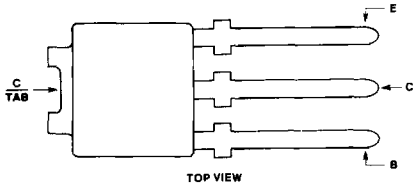
4-Ampere N-P-N Power Darlington Transistors

Features:
- *Operates from IC without predriver*
- h_{FE} *Min. = 2000*
- *Complementary to D73FY4D1,2*

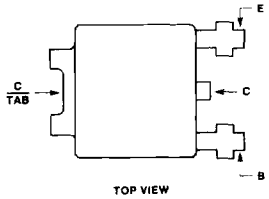
The D72FY4D1 and D72FY4D2 silicon n-p-n power Darlington transistors are designed for use in general-purpose amplifier and medium-speed switching circuits. The high gain of these devices makes it possible for them to be driven directly from integrated circuits.

The D72FY4D1 is supplied in the JEDEC TO-251 package and the D72FY4D2 is supplied in the JEDEC TO-252 surface-mount package.

TERMINAL DESIGNATION

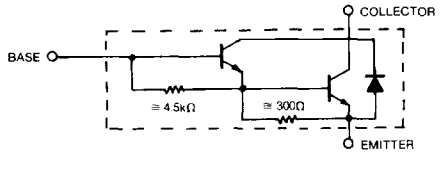


TO-251AA



TO-252AA

92CS-43478



Schematic diagram

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 7-16 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 (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	—	

