"BIG IDEAS IN BIG POWER"

PowerTech

90 AMPERES

PT-7511

SILICON NPN TRANSISTOR

MAXIMUM RATINGS	SYMBOL	PT-7511
Collector-Base Voltage	V_{CBO}	200V
Collector-Emitter Voltage	V_{CEO}	200V
Emitter-Base Voltage	V_{EBO}	10V
Peak Collector Current	I_{CM}*	90A
D.C. Collector Current	I_C	50A
Power Dissipation at 25°C Case Temperature	P_D	350W
Power Dissipation at 100°C Case Temperature	P_D	200W
Operating Junction Temperature Range	T_J	-65 to 200°C
Storage Temperature Range	T_A	-65 to 200°C
Thermal Resistance	θ_{JC}	0.5° C/W
Package		TO-63

ELECTRICAL CHARACTERISTICS (at 25°C unless noted)

TEST	SYMBOL	LIMITS PT-7511 MIN.	LIMITS PT-7511 MAX.	UNIT	TEST CONDITIONS
D.C. Current Gain*	h_{FE}	10	40		I_C=50A, V_{CE}=2V
D.C. Current Gain*	h_{FE}	5	—		I_C=90A, V_{CE}=4V
Collector Saturation Voltage*	$V_{CE(sat)}$	—	0.6	V	I_C=50A, I_B=5A
Collector Saturation Voltage*	$V_{CE(sat)}$	—	1.5	V	I_C=90A, I_B=18A
Base Emitter Voltage*	V_{BE}	—	1.5	V	I_C=50A, V_{CE}=2V
Base Emitter Voltage*	V_{BE}	—	2.5	V	I_C=90A, V_{CE}=4V
Collector-Emitter Breakdown Voltage*	$V_{CEO(sus)}$	200	—	V	I_C=200mA, I_B=0
Collector Cut-off Current	I_{CBO}	—	2.0	mA	V_{CB}=200V, I_{EB}=0
Collector Cut-off Current @ 150°C	I_{CBO}	—	10	mA	V_{CB}=100V, I_{EB}=0
Emitter Cut-off Current	I_{EBO}	—	1.0	mA	V_{EB}=8V, I_{CB}=0
Gain Bandwith Product Typ.	f_t	1.0	—	MHz	I_C=5A, V_{CE}=10V f=100KHz
Collector Capacitance	C_{obo}	—	1800	pf	V_{CB}=10V, f=1MHz
Switching Speed Typ.	t_r	—	2.5	µs.	
(PowerTech Test Circuit)	t_s	—	3	µs.	I_C=50A
	t_f	—	2.5	µs.	I_{B1}=10A, $-I_{B2}$=5A

*PW ≤ 300µs., D.C. ≤ 2%

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"BIG IDEAS IN BIG POWER"

PowerTech

500 AMPERES

MT-6010

POWERBLOCK POWER SYSTEM

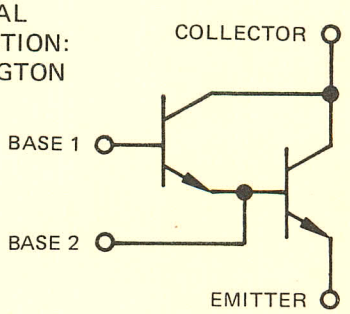
MAXIMUM RATINGS	SYMBOL	MT-6010
Collector-Base Voltage	V_{CBO}	450V
Collector-Emitter Voltage	V_{CE}	400V
Emitter-Base Voltage	V_{EBO}	10V
Peak Collector Current	I_{CM}*	500A
D. C. Collector Current	I_C	300A
Power Dissipation at 25°C Case Temperature	P_D	2100W
Power Dissipation at 100°C Case Temperature	P_D	1200W
Operating Junction Temperature Range	T_J	−65 to 200° C
Storage Temperature Range	T_A	−65 to 150° C
Package:		PPS-1200
Thermal Resistance	θ_{JC}	0.08°C/W

ELECTRICAL SPECIFICATIONS (at 25°C unless otherwise noted)

TEST	SYMBOL	MIN.	MAX.	UNITS	TEST CONDITIONS
D. C. Current Gain*	h_{FE}	300			I_C=300A, V_{CE}=4V
D. C. Current Gain*	h_{FE}	100			I_C=500A, V_{CE}=4V
Collector Saturation Voltage*	$V_{CE(sat)}$		1.5	V	I_C=300A, I_B=1A
Collector Saturation Voltage*	$V_{CE(sat)}$		2.0	V	I_C=500A, I_B=5A
Base Emitter Voltage*	V_{BE}		2.0	V	I_C=300A, V_{CE}=4V
Base Emitter Voltage*	V_{BE}		3.0	V	I_C=500A, V_{CE}=4V
Collector-Emitter Breakdown Voltage*ϕ	$V_{CE(sus)}$	400		V	I_C=50mA
Collector Cutoff Current**	I_{CES}		2	mA	V_{CB}=450V, R_{BE}=0
Emitter Cutoff Current***	I_{EBO}		10	mA	V_{EB}=10V, I_C=0

*$\leqslant$ 300μsec. DC $\leqslant$ 2%
** Base #1 connected to Base #2
*** Base #2 open circuit
ϕ $R_{B_1B_2}$ = 100 ohms, R_{B_2E} = 10 ohms

INTERNAL CONNECTION: DARLINGTON



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"BIG IDEAS IN BIG POWER"

PowerTech

800 AMPERES

MT-5004
MT-5005

POWERBLOCK POWER SYSTEM

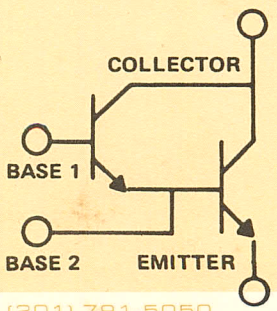
MAXIMUM RATINGS	SYMBOL	MT-5004	MT-5005
Collector-Base Voltage	V_{CBO}	60V	80V
Collector-Emitter Voltage	$V_{CE(sus)}$	60V	80V
Emitter-Base Voltage	V_{EBO}	10V	10V
Peak Collector Current*	I_C	800A	800A
D.C. Collector Current	I_C	500A	500A
Power Dissipation @ 25°C	P_D	1400W	1400W
Power Dissipation @ 100°C	P_D	800W	800W
Thermal Resistance	θ_{J-C}	0.12° C/W	0.12° C/W
Operating Junction Temp. Range		-65 to 200° C	-65 to 200° C
Storage Temperature Range		-65 to 150° C	-65 to 150° C
Package		PPS-1200	PPS-1200

ELECTRICAL CHARACTERISTICS 25°C

TEST	SYMBOL	LIMITS				UNIT	TEST CONDITIONS
		MT-5004		MT-5005			
		MIN.	MAX.	MIN.	MAX.		
D.C. Current Gain*	h_{FE}	400	–	400	–	–	I_C=500A, V_{CE}=4V
D.C. Current Gain*	h_{FE}	100	–	100	–	–	I_C=800A, V_{CE}=4V
Collector Saturation Voltage*	$V_{CE(sat)}$	–	2.0	–	2.0	V	I_C=500A, I_B=1.5A
Collector Saturation Voltage*	$V_{CE(sat)}$	–	2.5	–	2.5	V	I_C=800A, I_B=8.0A
Base Emitter Voltage*	V_{BE}	–	2.5	–	2.5	V	I_C=500A, V_{CE}=4V
Base Emitter Voltage*	V_{BE}	–	3.0	–	3.0	V	I_C=800A, V_{CE}=4V
Collector-Emitter Voltage* ø	$V_{CE(sus)}$	60	–	80	–	V	I_C=200mA,
Collector Cutoff Current*	I_{CES}	–	15	–	–	mA	V_{CB}=60V, R_{BE}=0
Collector Cutoff Current**	I_{CES}	–	–	–	15	mA	V_{CB}=80V, R_{BE}=0
Emitter Cutoff Current ***	I_{EBO}	–	5	–	5	mA	V_{EB}=10V, I_{CB} =0

