VERY HIGH GAIN
NPN POWER DARLINGTON TRANSISTORS

COMPLEMENTARY TO THE D45D SERIES

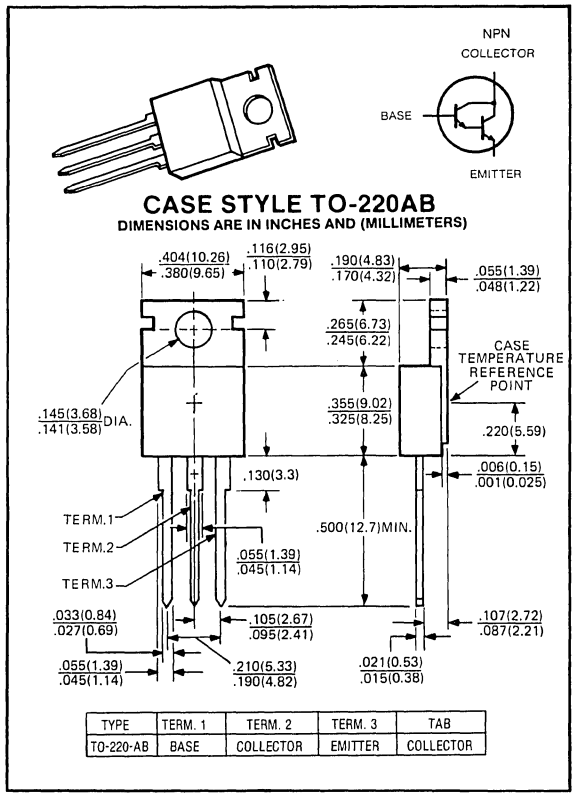
D44D Series

40-80 VOLTS
6 AMP, 30 WATTS

The General Electric D44D is a Darlington power transistor. It is designed for general purpose switching of multi-ampere loads directly from low level logic circuitry. A monolithic bias resistor is included for elevated temperature stability and bypass diode for reduced dissipation under negative transient conditions.

Applications:

- Solenoid Driver
- Lamp Driver
- Relay Substitute
- Switching Regulator
- Inverter/Converter



maximum ratings (T_A = 25° C) (unless otherwise specified)

RATING	SYMBOL	D44D1,2	D44D3,4	D44D5,6	UNITS
Collector-Emitter Voltage	V_{CEO}	40	60	80	Volts
Collector-Emitter Voltage	V_{CES}	50	70	90	Volts
Emitter Base Voltage	V_{EBO}	5	5	5	Volts
Collector Current — Continuous	I_C	6	6	6	A
Base Current — Continuous	I_B	.5	.5	.5	A
Total Power Dissipation @ T_A = 25°C @ T_C = 25°C	P_D	2.1 30	2.1 30	2.1 30	Watts
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-55 to +150	-55 to +150	-55 to +150	°C

thermal characteristics

Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	60	60	60	°C/W
Thermal Resistance, Junction to Case	$R_{\theta JC}$	4.2	4.2	4.2	°C/W
Maximum Lead Temperature for Soldering Purposes: ⅛" from Case for 5 Seconds	T_L	260	260	260	°C

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

CHARACTERISTIC		SYMBOL	MIN	TYP	MAX	UNIT
off characteristics[1]						
Collector-Emitter Breakdown Voltage (I_C = 50mA)	D44D1,2	$V_{CEO(BR)}$	40	—	—	Volts
	D44D3,4		60	—	—	
	D44D5,6		80	—	—	
Collector Cut-off Current (V_{CE} = Rated V_{CES})	T_C = 25°C	I_{CES}	—	—	10	μA
(V_{CE} = Rated V_{CES}, V_{BE} = 0.4V)	T_C = 125°C	I_{CEV}	—	—	5	
Emitter Cutoff Current (V_{EB} = 5V)		I_{EBO}	—	—	10	μA
second breakdown						
Second Breakdown with Base Forward Biased		FBSOA	SEE FIGURE 5			
on characteristics						
DC Current Gain (I_C = 1A, V_{CE} = 2V)		h_{FE}	2,000	5,000	—	—
Collector-Emitter Saturation Voltage (I_C = 3A, I_B = 3mA)		$V_{CE(sat)}$	—	—	1.5	V
(I_C = 5A, I_B = 5mA)	D44D2,4,6 only		—	—	1.5	V
Base-Emitter Saturation Voltage (I_C = 5A, I_B = 5mA)		$V_{BE(sat)}$	—	—	2.5	Volts
dynamic characteristics						
Collector Capacitance (V_{CE} = 10V, f = 1MHz)		C_{CBO}	—	—	45	pF
switching characteristics						
Resistive Load						
Delay Time + Rise Time	I_C = 3A, I_{B1} = I_{B2} = 3mA	$t_d + t_r$	—	0.5	—	μS
Storage Time	V_{CC} = 40V, t_p = 25 μsec	t_s	—	1.2	—	
Fall Time		t_f	—	0.8	—	

