"BIG IDEAS IN BIG POWER"

PowerTech

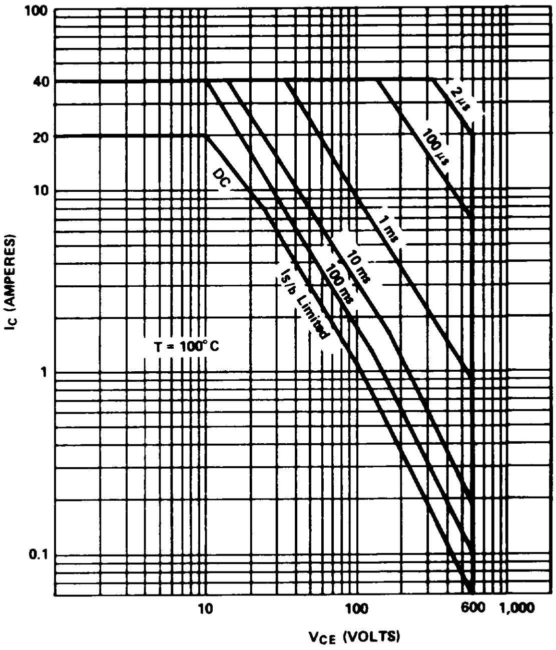
40 AMPERES

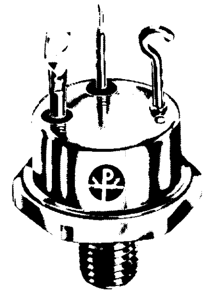
PT-3526

HIGH VOLTAGE SILICON NPN TRANSISTOR

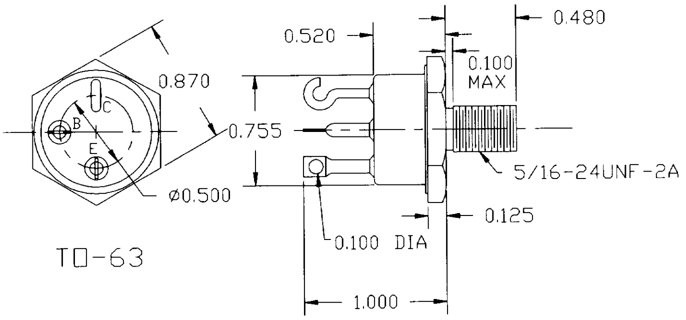
FEATURES

$V_{CE(sat)}$	0.5V @ 20A	h_{FE}	5 min. @ 40A	$I_{S/B}$	0.06A @ 600V
V_{BE}	1.5V @ 20A	t_f	1.2 µsec.	$E_{S/b}$	2.5 Joules





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 40V, 3A @ 100°C case temperature. These transistors exceed the requirements of MIL-S-19500 and are well suited for the most severe military-aerospace applications.

ABSOLUTE MAXIMUM RATINGS	SYMBOL	PT-3526
Collector-Base Voltage	V_{CBO}	650V
Collector-Emitter Voltage	V_{CEO}	600V
Emitter-Base Voltage	V_{EBO}	10V
Peak Collector Current	I_{CM}*	40A
D. C. Collector Current	I_C	20A
Power Dissipation at 25°C Case Temperature	P_D	325W
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
Package:		TO-63
Thermal Resistance	θ_{JC}	0.5°C/W

ELECTRICAL SPECIFICATIONS (at 25°C unless otherwise noted)

TEST	SYMBOL	MIN.	MAX.	UNITS	TEST CONDITIONS
D. C. Current Gain*	h_{FE}	10			I_C=20A, V_{CE}=4V
D. C. Current Gain*	h_{FE}	5			I_C=40A, V_{CE}=4V
Collector Saturation Voltage*	$V_{CE(sat)}$		0.5	V	I_C=20A, I_B=3A
Base Emitter Voltage*	V_{BE}		1.5	V	I_C=20A, V_{CE}=5V
Collector-Emitter Breakdown Voltage*	$V_{CEO(sus)}$	600		V	I_C=50mA, I_B=0
Collector Cutoff Current	I_{CBO}		2	mA	V_{CB}=650V, I_{EB}=0
Emitter Cutoff Current	I_{EBO}		5	mA	V_{EB}=10V, I_{CB}=0
Gain Bandwidth Product	f_t	1.5		MHz	I_C=5A, V_{CE}=10V
Collector Capacitance	C_{obo}		400	pF	V_{CB}=10V
Switching Speed (typical)	t_r		1.2	μsec	I_C=20A
	t_s		2.0	μsec	$I_{B1} = I_{B2}$ = 3A
	t_f		1.2	μsec	