* <300µ sec. DC<2%
** Base #1 connected to Base #2
*** Base #2 open circuit
ø $R_{B_1B_2}$ = 100 ohms, R_{B_2E} = 10 ohms

INTERNAL CONNECTION: DARLINGTON



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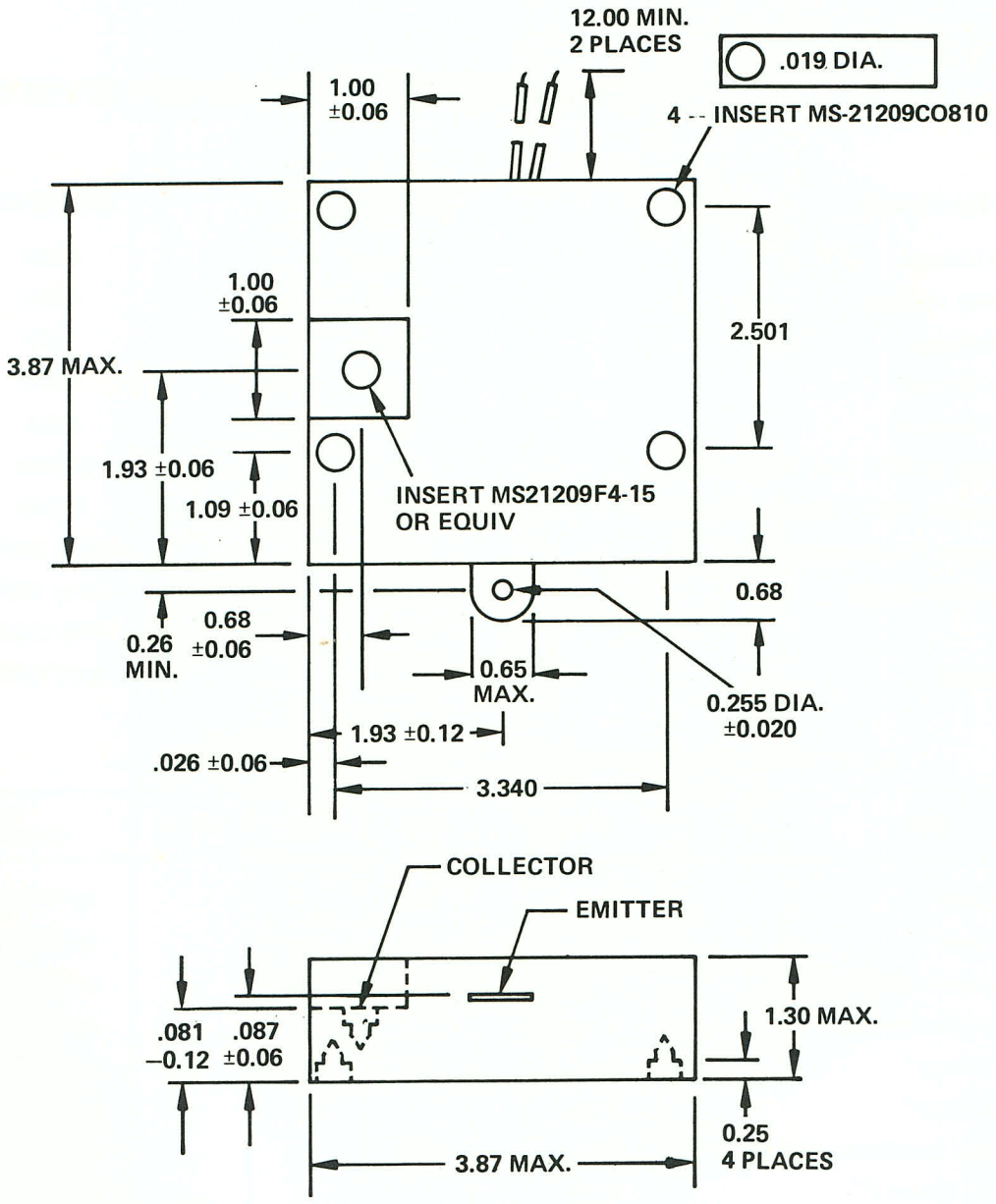


PPS – 1200

4746–12/77. Printed in U.S.A.

"BIG IDEAS IN BIG POWER"

PowerTech

90 AMPERES

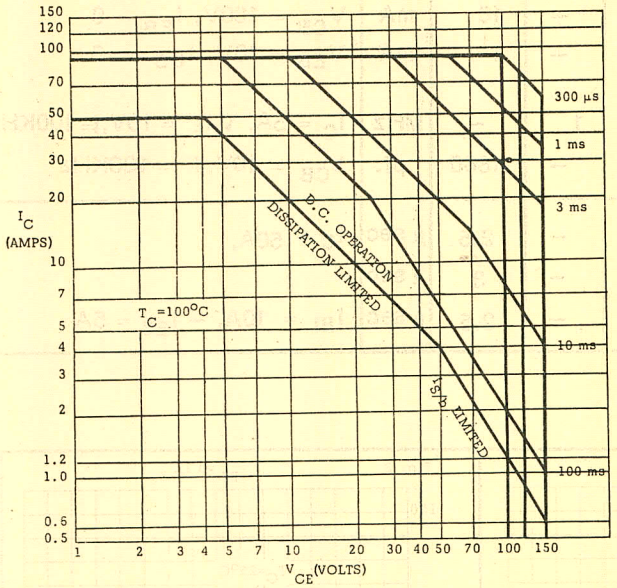
2N5926
PT - 7507
PT - 7508

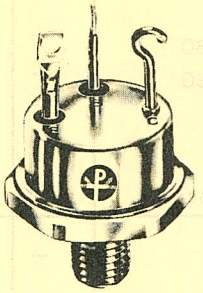
SILICON NPN TRANSISTOR

FEATURES:

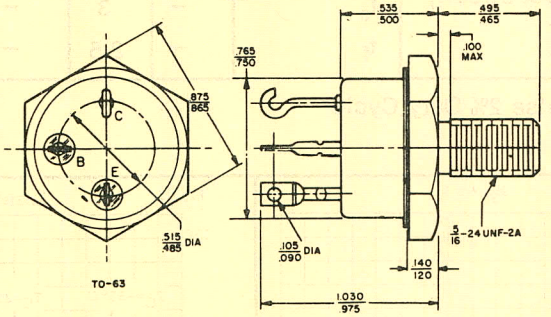
$V_{CE(sat)}$	0.6 V @ 50 A	h_{FE}	5 min @ 90 A	$I_{S/b}$	1.2 A @ 100 V
V_{BE}	1.2 V @ 50 A	t_f	2 μ sec	$E_{S/b}$	6 Joules

SAFE OPERATING AREA





JEDEC TO-63 PKG.



PowerTech's transistors offer high current capability, high breakdown voltage and the lowest available saturation voltage. They have exceptional resistance to both forward and reverse second breakdown. This unique combination of device characteristics makes them particularly suited for a wide variety of high current applications, which include series and switching regulators, motor controls, servoamplifiers and power control circuits. The transistors will provide outstanding performance when used as replacements for paralleled lower current devices, resulting in considerable reductions in weight, space and circuit complexity. Their reliability is assured through 100% power testing at 50V, 4A @ 100°C case temperature. These transistors exceed the requirements of MIL-S-19500 and are well suited for the most severe military-aerospace applications.

