NPN POWER DARLINGTON TRANSISTORS

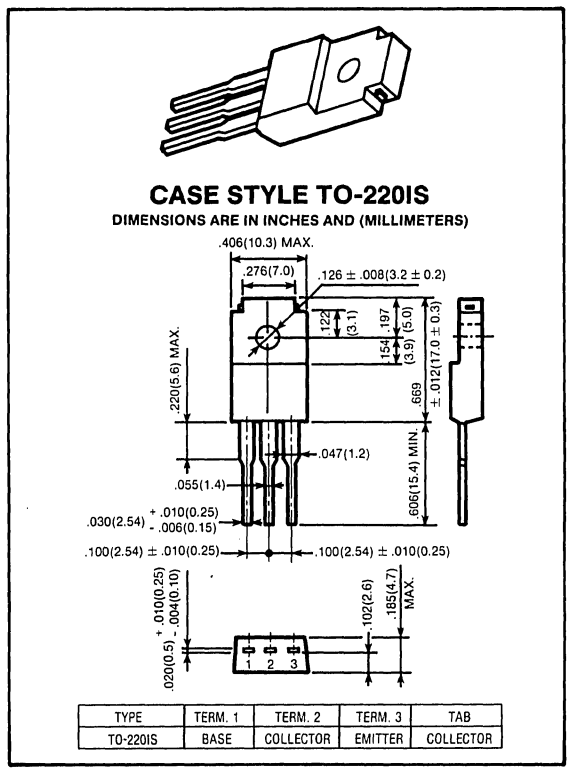
D54A7D

100 VOLTS
7 AMP, 30 WATTS

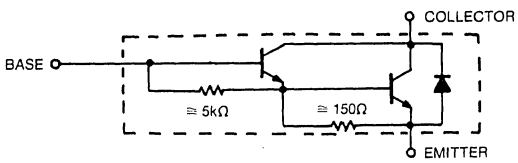
Designed for high power switching applications, hammer drive, pulse motor drive applications.

Features:

- High DC Current Gain:
  h_{FE} = 2000 (Min.) (at V_{CE} = 3V, I_C = 3A)
- Low Saturation Voltage:
  $V_{CE(sat)}$ = 1.5V (Max.) (at I_C = 3A)
- Complementary to D55A7D
- Isolated TO-220 package



EQUIVALENT CIRCUIT



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

RATING	SYMBOL	D54A7D	UNITS
Collector-Emitter Voltage	V_{CEO}	100	Volts
Collector-Base Voltage	V_{CBO}	100	Volts
Emitter Base Voltage	V_{EBO}	5	Volts
Collector Current — Continuous	I_C	7	A
Base Current — Continuous	I_B	0.2	A
Total Power Dissipation @ T_C = 25°C	P_D	30	Watts
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-55 to +150	°C

thermal characteristics

Maximum Lead Temperature for Soldering Purposes: ⅛" from Case for 5 Seconds	T_L	260	°C

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

CHARACTERISTIC	SYMBOL	MIN	TYP	MAX	UNIT
off characteristics					
Collector-Emitter Breakdown Voltage (I_C = 50mA)	$V_{(BR)CEO}$	100	—	—	Volts
Collector Cutoff Current (V_{CB} = 100V)	I_{CBO}	—	—	100	μA
Emitter Cutoff Current (V_{EB} = 5V)	I_{EBO}	—	—	3.0	mA
second breakdown					
Second Breakdown with Base Forward Biased	FBSOA	SEE FIGURE 9			
on characteristics					
DC Current Gain (I_C = 3A, V_{CE} = 3V) (I_C = 7A, V_{CE} = 3V)	h_{FE}	2000 1000	— —	15000 —	—
Collector-Emitter Saturation Voltage (I_C = 3A, I_B = 6mA) (I_C = 7A, I_B = 14mA)	$V_{CE(sat)}$	— —	0.9 1.2	1.5 2.0	Volts
Base-Emitter Saturation Voltage (I_C = 3A, I_B = 6mA)	$V_{BE(sat)}$	—	1.5	2.5	Volts
switching characteristics					
Turn-on Time	V_{CC} = 45V	t_{on}	—	0.8	—	μs
Storage Time	I_{B1} = I_{B2} = 6μA	t_{stg}	—	3.0	—	
Fall Time	Duty Cycle ≤ 1%	t_f	—	2.5	—	

