SURFACE-MOUNT
NPN POWER DARLINGTON TRANSISTORS

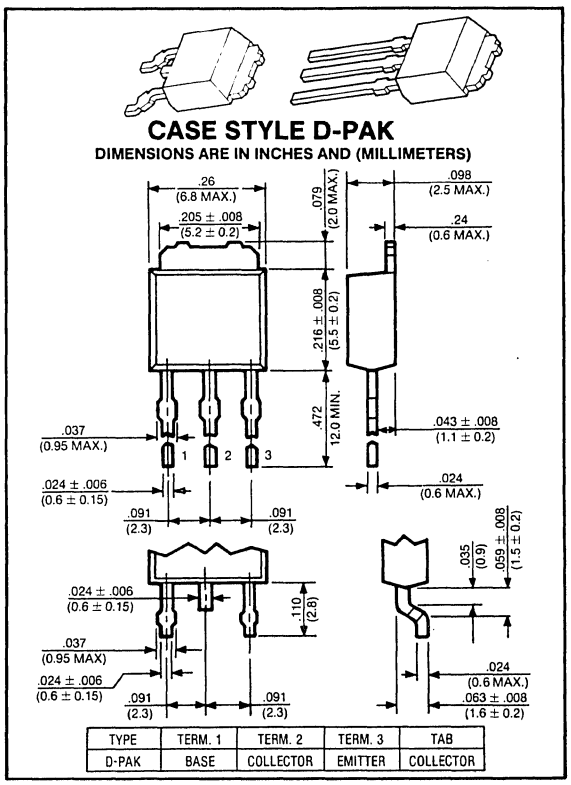
D72FY4D1,2

80 VOLTS
4 AMP, 15 WATTS

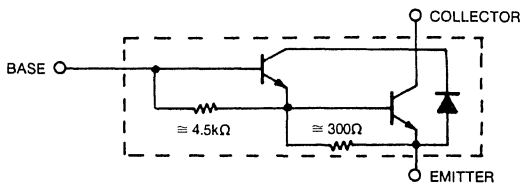
Designed for switching applications, hammer drive, pulse motor drive applications, power amplifier applications.

Features:

- High DC Current Gain
  : $h_{FE(1)}$ = 2000(Min.) (V_{CE} = 2V, I_C = 1A)
- Low Saturation Voltage
  : $V_{CE(sat)}$ = 1.5V (Max.) (I_C = 3A)
- Complementary to D73FY4D1,2
- Suffix "2" designates lead formed version
- See page 840 for mounting and handling considerations.



EQUIVALENT CIRCUIT



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

RATING	SYMBOL	D72FY4D1,2	UNITS
Collector-Emitter Voltage	V_{CEO}	80	Volts
Collector-Base Voltage	V_{CBO}	100	Volts
Emitter Base Voltage	V_{EBO}	5	Volts
Collector Current — Continuous	I_C	4	A
Base Current — Continuous	I_B	-1	A
Total Power Dissipation @ T_A = 25°C @ T_C = 25°C	P_D	1.0 15	Watts
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-55 to +150	°C

thermal characteristics[1]

Maximum Lead Temperature for Soldering Purposes: ⅛" from Case for 5 Seconds	T_L	235	°C

(1) See page 841 for thermal considerations.

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

CHARACTERISTIC	SYMBOL	MIN	TYP	MAX	UNIT
off characteristics					
Collector-Emitter Breakdown Voltage (I_C = 10mA, I_B = 0)	$V_{(BR)CEO}$	80	—	—	Volts
Collector Cutoff Current (V_{CB} = 100V, I_E = 0)	I_{CBO}	—	—	-20	μA
Emitter Cutoff Current (V_{EB} = 5V, I_C = 0)	I_{EBO}	—	—	-2.5	mA
second breakdown					
Second Breakdown with Base Forward Biased	FBSOA	SEE FIGURE 10			
on characteristics					
DC Current Gain[2] (I_C = 1A, V_{CE} = 2V)	h_{FE}	2000	—	—	—
(I_C = 3A, V_{CE} = 2V)	h_{FE}	1000	—	—	
Collector-Emitter Saturation Voltage (I_C = 3A, I_B = 6mA)	$V_{CE(sat)}$	—	—	1.5	V
Base-Emitter Saturation Voltage (I_C = 3A, I_B = 6mA)	$V_{BE(sat)}$	—	—	2.0	Volts
switching characteristics					
Turn-on Time	V_{CC} = 30V	t_{on}	—	0.2	—	μs
Storage Time	I_{B1} = -I_{B2} = 6mA	t_{stg}	—	1.5	—	
Fall Time	Duty Cycle ≦ 1%	t_f	—	0.6	—	