MAXIMUM RATINGS	SYMBOL	PT-7507	2N5926	PT-7508
Collector-Base Voltage	V_{CBO}	120V	150V	175V
Collector-Emitter Voltage	V_{CEO} (sus)	100V	120V	150V
Emitter-Base Voltage	V_{EBO}		10V	
Peak Collector Current	I_C		90A	
D.C. Collector Current	I_C		50A	
Power Dissipation @ 25°C	P_D		350W	
Power Dissipation @ 100°C	P_D		200W	
Thermal Resistance	θ_{J-C}		0.5° C/W	
Operating Temperature Range			-65 to 200°C	
Storage Temperature Range			-65 to 200°C	

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ELECTRICAL CHARACTERISTICS 25°C

TEST	SYMBOL	LIMITS						UNITS	TEST CONDITIONS
		PT7507		2N5926		PT7508			
		MIN.	MAX.	MIN.	MAX.	MIN.	MAX.		
D.C. Current Gain*	h_{FE}	10	40	10	40	10	40	–	I_C = 50A, V_{CE} = 2V
D.C. Current Gain*	h_{FE}	5	–	5	–	5	–	–	I_C = 90A, V_{CE} = 4V
Collector Saturation Voltg.*	$V_{CE\ (sat)}$	–	0.60	–	0.60	–	0.60	V	I_C = 50A, I_B = 5A
Collector Saturation Voltg.*	$V_{CE\ (sat)}$	–	1.5	–	1.5	–	1.5	V	I_C = 90A, I_B = 18A
Base Emitter Voltage*	V_{BE}	–	1.2	–	1.2	–	1.2	V	I_C = 50A, V_{CE} = 2V
Base Emitter Voltage*	V_{BE}	–	2.5	–	2.5	–	2.5	V	I_C = 90A, V_{CE} = 4V
Collector-Emitter Voltage*	$V_{CEO\ (sus)}$	100	–	120	–	150	–	V	I_C = 200mA, I_B = 0
Collector Cutoff Current	I_{CBO}	–	2	–	–	–	–	mA	V_{CB} = 120V, I_{EB} = 0
Collector Cutoff Current	I_{CBO}	–	–	–	2	–	–	mA	V_{CB} = 150V, I_{EB} = 0
Collector Cutoff Current	I_{CBO}	–	–	–	–	–	2	mA	V_{CB} = 175V, I_{EB} = 0
Collector Cutoff Current @ 150°C	I_{CBO}	–	10	–	10	–	10	mA	V_{CB} = 100V, I_{EB} = 0
Emitter Cutoff Current	I_{EBO}	–	1	–	1	–	1	mA	V_{EB} = 10V, I_{CB} = 0
Gain Bandwidth Product (Typ.)	f_t	1	–	1	–	1	–	MHz	I_C = 5A, V_{CE} = 10V, f= 100KHz
Collector Capacitance	C_{obo}	–	1800	–	1800	–	1800	pf.	V_{CB} = 10V, f = 100KHz
Switching Speed (Typ.) (PowerTech Test Circuit)	t_r	–	2.5	–	2.5	–	2.5	μ sec	I_C = 50A,
	t_s	–	3	–	3	–	3	μ sec	
	t_f	–	2.5	–	2.5	–	2.5	μ sec	I_{B1} = 10A, – I_{B2} = 5A

* $\leq$300 μ sec Pulse 2% Duty Cycle

Fig. 1 h_{FE} vs I_C

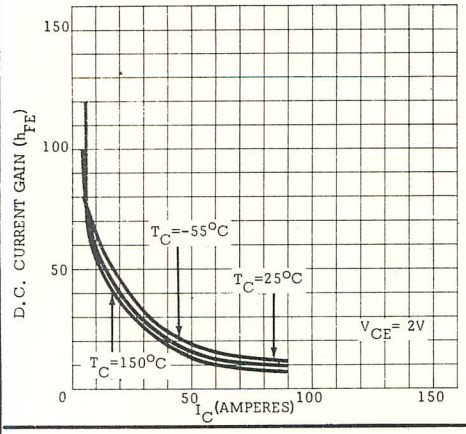


Fig. 2 $V_{CE(sat)}$ vs I_C

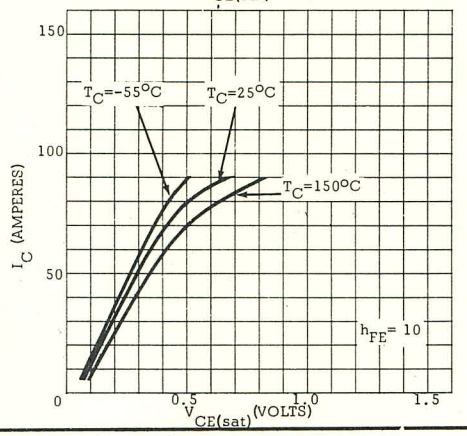


Fig. 3 V_{BE} vs I_C

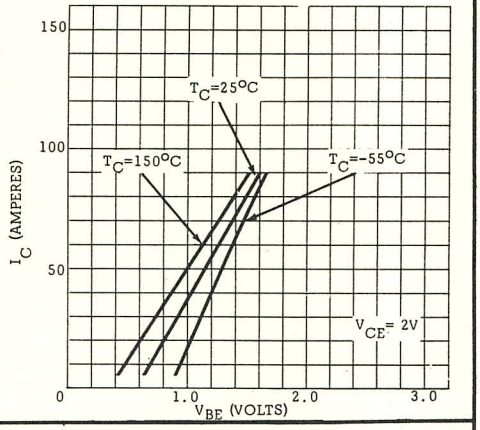


Fig. 4 POWER DISSIPATION vs TEMPERATURE

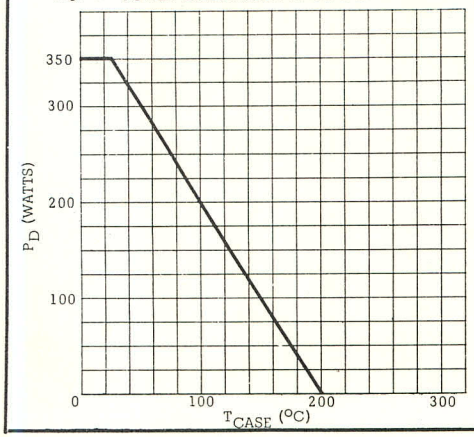
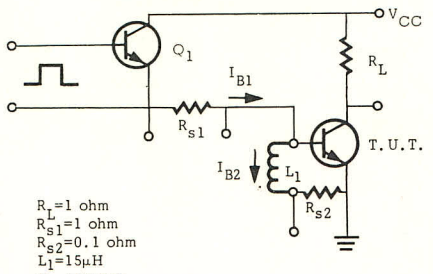
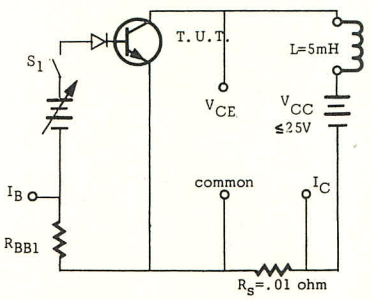


Fig. 5 SWITCHING TEST CIRCUIT



R_L=1 ohm
R_{s1}=1 ohm
R_{s2}=0.1 ohm
L_1=15μH
Q_1=2N5552

Fig. 6 UNCLAMPED INDUCTIVE SWEEP TEST



PROCEDURE
With S_1 closed, set I_B=6A, I_C=50A
Open S_1
$E_{S/b}$=1/2LI^2=6.25 Joules

"BIG IDEAS IN BIG POWER"