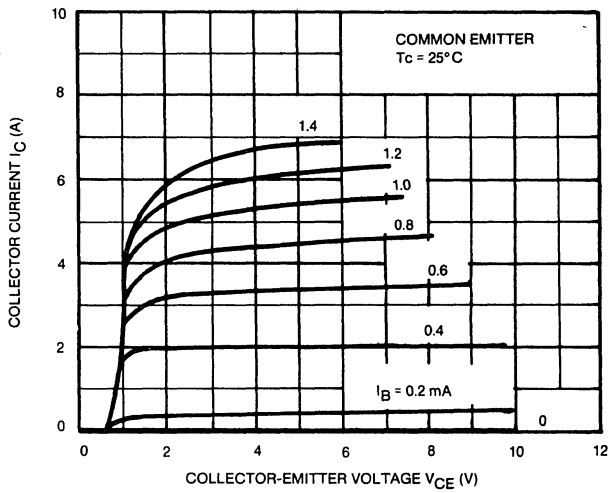


FIG. 1 I_C - V_{CE}

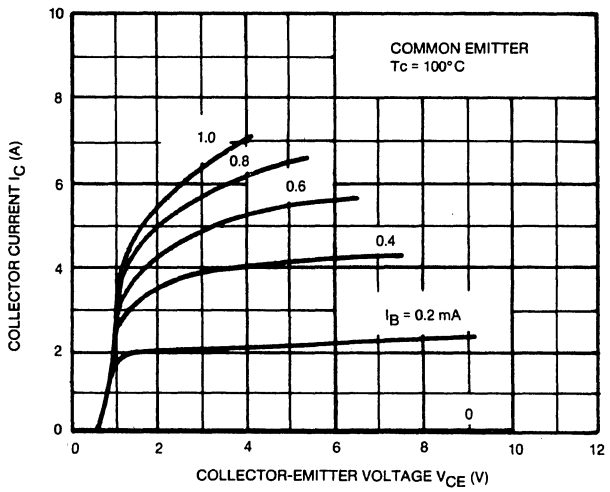


FIG. 2 I_C - V_{CE}

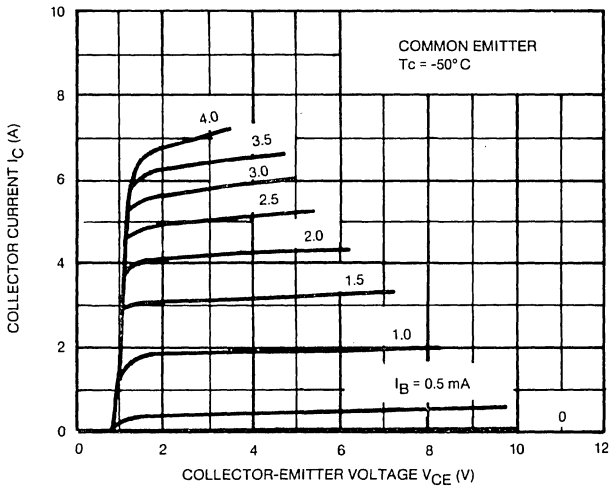


FIG. 3 I_C - V_{CE}

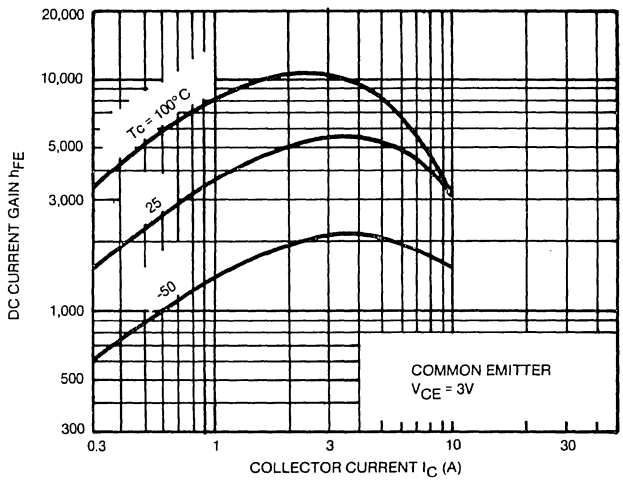


FIG. 4 h_{FE} - I_C

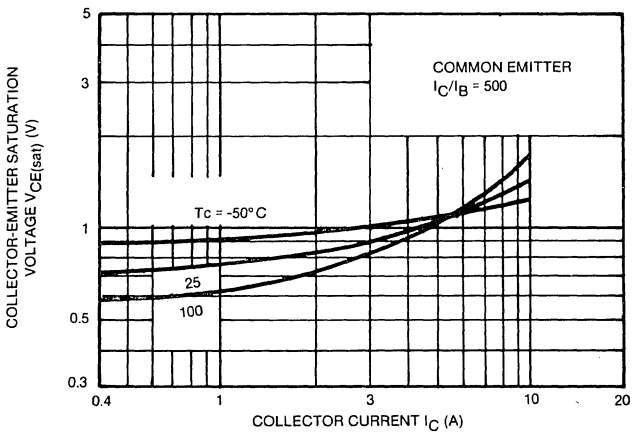