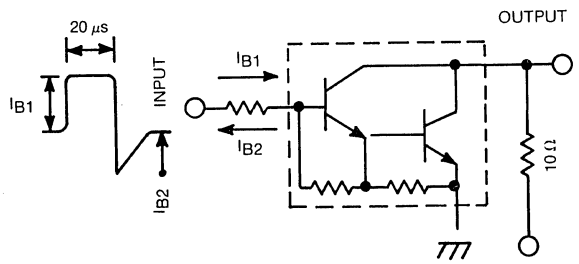


FIG. 1 SWITCHING TIME TEST CIRCUIT

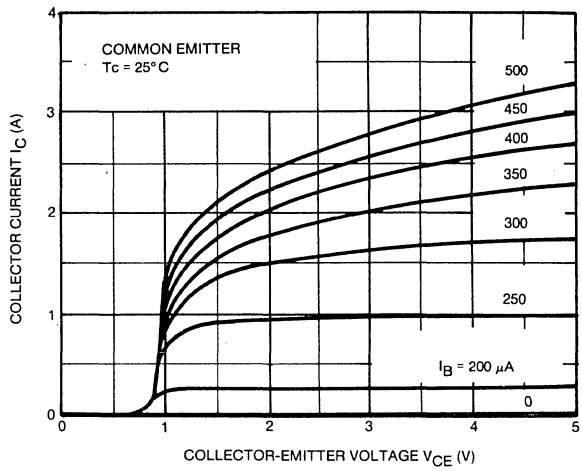


FIG. 2 I_C - V_{CE}

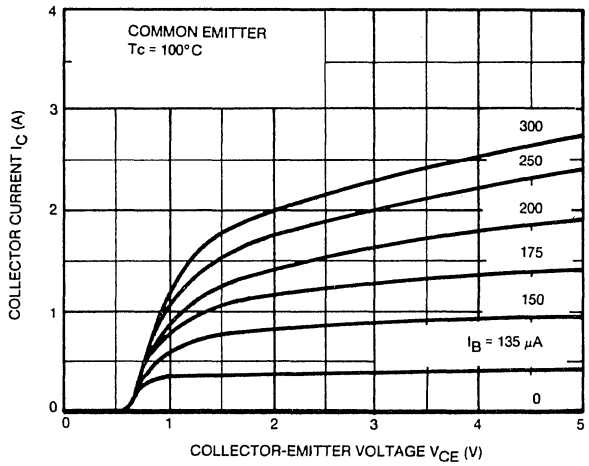


FIG. 3 I_C - V_{CE}

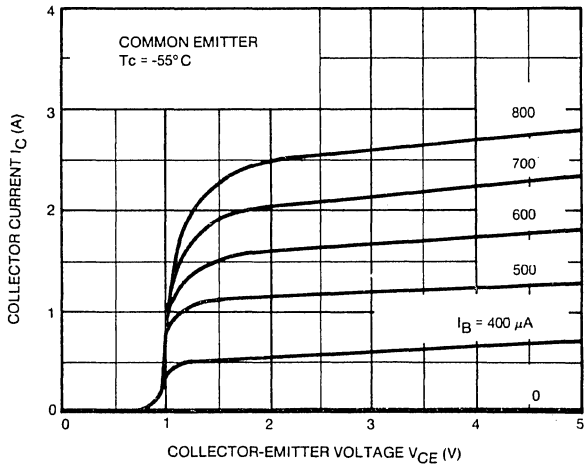


FIG. 4 I_C - V_{CE}

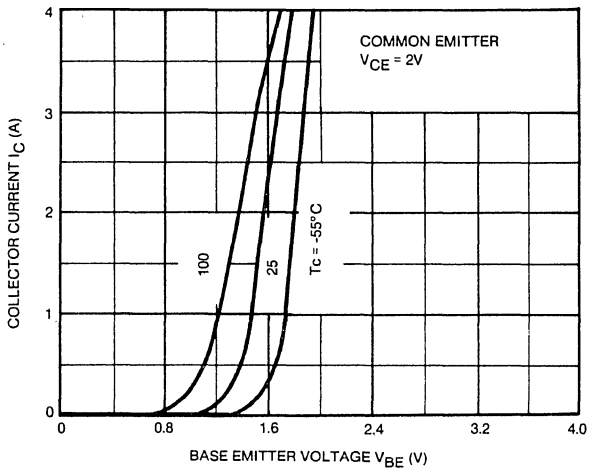


FIG. 5 I_C - V_{BE}