PowerTech

100 AMPERES

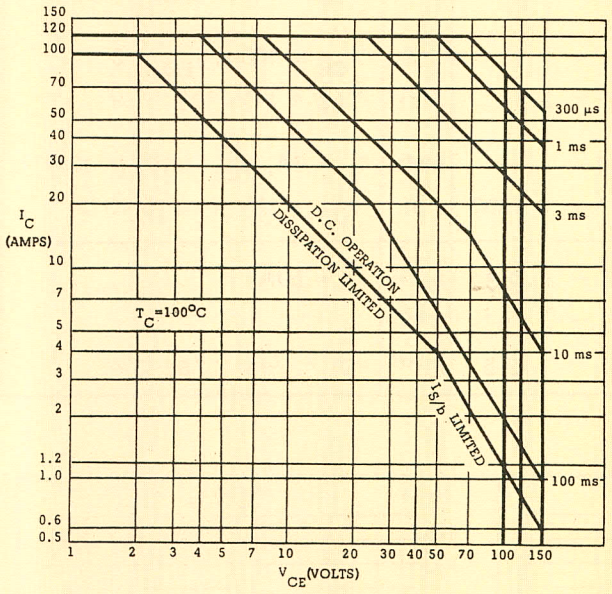
PT - 500
PT - 501
PT - 502

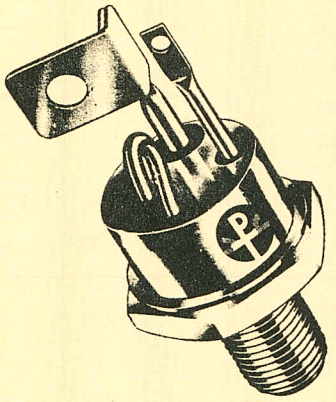
SILICON NPN TRANSISTOR

FEATURES:

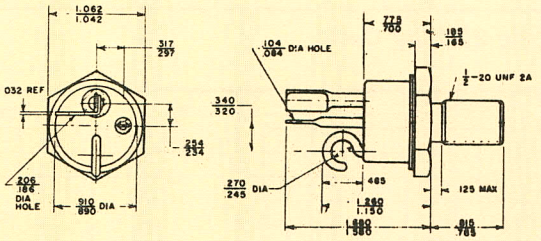
$V_{CE(sat)}$	0.6 V @ 50 A	h_{FE}	5 min @100 A	$I_{S/b}$	1.2 A @ 100 V
V_{BE}	1.2 V @ 50 A	t_f	2.5 μ sec	$E_{S/b}$	6 Joules

SAFE OPERATING AREA





JEDEC TO-114 PKG.



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MAXIMUM RATINGS	SYMBOL	PT-502	PT-501	PT-500
Collector-Base Voltage	V_{CBO}	120V	150V	175V
Collector-Emitter Voltage	V_{CEO} (sus)	100V	120V	150V
Emitter-Base Voltage	V_{EBO}		10V	
Peak Collector Current	I_C		100A	
D.C. Collector Current	I_C		80A	
Power Dissipation @ 25°C	P_D		350W	
Power Dissipation @ 100°C	P_D		200W	
Thermal Resistance	θ_{J-C}		0.5° C/W	
Operating Temperature Range			-65 to 200°C	
Operating Temperature Range			-65 to 200°C	

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ELECTRICAL CHARACTERISTICS 25°C

TEST	SYMBOL	LIMITS PT502 MIN.	LIMITS PT502 MAX.	LIMITS PT501 MIN.	LIMITS PT501 MAX.	LIMITS PT500 MIN.	LIMITS PT500 MAX.	UNITS	TEST CONDITIONS
D.C. Current Gain*	h_{FE}	10	40	10	40	10	40	–	I_C = 50A, V_{CE} = 2V
D.C. Current Gain*	h_{FE}	5	–	5	–	5	–	–	I_C = 100A, V_{CE} = 4V
Collector Saturation Voltg.*	$V_{CE\ (sat)}$	–	**0.60**	–	**0.60**	–	**0.60**	V	I_C = 50A, I_B = 5A
Collector Saturation Voltg.*	$V_{CE\ (sat)}$	–	1.5	–	1.5	–	1.5	V	I_C = 100A, I_B = 20A
Base Emitter Voltage*	V_{BE}	–	**1.2**	–	**1.2**	–	**1.2**	V	I_C = 50A, V_{CE} = 2V
Base Emitter Voltage*	V_{BE}	–	2.5	–	2.5	–	2.5	V	I_C = 100A, V_{CE} = 4V
Collector-Emitter Voltage*	$V_{CEO\ (sus)}$	100	–	120	–	150	–	V	I_C = 200mA, I_B = 0
Collector Cutoff Current	I_{CBO}	–	2	–	–	–	–	mA	V_{CB} = 120V, I_{EB} = 0
Collector Cutoff Current	I_{CBO}	–	–	–	2	–	–	mA	V_{CB} = 150V, I_{EB} = 0
Collector Cutoff Current	I_{CBO}	–	–	–	–	–	2	mA	V_{CB} = 175V, I_{EB} = 0
Collector Cutoff Current @ 150°C	I_{CBO}	–	10	–	10	–	10	mA	V_{CB} = 100V, I_{EB} = 0
Emitter Cutoff Current	I_{EBO}	–	1	–	1	–	1	mA	V_{EB} = 10V, I_{CB} = 0
Gain Bandwidth Product (Typ.)	f_t	1	–	1	–	1	–	MHz	I_C = 5A, V_{CE} = 10V, f = 100KHz
Collector Capacitance	C_{obo}	–	1800	–	1800	–	1800	pf.	V_{CB} = 10V, f = 100KHz
Switching Speed (Typ.) (PowerTech Test Circuit)	t_r	–	2.5	–	2.5	–	2.5	μ sec	I_C = 50A
	t_s	–	3	–	3	–	3	μ sec	
	t_f	–	2.5	–	2.5	–	2.5	μ sec	I_{B1} = 10A, – I_{B2} = 5A

