1100	Watts
Mounting Force	—	900	lb.
Mounting Force	—	4.05	kN

		D62T2575 D62T2590	D62T3075 D62T3090	D62T3575 D62T3590	D62T4075 D62T4090	D62T4575 D62T4590	D62T5075	
Collector Emitter Sustaining Voltage ^②	$V_{CE(SUS)}$	250	300	350	400	450	500	Volts
Collector Base Voltage	V_{CBO}	300	350	400	450	500	550	Volts
Collector Emitter Voltage $V_{BE} = -1.5\text{V}$	V_{CEV}	300	350	400	450	500	550	Volts

① Collector current limited by base current.
Base current must not exceed 20 Amperes, RMS,
28 Amperes square wave 50 duty cycle or 40
Amperes peak ½ sine wave.
② $V_{CE(SUS)}$ must not be measured on a curve tracer.

Note:
Specifications for all 450 Volt and 500 Volt products are
tentative.



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

D60T/D62T ___75, D60T/D62T ___90

NPN Power Switching Transistors

75-90 Amperes/250-500 Volts

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

Characteristics	Symbol	Test Conditions	D60T/D62T ___75/90			Units
			Min.	Typ.	Max.	
Collector Cutoff Current (Base Emitter Reverse Biased)	I_{CEV}	At Rated V_{CEV} $V_{BE(OFF)} = -1.5\text{V}$	—	—	1	mA
Collector Cutoff Current (Base Emitter Reverse Biased)	I_{CEV}	At Rated V_{CEV} $V_{BE(OFF)} = -1.5\text{V}, T_j = 150^\circ\text{C}$	—	—	3	mA
Emitter Cutoff Current	I_{EBO}	$V_{EB} = 7\text{V}$	—	2	30	mA
Output Capacitance	C_{OB}	$f_{TEST} = 1\text{ MHz}, V_{CB} = 10\text{V}$	—	2500	—	μF
Gain-Bandwidth Product	f_T	$f_{TEST} = 1\text{ MHz}, I_C = 5\text{A}, V_{CE} = 10\text{V}$	7	10	—	MHz
D60T/D62T ___75						
DC Current Gain	h_{FE}	$I_C = 75\text{A}, V_{CE} = 2.5\text{V}$ $I_C = 150\text{A}, V_{CE} = 2.5\text{V}$	10	—	—	—
			—	5	—	—
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C = 75\text{A}, I_B = 9\text{A}$	—	—	1.25	Volts
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	$I_C = 75\text{A}, I_B = 9\text{A}$	—	—	1.8	Volts
Turn-On Delay	t_d	$V_{CC} = 250\text{V}, I_C = 75\text{A}$	—	—	200	ns
Resistive Load Rise Time	t_r	$I_{B1} = -I_{B2} = 11.2\text{A}$	—	—	1.10	μs
Switch Times Storage Time	t_s	$t_p = 50\text{ }\mu\text{s}$	—	—	3.0	μs
Fall Time	t_f	Duty Cycle < 2%	—	—	0.6	μs
D60T/D62T ___90						
DC Current Gain	h_{FE}	$I_C = 90\text{A}, V_{CE} = 2.5\text{V}$ $I_C = 180\text{A}, V_{CE} = 2.5\text{V}$	10	—	—	—
			—	5	—	—
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C = 90\text{A}, I_B = 10.8\text{A}$	—	—	1.25	Volts
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	$I_C = 90\text{A}, I_B = 10.8\text{A}$	—	—	2.0	Volts
Turn-On Delay	t_d	$V_{CC} = 250\text{V}, I_C = 90\text{A}$	—	—	200	ns
Resistive Load Rise Time	t_r	$I_{B1} = -I_{B2} = 13.5\text{A}$	—	—	1.20	μs
Switch Times Storage Time	t_s	$t_p = 50\text{ }\mu\text{s}$	—	—	3.0	μs
Fall Time	t_f	Duty Cycle < 2%	—	—	0.6	μs

