



NPN POWER TRANSISTORS

COMPLEMENTARY TO THE D45H SERIES

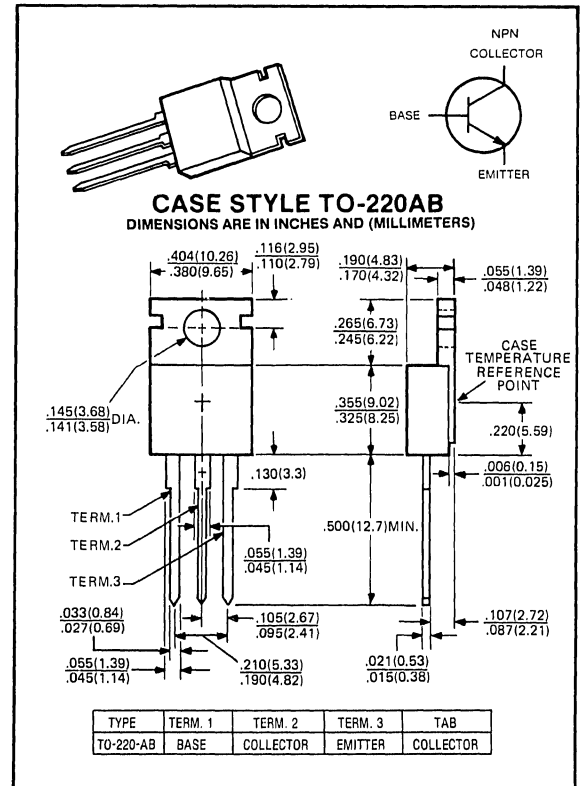
D44H Series

30 - 80 VOLTS
10 AMP, 50 WATTS

The General Electric D44H is a power transistor designed for various specific and general purpose applications, such as: output and driver stages of amplifiers operating at frequencies from DC to greater than 1.0 MHz; series, shunt and switching regulators; low and high frequency inverters/converters; and many others.

Features:

- NPN complement to D45H PNP
- Very Low collector saturation voltage
- Excellent linearity
- Fast switching



maximum ratings ($T_A = 25^\circ\text{C}$) (unless otherwise specified)

RATING	SYMBOL	D44H1, 2	D44H4, 5	D44H7, 8	D44H10, 11	UNITS
Collector-Emitter Voltage	V_{CEO}	30	45	60	80	Volts
Collector-Emitter Voltage	V_{CES}	30	45	60	80	Volts
Emitter Base Voltage	V_{EBO}	5	5	5	5	Volts
Collector Current — Continuous	I_C	10	10	10	10	A
Collector Current — Peak ⁽¹⁾	I_{CM}	20	20	20	20	A
Base Current — Continuous	I_B	5	5	5	5	A
Total Power Dissipation @ $T_A = 25^\circ\text{C}$ @ $T_C = 25^\circ\text{C}$	P_D	1.67 50	1.67 50	1.67 50	1.67 50	Watts
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-55 to +150	-55 to +150	-55 to +150	-55 to +150	$^\circ\text{C}$

thermal characteristics

Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	75	75	75	75	$^\circ\text{C/W}$
Thermal Resistance, Junction to Case	$R_{\theta JC}$	2.5	2.5	2.5	2.5	$^\circ\text{C/W}$
Maximum Lead Temperature for Soldering Purposes: $\frac{1}{8}$ " from Case for 5 Seconds	T_L	+260	+260	+260	+260	$^\circ\text{C}$

(1) Pulse Test Pulse Width = 300ms Duty Cycle $\leq 2\%$.

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

CHARACTERISTIC	SYMBOL	MIN	TYP	MAX	UNIT
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off characteristics⁽¹⁾

Collector-Emitter Sustaining Voltage ($I_C = 100\text{mA}$)	D44H1, 2 D44H4, 5 D44H7, 8 D44H10, 11	$V_{CEO(sus)}$	30 45 60 80	— — — —	— — — —	Volts
Collector Cutoff Current ($V_{CB} = \text{Rated } V_{CBO}$)		I_{CBO}	—	—	10	μA
Emitter Cutoff Current ($V_{EB} = 5\text{V}$)		I_{EBO}	—	—	100	μA

second breakdown

Second Breakdown with Base Forward Biased	FBSOA	SEE FIGURE 4
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on characteristics

DC Current Gain ($I_C = 2\text{A}$, $V_{CE} = 1\text{V}$)	D44H1, 4, 7, 10 D44H2, 5, 8, 11	h_{FE}	35 60	— —	— —	—
($I_C = 4\text{A}$, $V_{CE} = 1\text{V}$)	D44H1, 4, 7, 10 D44H2, 5, 8, 11	h_{FE}	20 40	— —	— —	—
Collector-Emitter Saturation Voltage ($I_C = 8\text{A}$, $I_B = 0.4\text{A}$)	D44H2, 5, 8, 11 D44H1, 4, 7, 10	$V_{CE(sat)}$	— —	— —	1.0 1.0	Volts
($I_C = 8\text{A}$, $I_B = 0.8\text{A}$)						
Base-Emitter Saturation Voltage ($I_C = 8\text{A}$, $I_B = 0.8\text{A}$)		$V_{BE(sat)}$	—	—	1.5	Volts

dynamic characteristics

Collector Capacitance ($V_{CB} = 10\text{V}$, $f = 1\text{MHz}$)	C_{CBO}	—	—	130	pF
Current-Gain — Bandwidth Product ($I_C = 500\text{mA}$, $V_{CE} = 10\text{V}$)	f_T	—	50	—	MHz

switching characteristics

Resistive Load						
Delay Time + Rise Time	$I_C = 5\text{A}$, $I_{B1} = I_{B2} = 0.5\text{A}$ $V_{CC} = 30\text{V}$, $t_p = 25\text{ }\mu\text{sec}$	$t_d + t_r$	—	300	—	nS
Storage Time		t_s	—	500	—	
Fall Time		t_f	—	140	—	

(1) Pulse Test PW = 300ms Duty Cycle $\leq 2\%$.