* ≤ 300 μ sec Pulse 2% Duty Cycle

Fig. 1 h_{FE} vs I_C

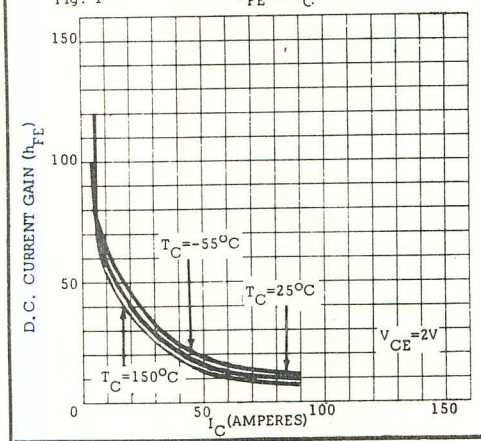


Fig. 2 $V_{CE(sat)}$ vs I_C

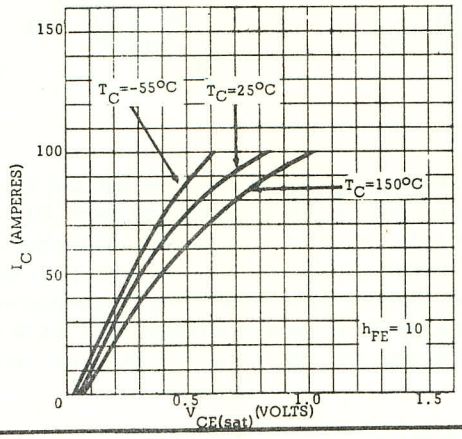


Fig. 3 V_{BE} vs I_C

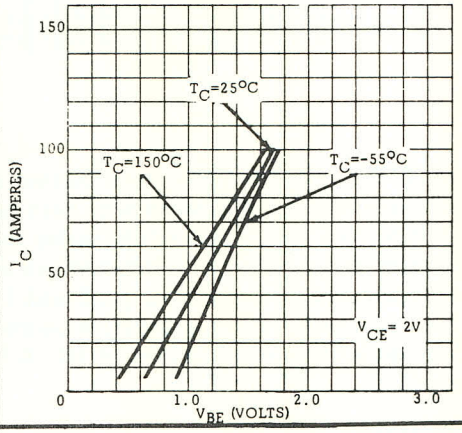


Fig. 4 POWER DISSIPATION vs TEMPERATURE

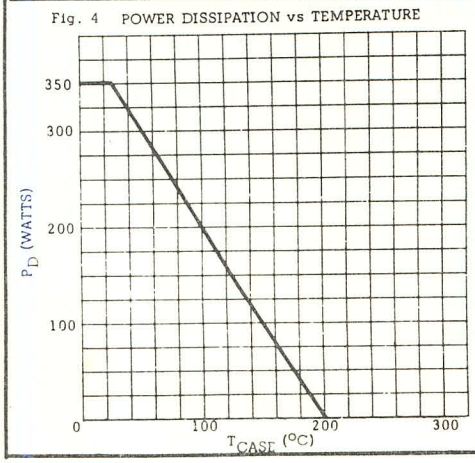
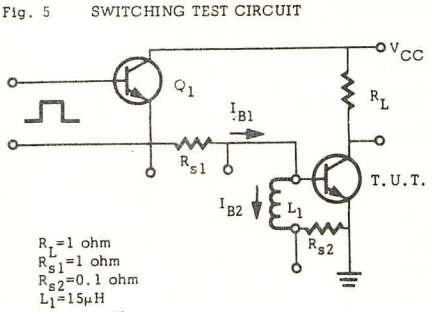
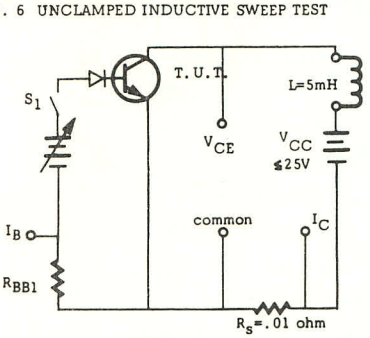


Fig. 5 SWITCHING TEST CIRCUIT



R_L=1 ohm
R_{s1}=1 ohm
R_{s2}=0.1 ohm
L_1=15μH
Q_1=2N5552

Fig. 6 UNCLAMPED INDUCTIVE SWEEP TEST



PROCEDURE
With S_1 closed, set I_B=8A, I_C=50A
Open S_1
$E_{S/b}=1/2LI^2=6.25$ Joules

"BIG IDEAS IN BIG POWER"

PowerTech

150 AMPERES

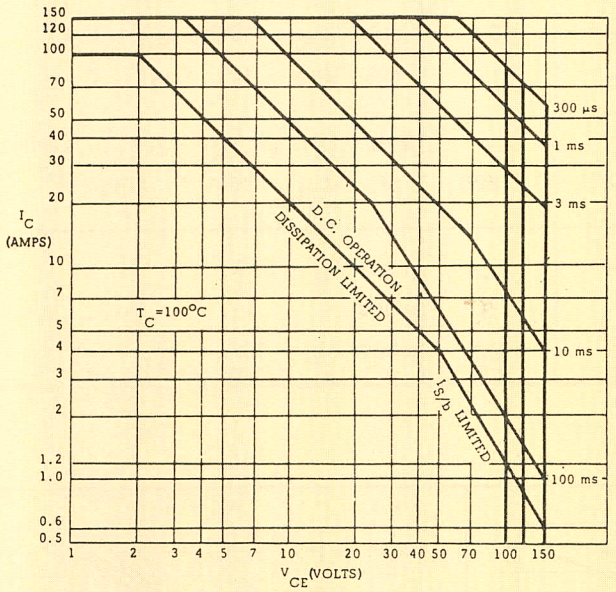
2N5928
PT-8502

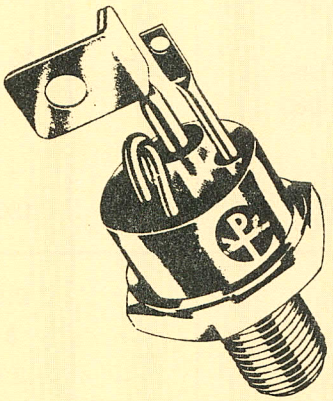
SILICON NPN TRANSISTOR

FEATURES:

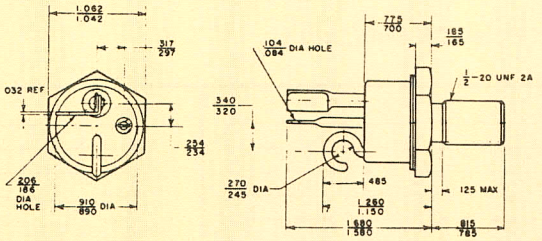
$V_{CE(sat)}$	1.0 V @ 100 A	h_{FE}	5 min @ 150 A	$I_{S/b}$	1.2 A @ 100 V
V_{BE}	2.0 V @ 100 A	t_f	2.5 μ sec	$E_{S/b}$	6 Joules

SAFE OPERATING AREA





JEDEC TO-114 PKG.



PowerTech's transistors offer high current capability, high breakdown voltage and the lowest available saturation voltage. They have exceptional resistance to both forward and reverse second breakdown. This unique combination of device characteristics makes them particularly suited for a wide variety of high current applications, which include series and switching regulators, motor controls, servoamplifiers and power control circuits. The transistors will provide outstanding performance when used as replacements for paralleled lower current devices, resulting in considerable reductions in weight, space and circuit complexity. Their reliability is assured through 100% power testing at 50V, 4A @ 100°C case temperature. These transistors exceed the requirements of MIL-S-19500 and are well suited for the most severe military-aerospace applications.

MAXIMUM RATINGS	SYMBOL	PT-8502	2N5928
Collector-Base Voltage	V_{CBO}	100V	120V
Collector-Emitter Voltage	V_{CEO} (sus)	100V	120V
Emitter-Base Voltage	V_{EBO}	10V	10V
Peak Collector Current	I_C	150A	150A
D.C. Collector Current	I_C	100A	100A
Power Dissipation @ 25°C	P_D	350W	350W
Power Dissipation @ 100°C	P_D	200W	200W
Thermal Resistance	θ_{J-C}	0.5° C/W	0.5°C/W
Operating Temperature Range		-65 to 200°C	-65 to 200°C
Storage Temperature Range		-65 to 200°C	-65 to 200°C

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ELECTRICAL CHARACTERISTICS 25°C