Note:

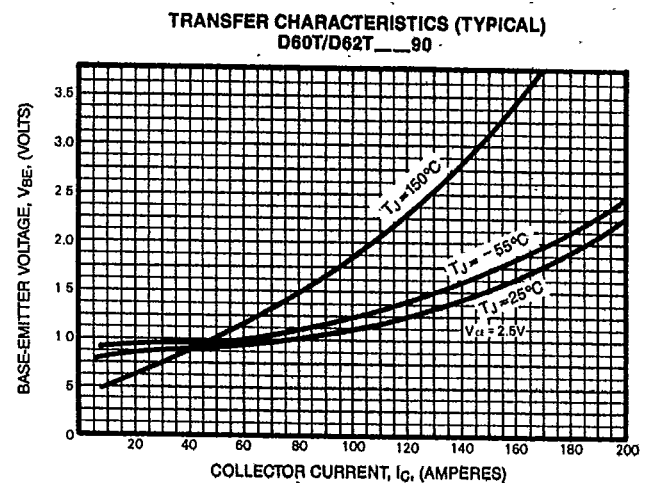
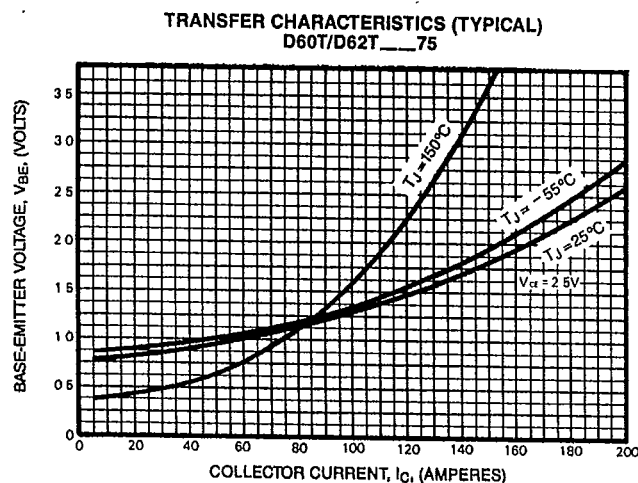
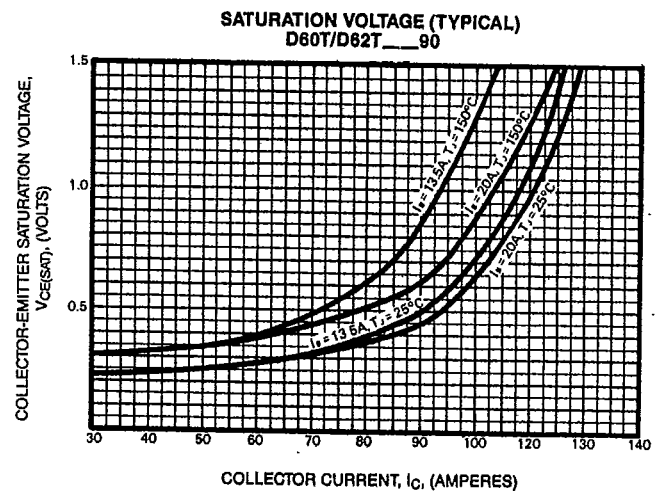
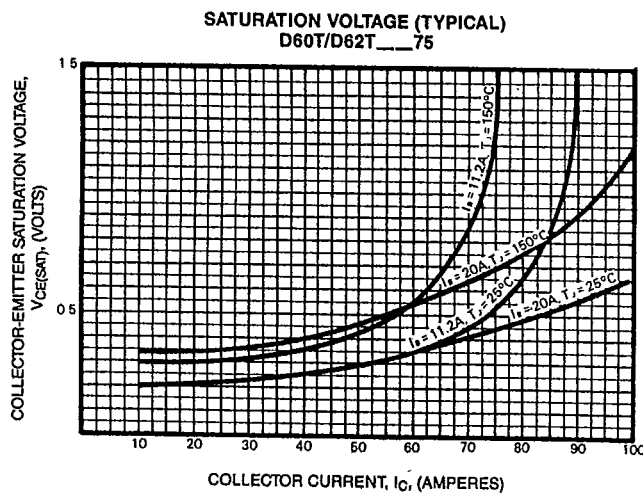