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

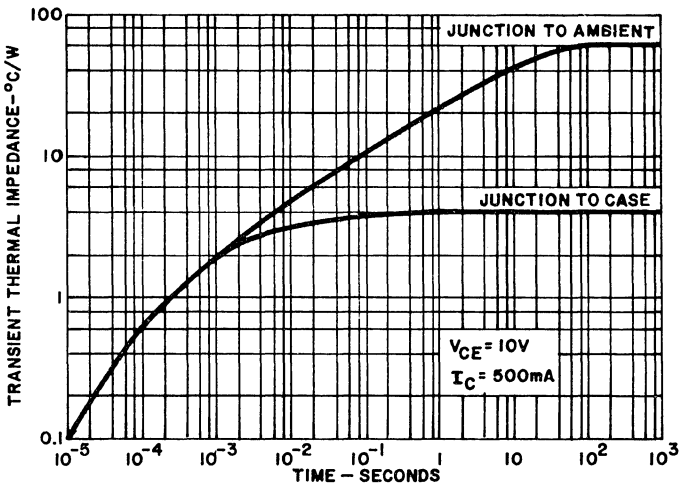


FIG. 1
MAXIMUM TRANSIENT THERMAL IMPEDANCE

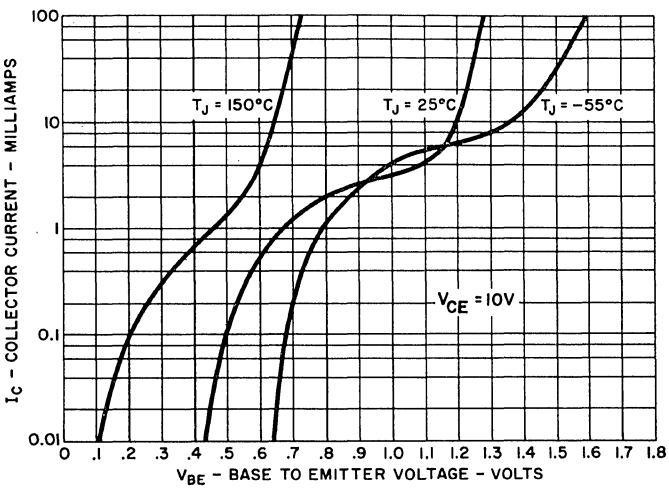


FIG. 2
TYPICAL TRANSCONDUCTANCE CHARACTERISTICS

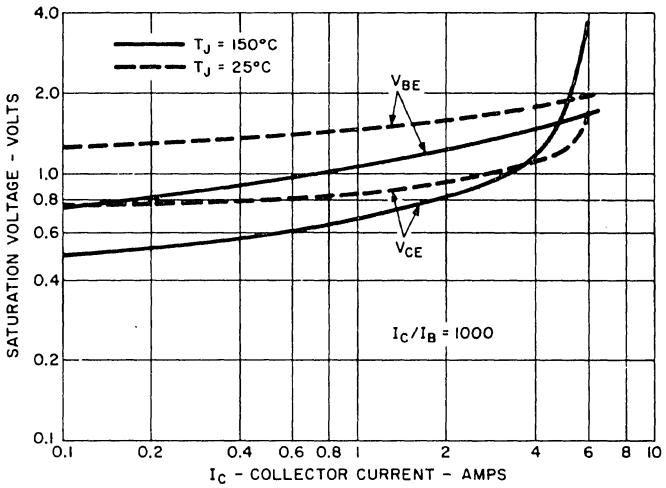


FIG. 3
TYPICAL SATURATION VOLTAGE CHARACTERISTICS

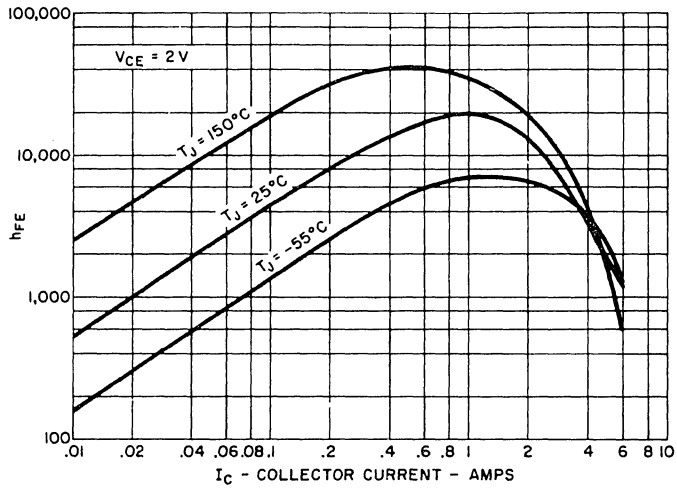


FIG. 4 TYPICAL h_{FE} VS. I_C

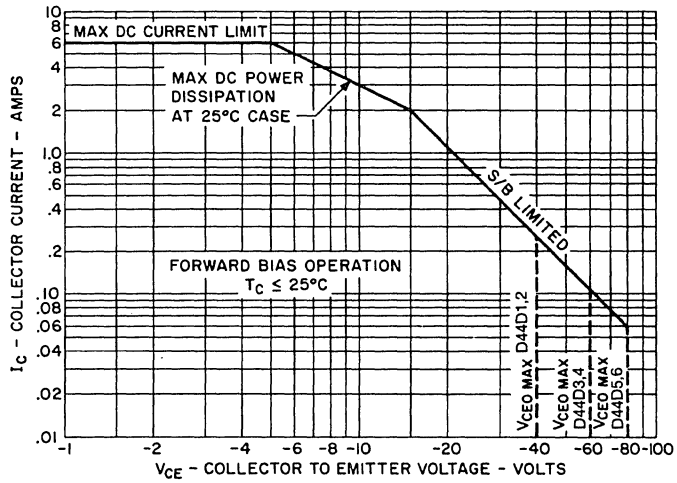


FIG. 5 SAFE REGION OF OPERATION