NPN POWER TRANSISTORS

COMPLEMENTARY TO THE D45H SERIES

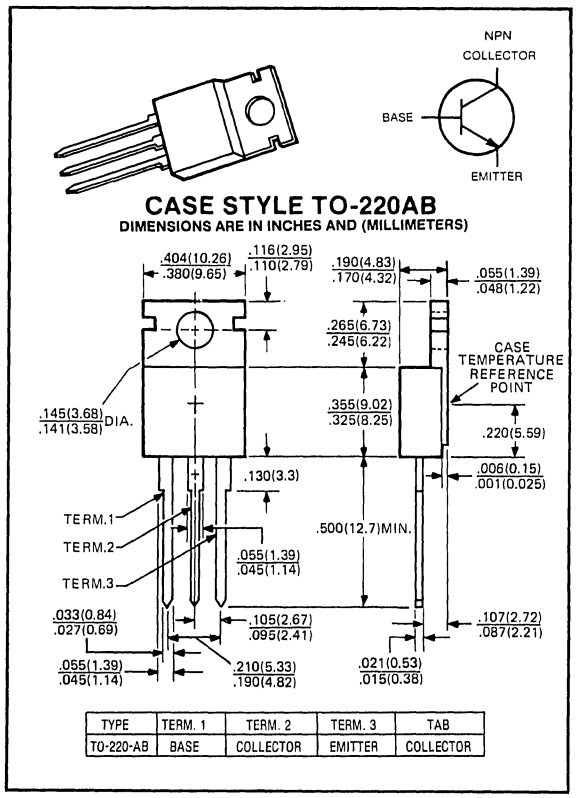
D44H Series

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



TYPE	TERM. 1	TERM. 2	TERM. 3	TAB
TO-220-AB	BASE	COLLECTOR	EMITTER	COLLECTOR

maximum ratings (T_A = 25°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	8C	Volts
Emitter Base Voltage	V_{EBO}	5	5	5	5	Volts
Collector Current — Continuous Peak(1)	I_C I_{CM}	10 20	10 20	10 20	10 20	A
Base Current — Continuous	I_B	5	5	5	5	A
Total Power Dissipation @ T_A = 25°C @ T_C = 25°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	°C

thermal characteristics

Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	75	75	75	75	°C/W
Thermal Resistance, Junction to Case	$R_{\theta JC}$	2.5	2.5	2.5	2.5	°C/W
Maximum Lead Temperature for Soldering Purposes: ⅛" from Case for 5 Seconds	T_L	+260	+260	+260	+260	°C

(1) Pulse Test Pulse Width = 300ms Duty Cycle ≤ 2%.

electrical characteristics (T_C = 25° C) (unless otherwise specified)

CHARACTERISTIC		SYMBOL	MIN	TYP	MAX	UNIT
off characteristics[1]						
Collector-Emitter Sustaining Voltage (I_C = 100mA)	D44H1, 2 D44H4, 5 D44H7, 8 D44H10, 11	$V_{CEO(sus)}$	30 45 60 80	— — — —	— — — —	Volts
Collector Cutoff Current (V_{CB} = Rated V_{CBO})		I_{CBO}	—	—	10	μA
Emitter Cutoff Current (V_{EB} = 5V)		I_{EBO}	—	—	100	μA
second breakdown						
Second Breakdown with Base Forward Biased		FBSOA	SEE FIGURE 4			
on characteristics						
DC Current Gain (I_C = 2A, V_{CE} = 1V)	D44H1, 4, 7, 10 D44H2, 5, 8, 11	h_{FE}	35 60	— —	— —	—
(I_C = 4A, V_{CE} = 1V)	D44H1, 4, 7, 10 D44H2, 5, 8, 11	h_{FE}	20 40	— —	— —	—
Collector-Emitter Saturation Voltage (I_C = 8A, I_B = 0.4A) (I_C = 8A, I_B = 0.8A)	 D44H2, 5, 8, 11 D44H1, 4, 7, 10	$V_{CE(sat)}$	 — —	 — —	 1.0 1.0	Volts
Base-Emitter Saturation Voltage (I_C = 8A, I_B = 0.8A)		$V_{BE(sat)}$	—	—	1.5	Volts
dynamic characteristics						
Collector Capacitance (V_{CB} = 10V, f = 1M_{Hz})		C_{CBO}	—	—	130	pF
Current-Gain — Bandwidth Product (I_C = 500mA, V_{CE} = 10V)		f_T	—	50	—	MHz
switching characteristics						
Resistive Load						
Delay Time + Rise Time	I_C = 5A, I_{B1} = I_{B2} = 0.5A	$t_d + t_r$	—	300	—	nS
Storage Time	V_{CC} = 30V, t_p = 25 μsec	t_s	—	500	—	
Fall Time		t_f	—	140	—	

(1) Pulse Test PW = 300ms Duty Cycle ≤ 2%.