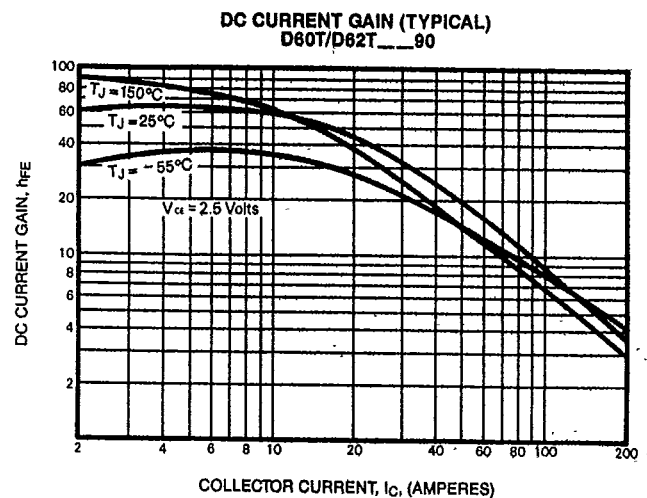
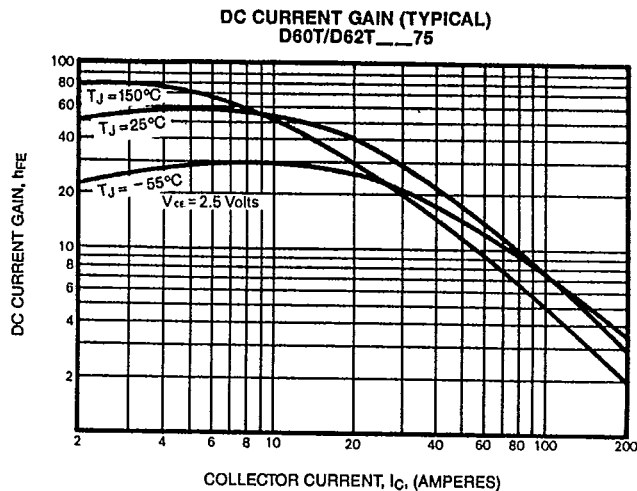
Specifications for all 450 Volts and 500 Volt products are tentative.