FIG. 5 $V_{CE(sat)}$ - I_C

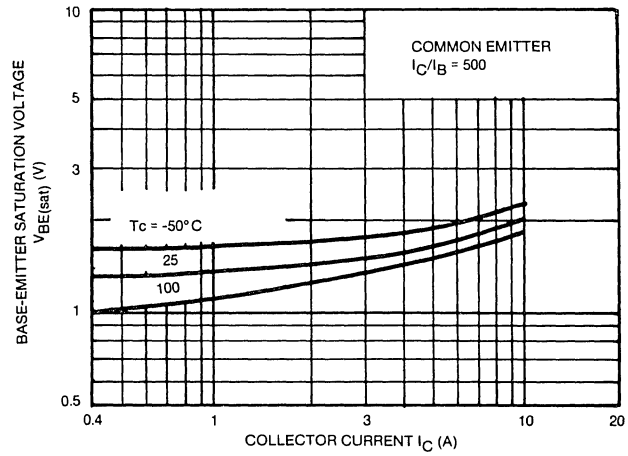


FIG. 6 $V_{BE(sat)}$ - I_C

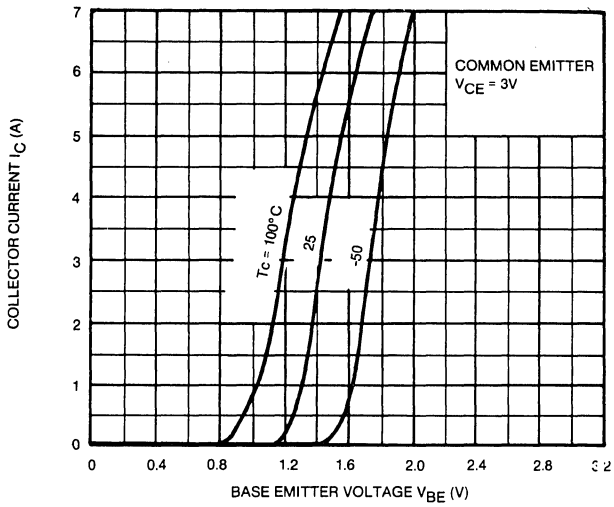


FIG. 7 I_C - V_{BE}

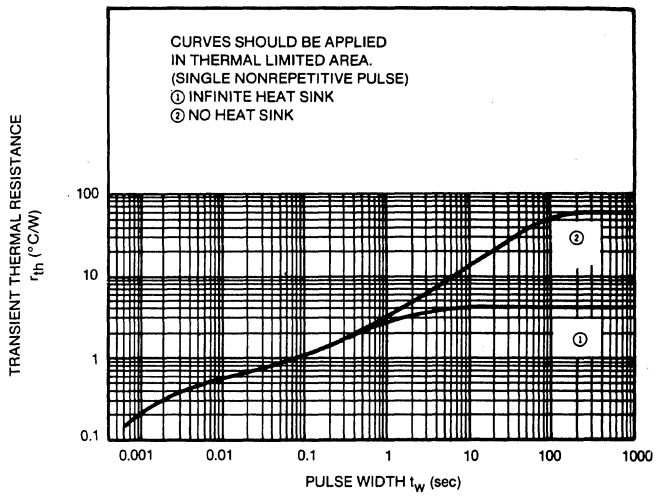


FIG. 8 r_{th} - t_w

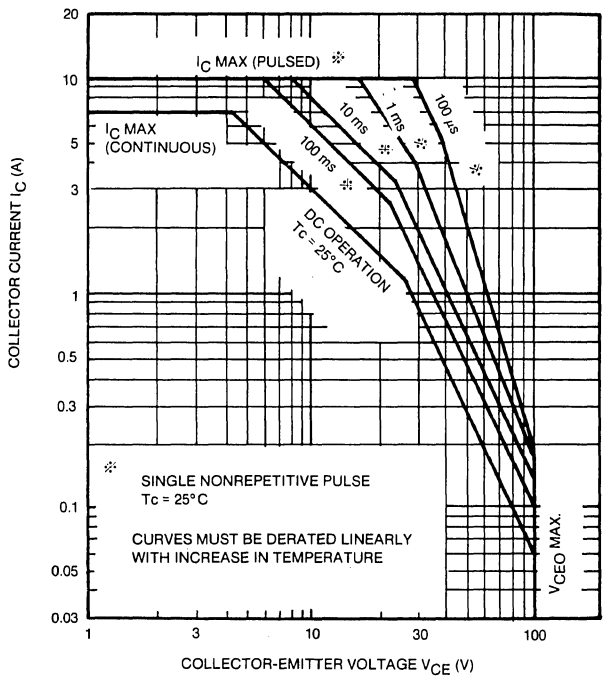


FIG. 9 SAFE OPERATING AREA