*PW ⩽ 300 μsec, D. C. ⩽ 2%

ϕ V_{CE} measured with pulse 300 μsec max., I_B = 100μA

Do Not Use Curve Tracer

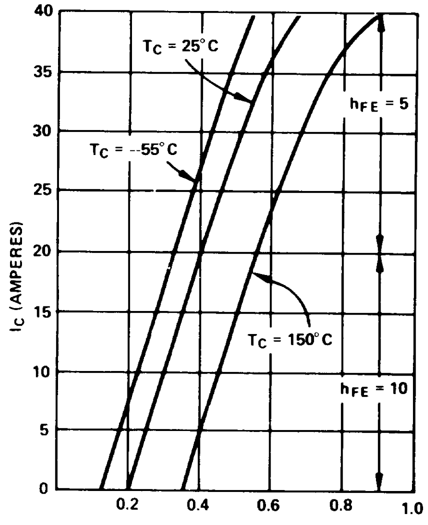


Fig. 1

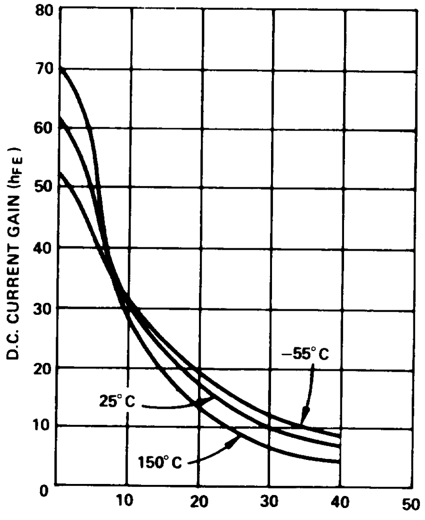


Fig. 2

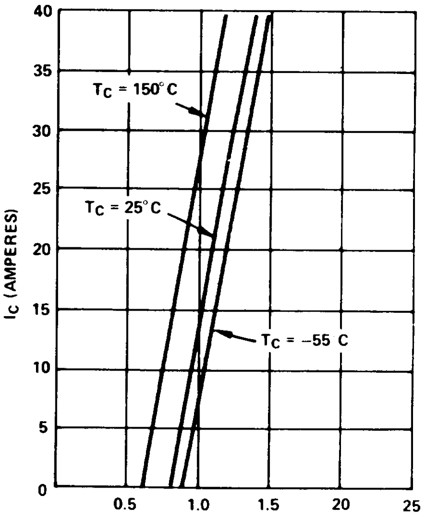


Fig. 3

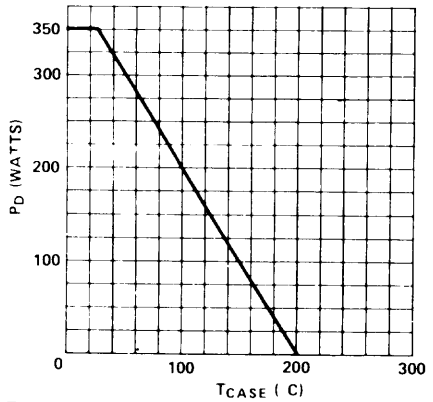


Fig. 4.
POWER DISSIPATION vs TEMPERATURE

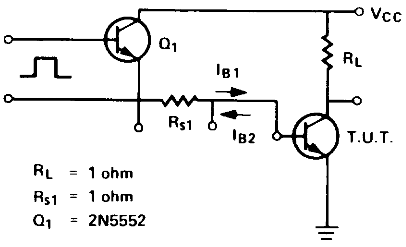
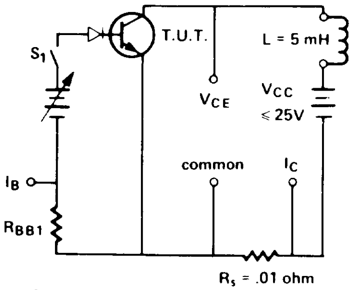


Fig. 5. SWITCHING TEST CIRCUIT



PROCEDURE

With S_1 closed, set I_B = 8A, I_C = 35 A

Open S_1

$E_{S/b} = 1/2LI^2$ = 2.5 Joules

Fig. 6.
UNCLAMPED INDUCTIVE SWEEP TEST