T-33-15

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

D60T/D62T___75, D60T/D62T___90
NPN Power Switching Transistors
75-90 Amperes/250-500 Volts

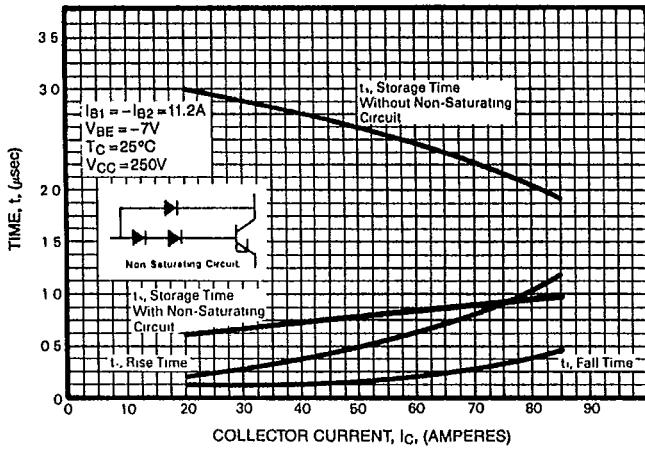




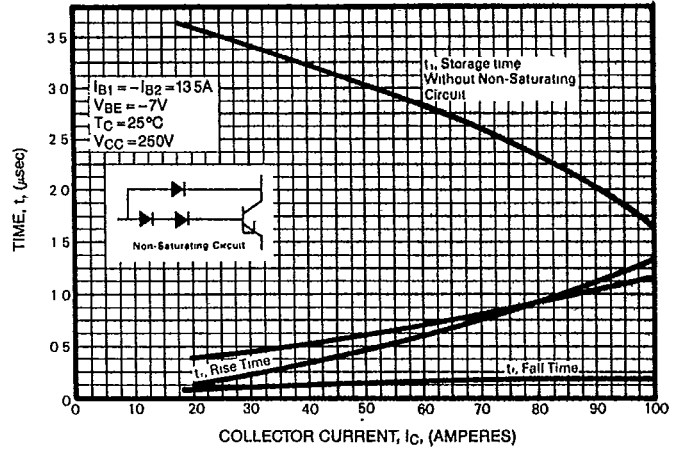
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D60T/D62T___75, D60T/D62T___90
NPN Power Switching Transistors
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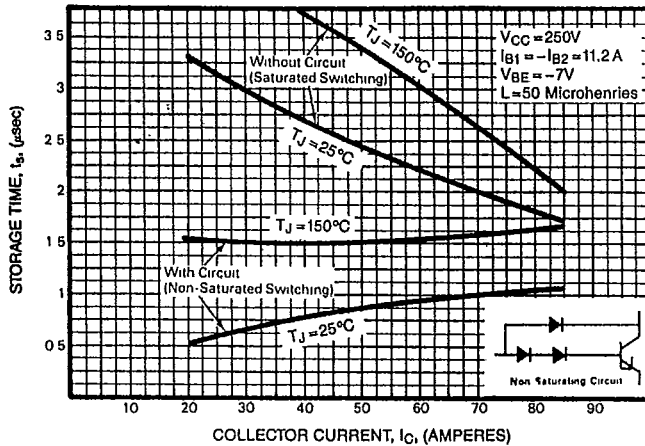
RESISTIVE SWITCHING TIMES (TYPICAL)
D60T/D62T___75



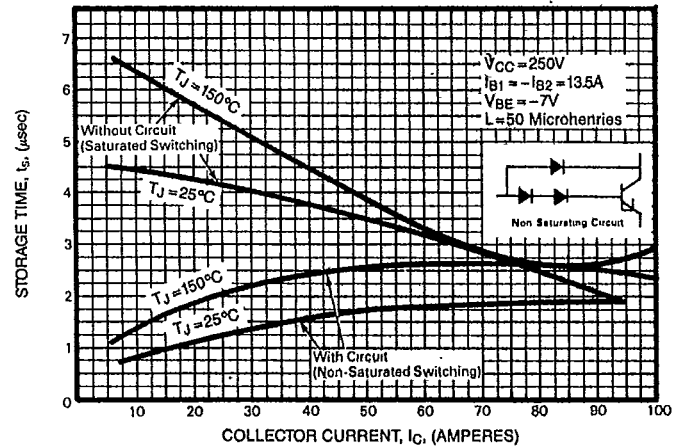
RESISTIVE SWITCHING TIMES (TYPICAL)
D60T/D62T___90