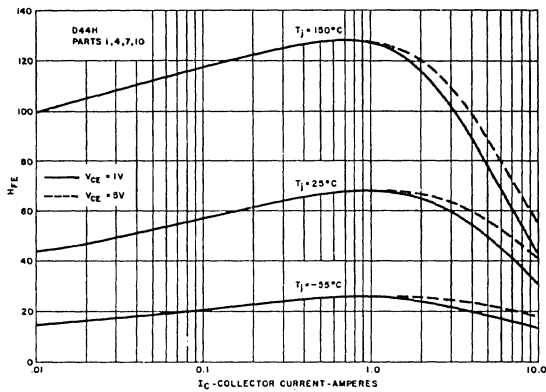


FIG. 1 TYPICAL GAIN CHARACTERISTICS

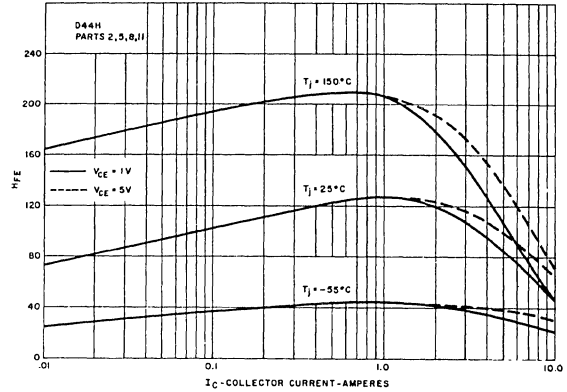


FIG. 2 TYPICAL GAIN CHARACTERISTICS

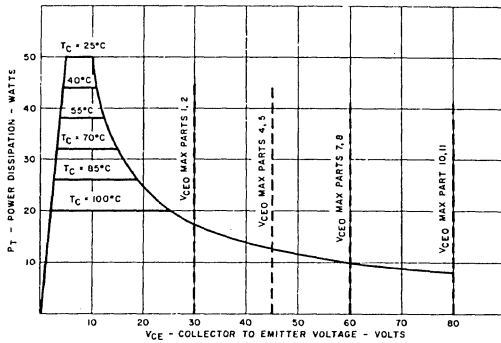


FIG. 3 MAXIMUM PERMISSIBLE DC POWER DISSIPATION

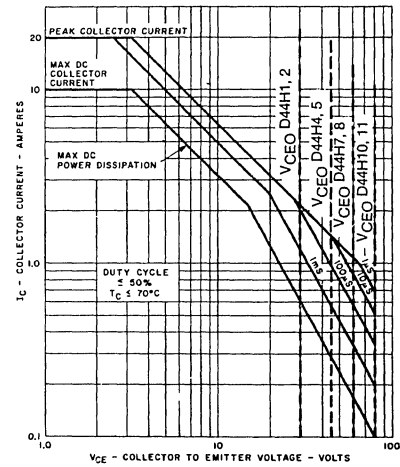


FIG. 4 SAFE REGION OF OPERATION

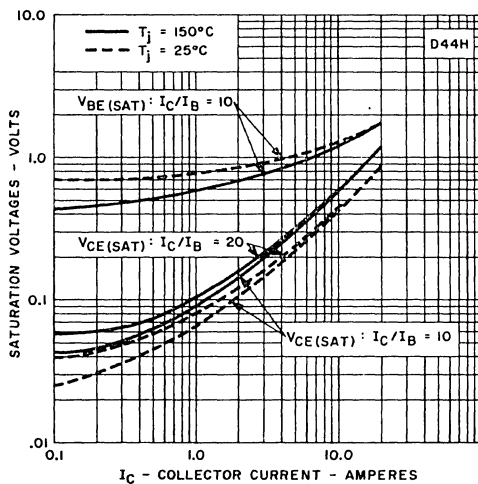


FIG. 5 TYPICAL SATURATION VOLTAGE CHARACTERISTICS

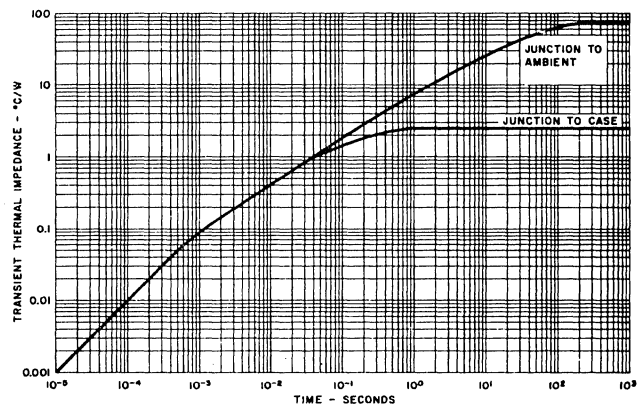


FIG. 6 TRANSIENT THERMAL IMPEDANCE