TEST	SYMBOL	LIMITS				UNITS	TEST CONDITIONS
		PT8502		2N5928			
		MIN.	MAX.	MIN.	MAX.		
D.C. Current Gain*	h_{FE}	10	40	10	40	–	I_C = 100A, V_{CE} = 2V
D.C. Current Gain*	h_{FE}	5	–	5	–	–	I_C = 150A, V_{CE} = 4V
Collector Saturation Voltg.*	$V_{CE\ (sat)}$	–	1.0	–	1.0	V	I_C = 100A, I_B = 10A
Collector Saturation Voltg.*	$V_{CE\ (sat)}$	–	2.0	–	2.0	V	I_C = 150A, I_B = 25A
Base Emitter Voltage*	V_{BE}	–	2.0	–	2.0	V	I_C = 100A, V_{CE} = 2V
Base Emitter Voltage*	V_{BE}	–	3.0	–	3.0	V	I_C = 150A, V_{CE} 4V
Collector-Emitter Voltage*	$V_{CEO\ (sus)}$	100	–	120	–	V	I_C = 200mA, I_B = 0
Collector Cutoff Current	I_{CBO}	–	2	–	–	mA	V_{CB} = 100V, I_{EB} = 0
Collector Cutoff Current	I_{CBO}	–	–	–	2	mA	V_{CB} = 120V, I_{EB} = 0
Collector Cutoff Current @ 150° C	I_{CBO}	–	10	–	10	mA	V_{CB} = 100V, I_{EB} = 0
Emitter Cutoff Current	I_{EBO}	–	1	–	1	mA	V_{EB} = 10V, I_{CB} = 0
Gain Bandwidth Product (Typ.)	f_t	1	–	1	–	MHz	I_C = 5A, V_{CE} = 10V, f=100KHz
Collector Capacitance	C_{obo}	–	1800	–	1800	pf.	V_{CB} = 10V, f = 100KHz
Switching Speed (Typ.) (PowerTech Test Circuit)	t_r	–	2.5	–	2.5	μ sec	I_C = 50A
	t_s	–	3	–	3	μ sec	
	t_f	–	2.5	–	2.5	μ sec	I_{B1} = 10A, – I_{B2} = 5A

*$\leq$ 300 μ sec Pulse 2% Duty Cycle

Fig. 1 h_{FE} vs I_C

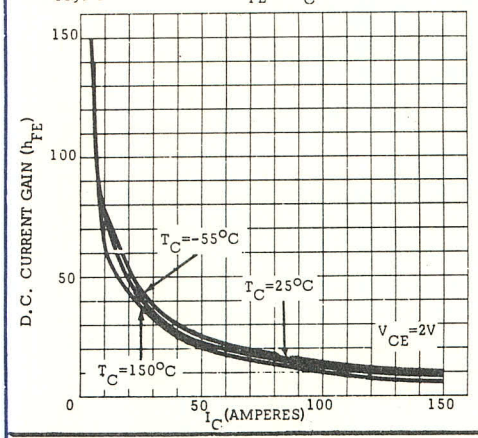


Fig. 2 $V_{CE(sat)}$ vs I_C

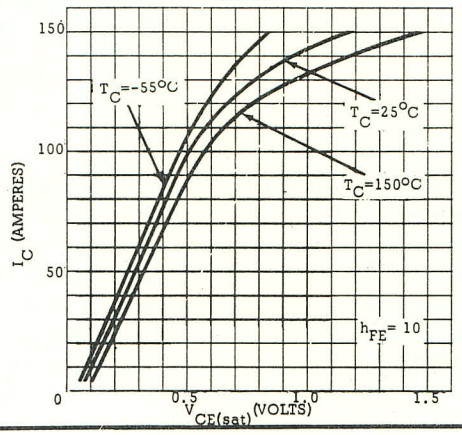


Fig. 3 V_{BE} vs I_C

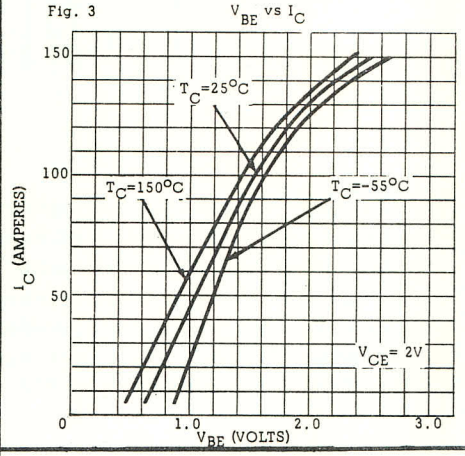


Fig. 4 POWER DISSIPATION vs TEMPERATURE

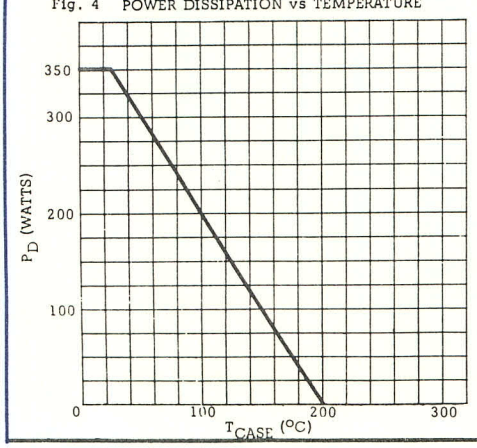
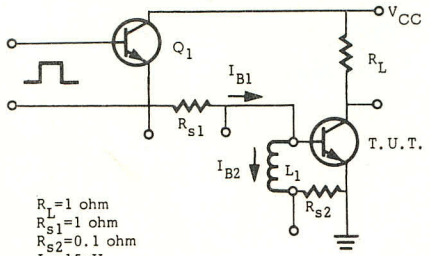
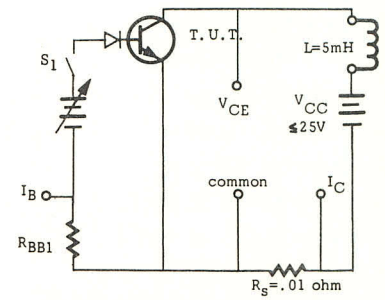


Fig. 5 SWITCHING TEST CIRCUIT



R_L=1 ohm
R_{s1}=1 ohm
R_{s2}=0.1 ohm
L_1=15μH
Q_1=2N5552

Fig. 6 UNCLAMPED INDUCTIVE SWEEP TEST



PROCEDURE
With S_1 closed, set I_B=8A, I_C=50A
Open S_1
$E_{S/b}=1/2LI^2$=6.25 Joules

"BIG IDEAS IN BIG POWER"

PowerTech

500 AMPERES

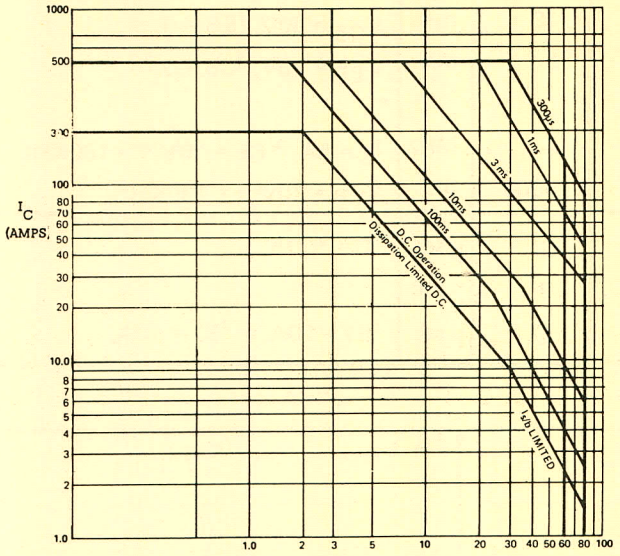
PT-9501
PT-9502

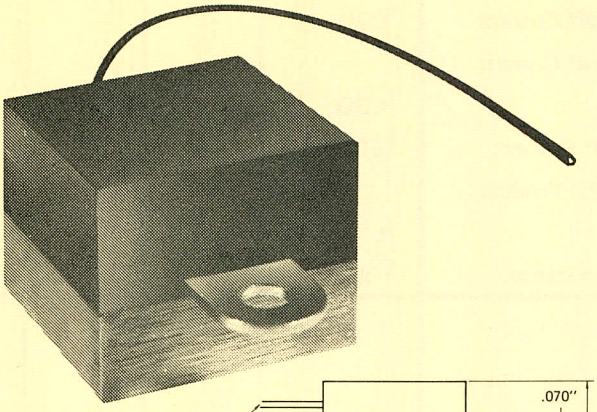
SILICON NPN TRANSISTOR

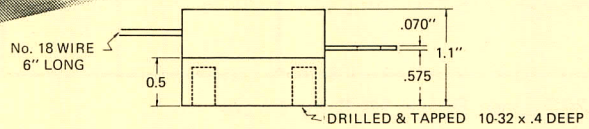
FEATURES:

