Silicon N-P-N Transistors

Complementary to the D45H Series

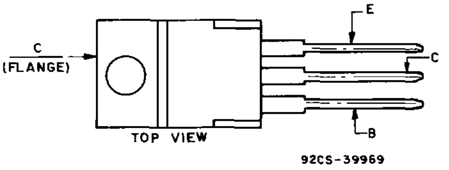
For Switching and Linear Applications

Features:

- *Very low collector saturation voltage*
- *Excellent linearity*
- *Fast switching*

D44H-series n-p-n power transistors are designed for various specific and general purpose applications, such as output and driver stages of amplifiers operating at frequencies fron DC to greater than 1.0 MHz, series, shunt and switching regulators, and low and high frequency inverters/converters.

TERMINAL DESIGNATIONS



JEDEC TO-220AB

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	80	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	$V_{CEO(sus)}$	30	—	—	Volts
D44H4, 5		45	—	—	
D44H7, 8		60	—	—	
D44H10, 11		80	—	—	
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(1)

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

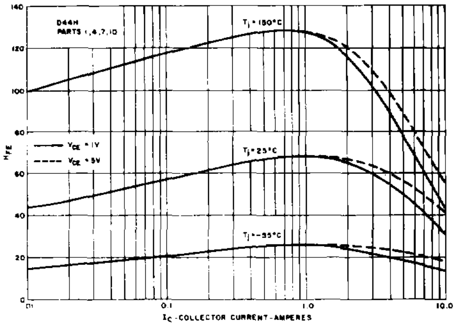


FIG. 1 TYPICAL GAIN CHARACTERISTICS

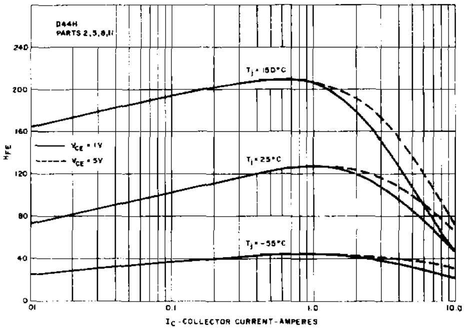


FIG. 2 TYPICAL GAIN CHARACTERISTICS

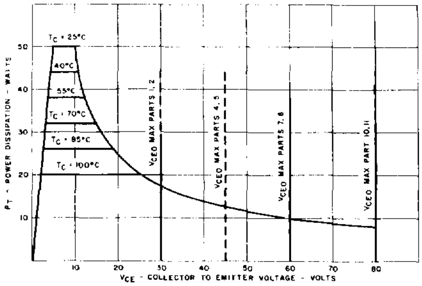


FIG. 3 MAXIMUM PERMISSIBLE DC POWER DISSIPATION

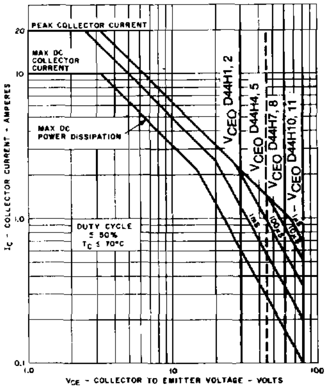


FIG. 4 SAFE REGION OF OPERATION

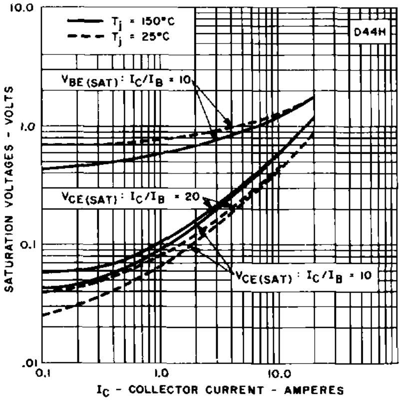


FIG. 5 TYPICAL SATURATION VOLTAGE CHARACTERISTICS

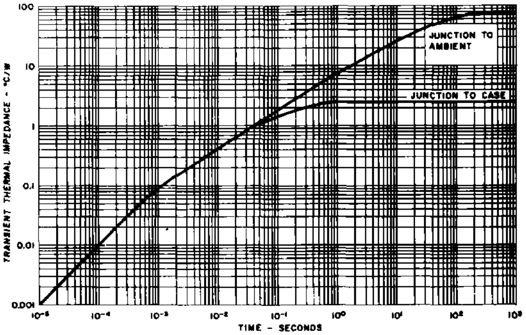


FIG. 6 TRANSIENT THERMAL IMPEDANCE