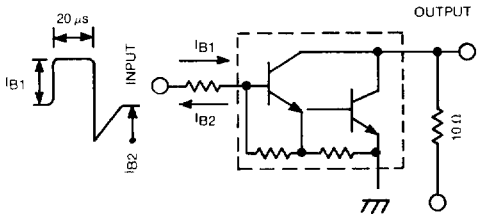


FIG. 1 SWITCHING TIME TEST CIRCUIT

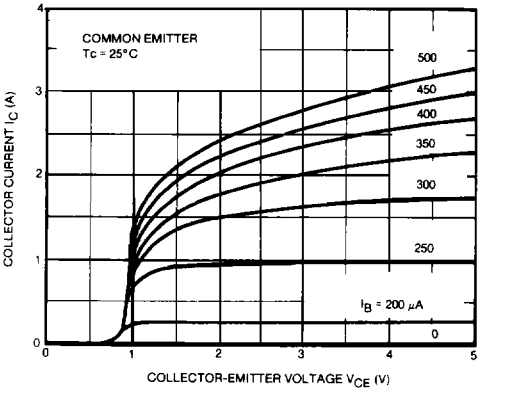


FIG. 2 I_C - V_{CE}

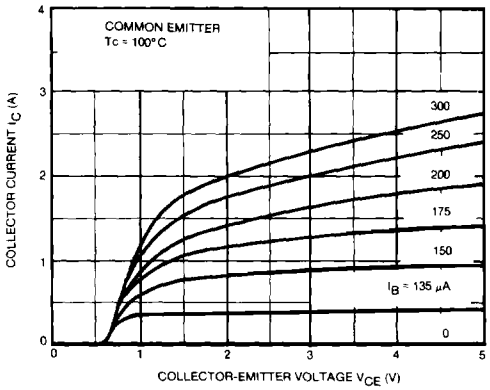


FIG. 3 I_C - V_{CE}

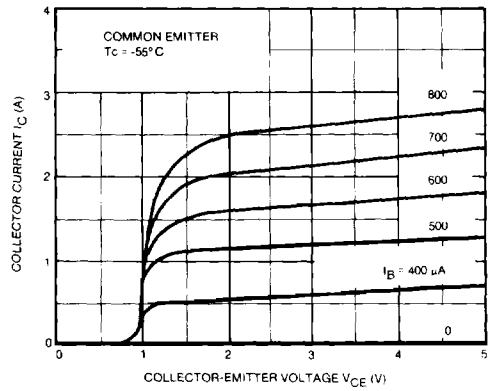


FIG. 4 I_C - V_{CE}

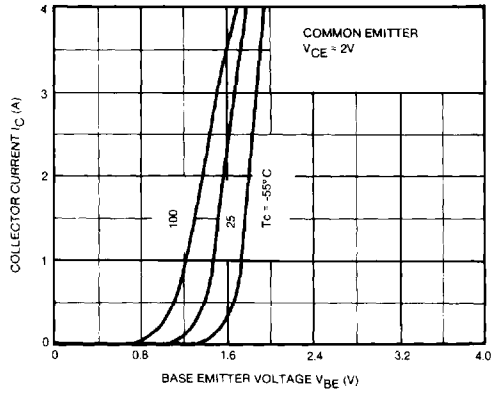


FIG. 5 I_C - V_{BE}

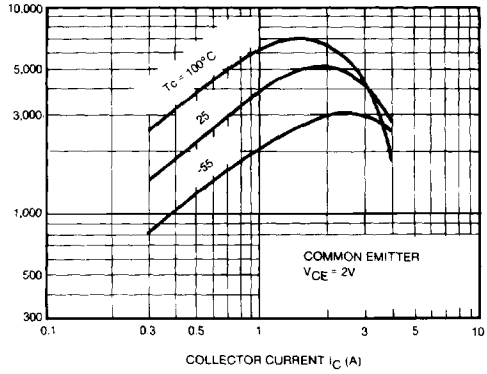


FIG. 6 h_{FE} - I_C

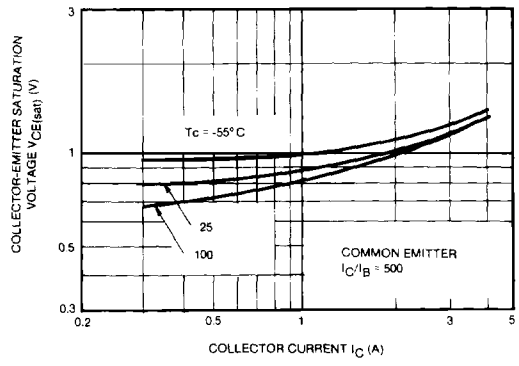


FIG. 7 $V_{CE(sat)}$ - I_C

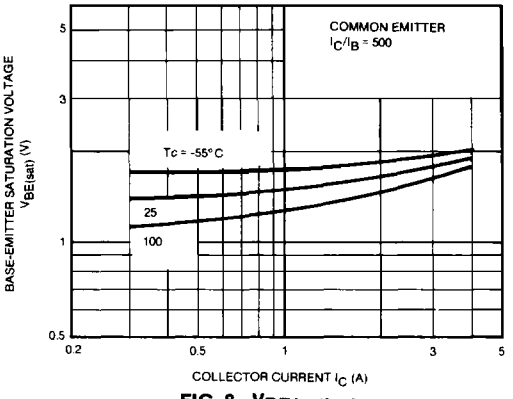


FIG. 8 $V_{BE(sat)}$ - I_C

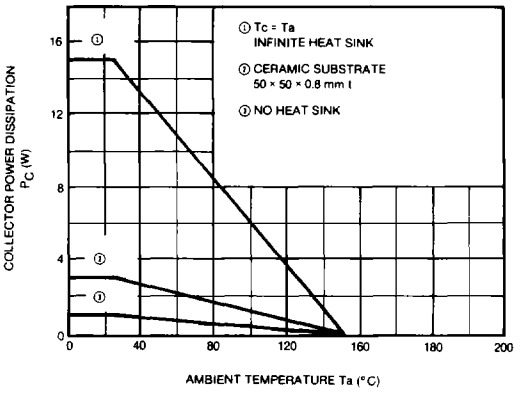


FIG. 9 P_C - Ta

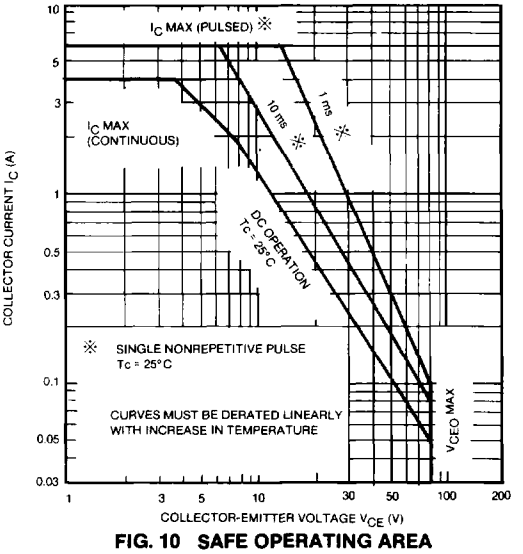


FIG. 10 SAFE OPERATING AREA