$V_{CE(sat)}$	0.5V @ 300A	h_{FE}	5 @ 500A	P_D	625 Watts
V_{BE}	1.5V @ 300A	t_f	2μ sec.	$E_{S/b}$	6 Joules

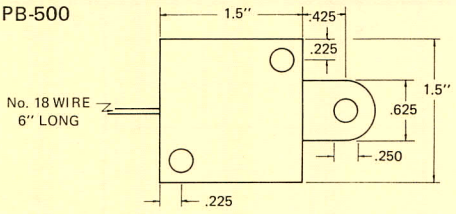
SAFE OPERATING AREA







PACKAGE PB-500



PowerTech's transistors offer high current capability, high breakdown voltage and the lowest available saturation voltage. They have exceptional resistance to both forward and reverse second breakdown. This unique combination of device characteristics makes them particularly suited for a wide variety of high current applications, which include series and switching regulators, motor controls, servoamplifiers and power control circuits. The transistors will provide outstanding performance when used as replacements for paralleled lower current devices, resulting in considerable reductions in weight, space and circuit complexity. Their reliability is assured through 100% power testing at 40V,10A @100°C case temperature.

MAXIMUM RATINGS	SYMBOL	PT–9501	PT-9502
Collector-Base Voltage	V_{CBO}	80V	100V
Collector-Emitter Voltage	$V_{CEO\ (sus)}$	60V	80V
Emitter-Base Voltage	V_{EBO}	10V	10V
Peak Collector Current	I_C	500A	500A
D.C. Collector Current	I_C	300A	300A
Power Dissipation @ 25°C	P_D	625W	625W
Power Dissipation @ 100°C	P_D	400W	400W
Thermal Resistance	Θ_{J-C}	0.25° C/W	0.25° C/W
Operating Temperature Range	T_J	-65 to 200°C	-65 to 200°C
Storage Temperature Range	T_A	-65 to 150°C	-65 to 150°C

ELECTRICAL CHARACTERISTICS 25°C

TEST	SYMBOL	LIMITS PT-9501 MIN.	LIMITS PT-9501 MAX.	LIMITS PT-9502 MIN.	LIMITS PT-9502 MAX.	UNITS	TEST CONDITIONS
D.C. Current Gain*	h_{FE}	10	40	10	40	—	I_C = 300A, V_{CE} = 4V
D.C. Current Gain*	h_{FE}	5	—	5	—	—	I_C = 500A, V_{CE} = 4V
Collector Saturation Voltg.*	$V_{CE\ (sat)}$	—	0.5	—	0.5	V	I_C = 300A, I_B = 30A
Collector Saturation Voltg.*	$V_{CE\ (sat)}$	—	1.0	—	1.0	V	I_C = 500A, I_B = 100A
Base Emitter Voltage*	V_{BE}	—	1.5	—	1.5	V	I_C = 300A, V_{CE} = 2V
Base Emitter Voltage*	V_{BE}	—	2.5	—	2.5	V	I_C = 500A, V_{CE} = 4V
Collector-Emitter Voltage*	$V_{CEO\ (sus)}$	60	—	80	—	V	I_C = 200mA, I_B = 0
Collector Cutoff Current	I_{CBO}	—	5	—	—	mA	V_{CB} = 60V, I_{EB} = 0
Collector Cutoff Current	I_{CBO}	—	—	—	5	mA	V_{CB} = 80V, I_{EB} = 0
Collector Cutoff Current @ 150 °C	I_{CBO}	—	10	—	10	mA	V_{CB} = 60V, I_{EB} = 0
Emitter Cutoff Current	I_{EBO}	—	5	—	5	mA	V_{EB} = 10V, I_{CB} = 0
Gain Bandwidth Product (Typ.)	f_t	1	—	1	—	MHz	I_C = 5A, V_{CE} = 10V. f = 100KHz
Collector Capacitance	C_{obo}	—	5000	—	5000	pf.	V_{CB} = 10V, f = 100KHz
Switching Speed (Typ.)	t_r	—	2	—	2	μ sec	I_C = 100A
(Power Tech Test Circuit)	t_s	—	3	—	3	μ sec	
	t_f	—	2	—	2	μ sec	I_{B1} = 20A, — I_{B2} = 10A,