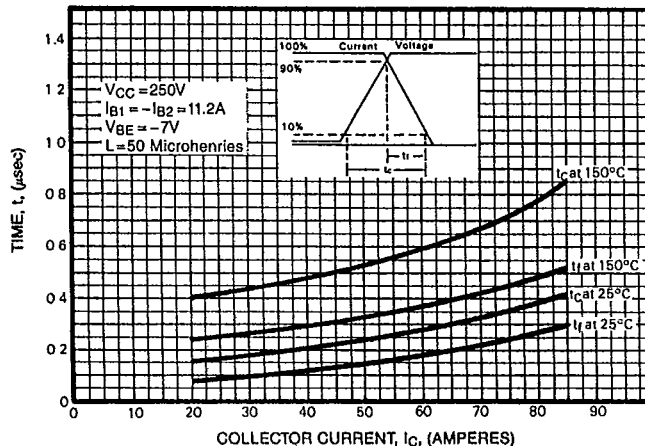
STORAGE TIME FOR CLAMPED INDUCTIVE SWITCHING
(TYPICAL) D60T/D62T___75



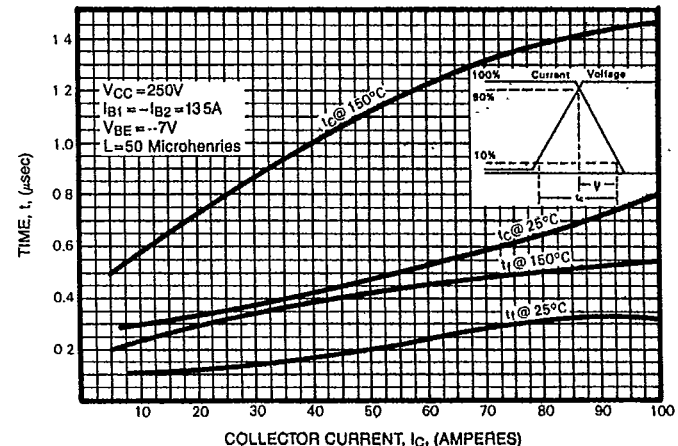
STORAGE TIME FOR CLAMPED INDUCTIVE SWITCHING
(TYPICAL) D60T/D62T___90



TURN-OFF TIME FOR CLAMPED INDUCTIVE SWITCHING
(TYPICAL) D60T/D62T___75



TURN-OFF TIME FOR CLAMPED INDUCTIVE SWITCHING
(TYPICAL) D60T/D62T___90





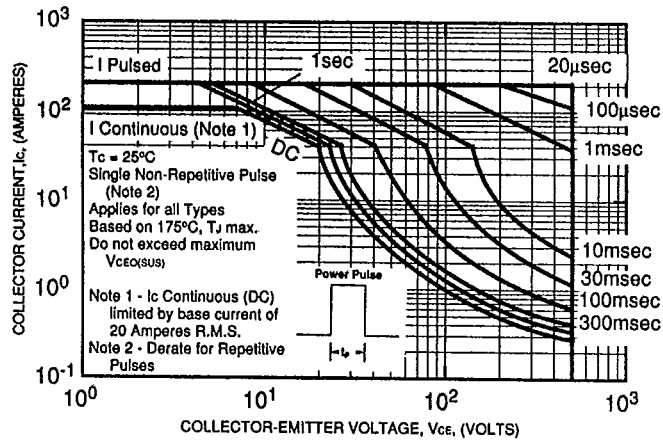
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D60T/D62T __75, D60T/D62T __90