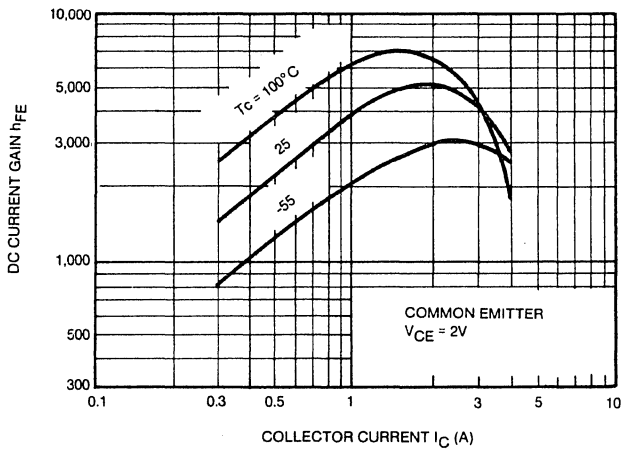


FIG. 6 h_{FE} - I_C

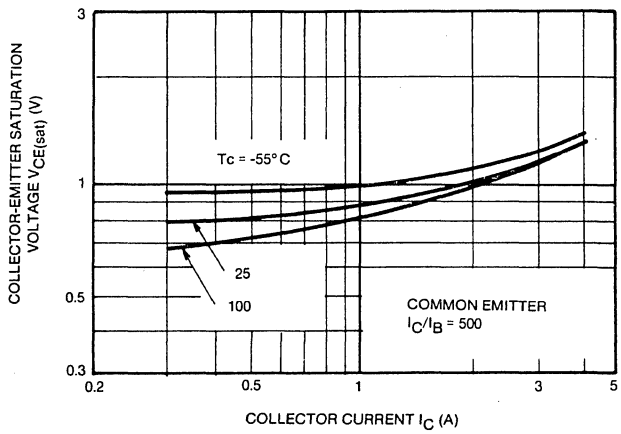


FIG. 7 $V_{CE(sat)}$ - I_C

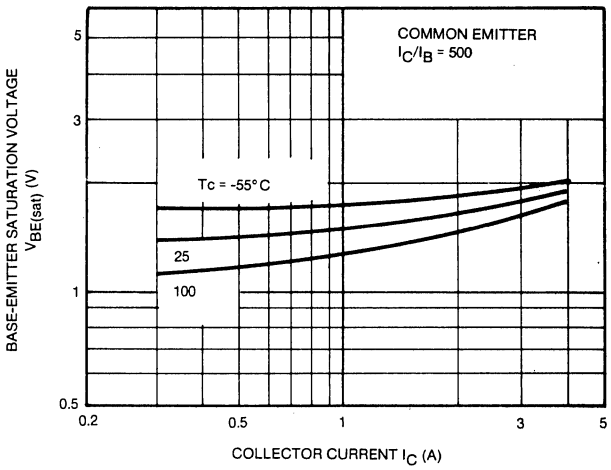


FIG. 8 $V_{BE(sat)}$ - I_C

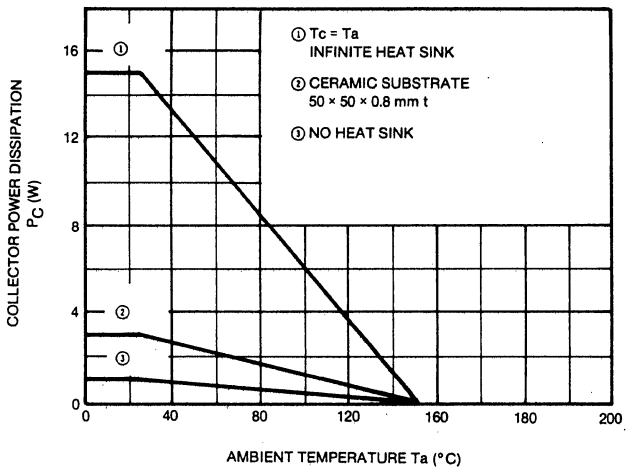


FIG. 9 P_C - Ta

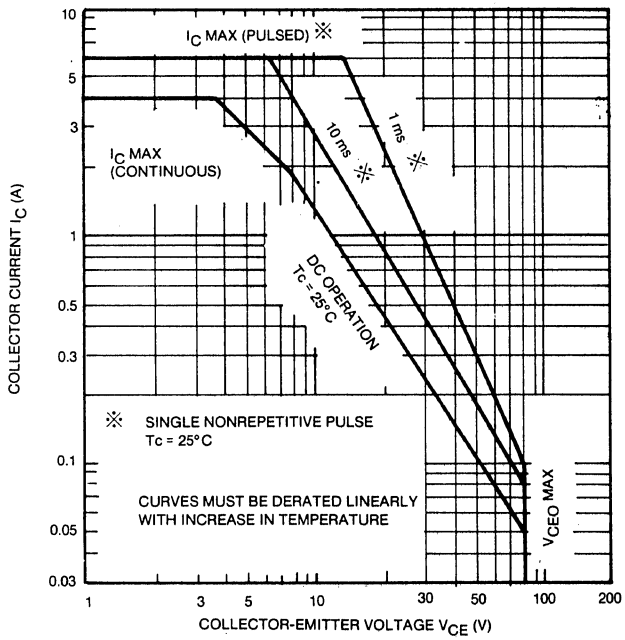


FIG. 10 SAFE OPERATING AREA