* ≤ 300 μ sec Pulse 2% Duty Cycle

Fig. 1 h_{FE} vs. I_C

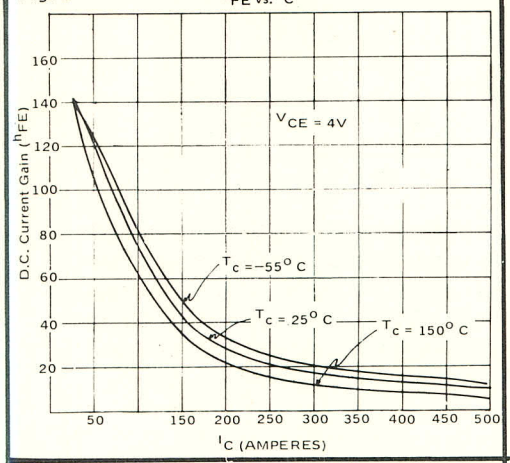


Fig. 2 $V_{CE\ (sat)}$ vs. I_C

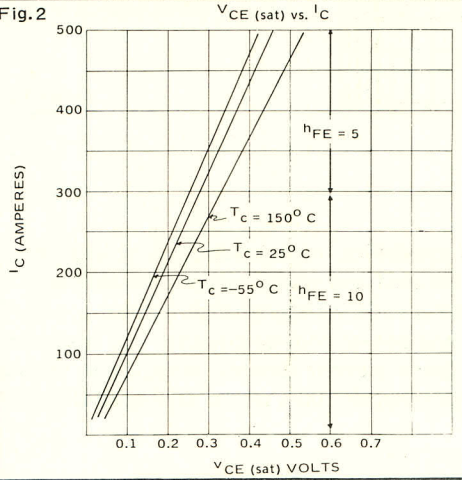


Fig. 3 V_{BE} vs. I_C

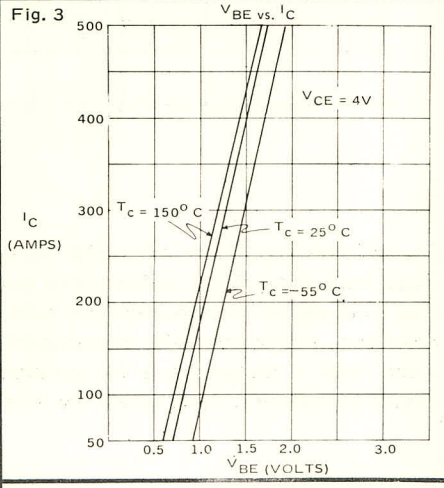


Fig. 4

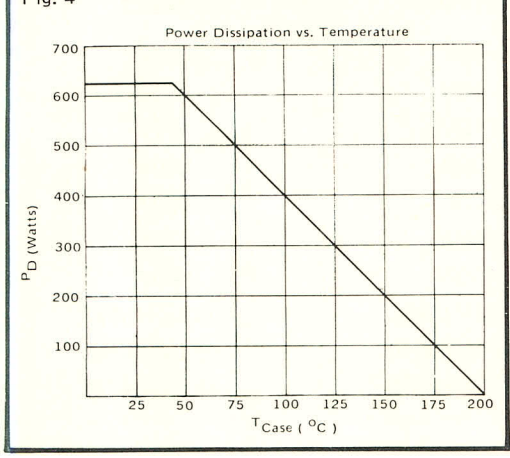


Fig. 5

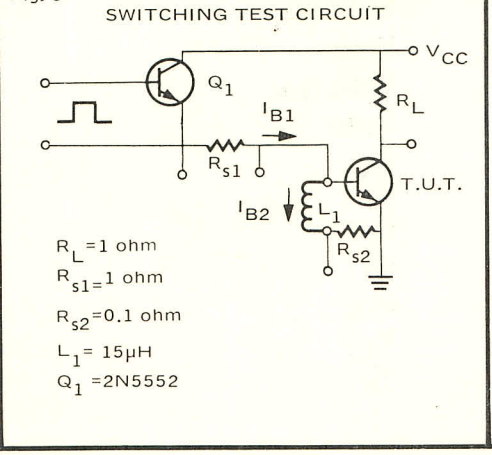
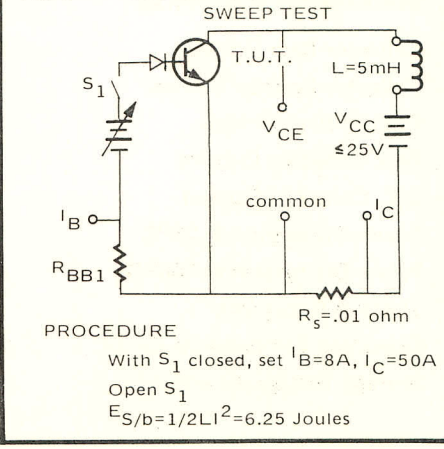


Fig. 6 UNCLAMPED INDUCTIVE SWEEP TEST



PROCEDURE

With S_1 closed, set I_B=8A, I_C=50A

Open S_1

$E_{S/b}=1/2LI^2=6.25$ Joules

"BIG IDEAS IN BIG POWER"

PowerTech

1200 AMPERES

MT-5006
MT-5007

POWERBLOCK POWER SYSTEM

MAXIMUM RATINGS	SYMBOL	MT-5006	MT-5007
Collector-Base Voltage	V_{CBO}	60V	80V
Collector-Emitter Voltage	$V_{CE(sus)}$	60V	80V
Emitter-Base Voltage	V_{EBO}	10V	10V
Peak Collector Current*	I_C	1200A	1200A
D.C. Collector Current	I_C	750A	750A
Power Dissipation @ 25°C	P_D	2100W	2100W
Power Dissipation @ 100°C	P_D	1200W	1200W
Thermal Resistance	θ_{J-C}	.08° C/W	.08° C/W
Operating Junction Temp. Range		-65 to 200° C	-65 to 200° C
Storage Temperature Range		-65 to 150° C	-65 to 150° C
Package		PPS-1200	PPS-1200

ELECTRICAL CHARACTERISTICS 25°C

TEST	SYMBOL	LIMITS				UNIT	TEST CONDITIONS
		MT-5006		MT-5007			
		MIN.	MAX.	MIN.	MAX.		
D.C. Current Gain*	h_{FE}	400	–	400	–	–	I_C=750A, V_{CE}=4V
D.C. Current Gain*	h_{FE}	100	–	100	–	–	I_C=1200A, V_{CE}=4V
Collector Saturation Voltage*	$V_{CE(sat)}$	–	2.0	–	2.0	V	I_C=750A, I_B=2.0A
Collector Saturation Voltage*	$V_{CE(sat)}$	–	2.5	–	2.5	V	I_C=1200A, I_B=12A
Base Emitter Voltage*	V_{BE}	–	2.5	–	2.5	V	I_C=750A, V_{CE}=4V
Base Emitter Voltage*	V_{BE}	–	3.0	–	3.0	V	I_C=1200A, V_{CE}=4V
Collector-Emitter Voltage* ø	$V_{CE(sus)}$	60	–	80	–	V	I_C=200mA,
Collector Cutoff Current*	I_{CES}	–	20	–	–	mA	V_{CB}=60V, R_{BE}=0
Collector Cutoff Current**	I_{CES}	–	–	–	20	mA	V_{CB}=80V, R_{BE}=0
Emitter Cutoff Current ***	I_{EBO}	–	10	–	10	mA	V_{EB}=10V, I_{CB} =0

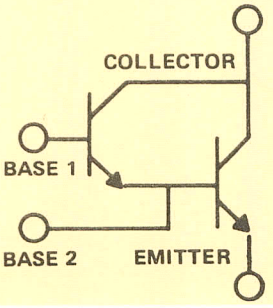
* < 300μ sec. DC < 2%

** Base #1 connected to Base #2

*** Base #2 open circuit

ø $R_{B_1B_2}$=100 ohms, R_{B_2E}= 10 ohms

INTERNAL CONNECTION: DARLINGTON



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"BIG IDEAS IN BIG POWER"

PowerTech

1200 AMPERES

MT-5006
MT-5007

POWERBLOCK POWER SYSTEM

MAXIMUM RATINGS	SYMBOL	MT-5006	MT-5007
Collector-Base Voltage	V_{CBO}	60V	80V
Collector-Emitter Voltage	$V_{CE(sus)}$	60V	80V
Emitter-Base Voltage	V_{EBO}	10V	10V
Peak Collector Current*	I_C	1200A	1200A
D.C. Collector Current	I_C	750A	750A
Power Dissipation @ 25°C	P_D	2100W	2100W
Power Dissipation @ 100°C	P_D	1200W	1200W
Thermal Resistance	θ_{J-C}	.08° C/W	.08° C/W
Operating Junction Temp. Range		-65 to 200° C	-65 to 200° C
Storage Temperature Range		-65 to 150° C	-65 to 150° C
Package		PPS-1200	PPS-1200

ELECTRICAL CHARACTERISTICS 25°C

TEST	SYMBOL	LIMITS				UNIT	TEST CONDITIONS
		MT-5006		MT-5007			
		MIN.	MAX.	MIN.	MAX.		
D.C. Current Gain*	h_{FE}	400	–	400	–	–	I_C=750A, V_{CE}=4V
D.C. Current Gain*	h_{FE}	100	–	100	–	–	I_C=1200A, V_{CE}=4V
Collector Saturation Voltage*	$V_{CE(sat)}$	–	2.0	–	2.0	V	I_C=750A, I_B=2.0A
Collector Saturation Voltage*	$V_{CE(sat)}$	–	2.5	–	2.5	V	I_C=1200A, I_B=12A
Base Emitter Voltage*	V_{BE}	–	2.5	–	2.5	V	I_C=750A, V_{CE}=4V
Base Emitter Voltage*	V_{BE}	–	3.0	–	3.0	V	I_C=1200A, V_{CE}=4V
Collector-Emitter Voltage* ø	$V_{CE(sus)}$	60	–	80	–	V	I_C=200mA,
Collector Cutoff Current*	I_{CES}	–	20	–	–	mA	V_{CB}=60V, R_{BE}=0
Collector Cutoff Current**	I_{CES}	–	–	–	20	mA	V_{CB}=80V, R_{BE}=0
Emitter Cutoff Current ***	I_{EBO}	–	10	–	10	mA	V_{EB}=10V, I_{CB} =0

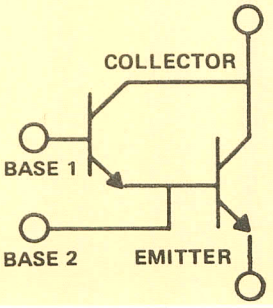
* < 300μ sec. DC < 2%

** Base #1 connected to Base #2

*** Base #2 open circuit

ø $R_{B_1B_2}$=100 ohms, R_{B_2E}= 10 ohms

INTERNAL CONNECTION: DARLINGTON



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