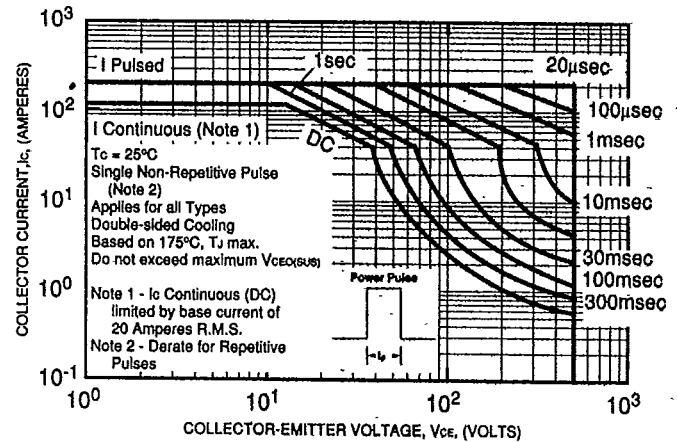
NPN Power Switching Transistors

75-90 Amperes/250-500 Volts

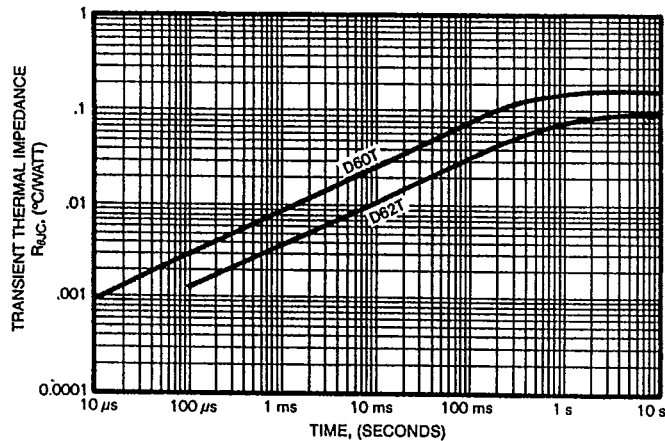
FORWARD BIAS SAFE OPERATING AREA (S.O.A.)
D60T __75/90



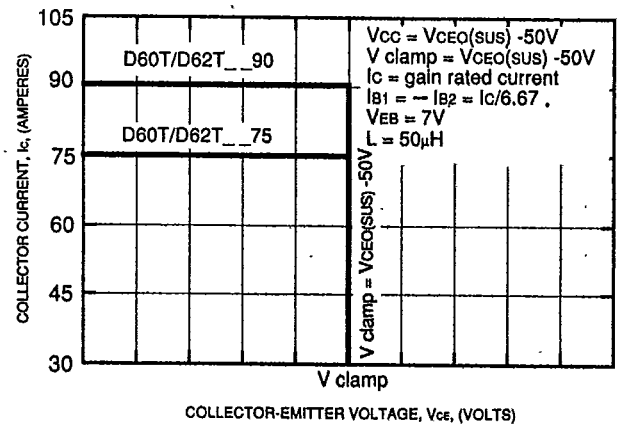
FORWARD BIAS SAFE OPERATING AREA (S.O.A.)
D62T __75/90



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS
D60T/D62T



REVERSE BIAS SAFE OPERATING AREA (R.B.S.O.A.)
D60T/D62T __75/90

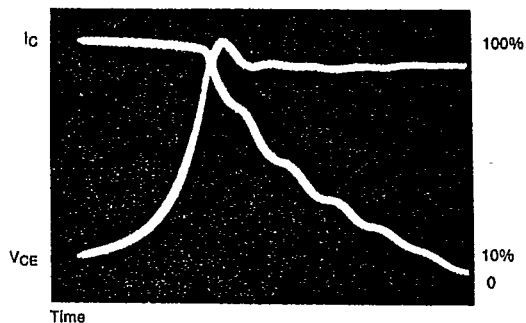




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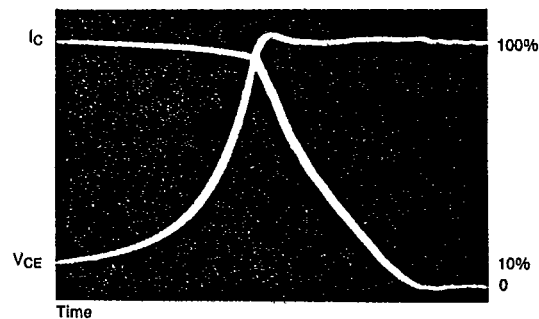
D60T/D62T___75/90
NPN Power Switching Transistors
75-90 Amperes/250-500 Volts

Typical Turn-Off Waveforms for Clamped Inductive Switching*



D60T___75
D62T___75

$V_{CE} = 250V$, 50V/cm
 $I_C = 75A$, scale not calibrated
 $I_{B1} = -I_{B2} = 11.2A$, $V_{EB} = 7V$
Time = 100 ns/cm



D60T___90
D62T___90

$V_{CE} = 250V$, 50V/cm
 $I_C = 90A$
 $I_{B1} = -I_{B2} = 13.5A$, $V_{EB} = 7V$
Time = 200 ns/cm

*Shown above are actual photographs taken during 150°C inductive switching measurements