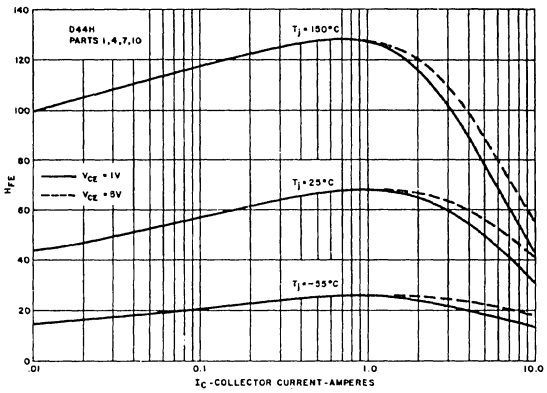


FIG. 1 TYPICAL GAIN CHARACTERISTICS

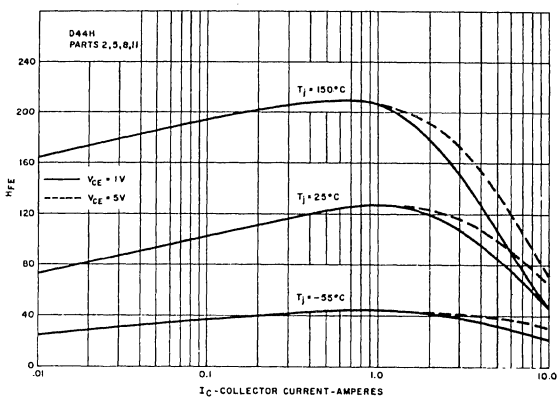


FIG. 2 TYPICAL GAIN CHARACTERISTICS

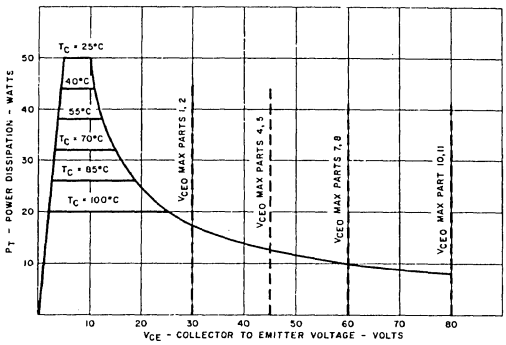


FIG. 3 MAXIMUM PERMISSIBLE DC POWER DISSIPATION

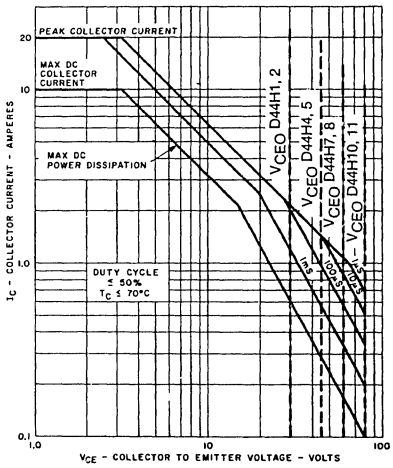


FIG. 4 SAFE REGION OF OPERATION

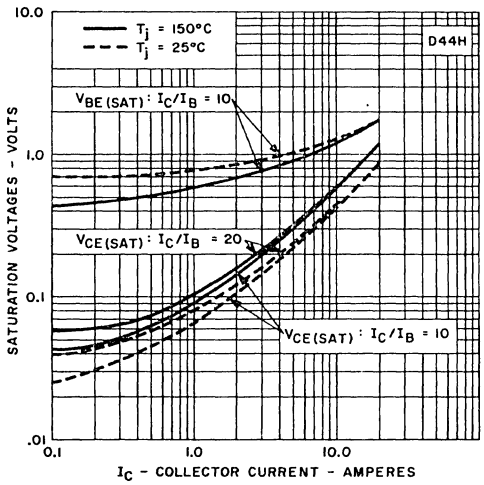


FIG. 5 TYPICAL SATURATION VOLTAGE CHARACTERISTICS

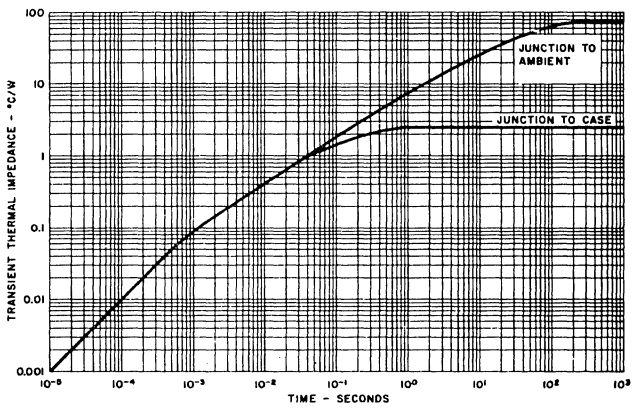


FIG. 6 TRANSIENT THERMAL IMPEDANCE