

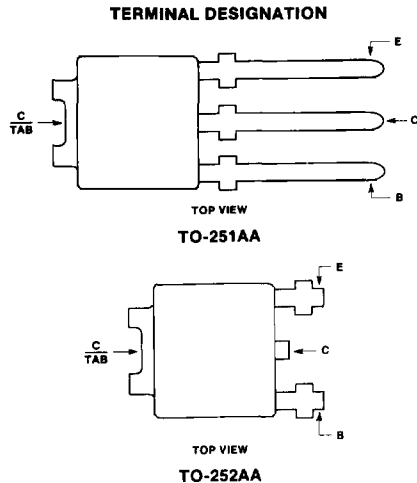
5-Ampere Silicon N-P-N Power Transistors

Features:

- Low $V_{CE(sat)}$
- Fast switching speed
- Complementary to D73F5T1,2

The D72F5T1 and D72F5T2 silicon n-p-n power transistors are designed for high current switching applications. They are intended for use in circuits such as converters, inverters, and pulse-width-modulated regulators.

The D72F5T1 is supplied in the JEDEC TO-251 package and the D72F5T2 is supplied in the JEDEC TO-252 surface-mount package.



92CS-43478

MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$) (unless otherwise specified)

RATING	SYMBOL	D72F5T1,2	UNITS
Collector-Emitter Voltage	V_{CEO}	50	Volts
Collector-Base Voltage	V_{CBO}	60	Volts
Emitter Base Voltage	V_{EBO}	5	Volts
Collector Current — Continuous	I_C	5	A
Base Current — Continuous	I_B	1	A
Total Power Dissipation @ $T_A = 25^\circ\text{C}$ @ $T_C = 25^\circ\text{C}$	P_D	1.0 20	Watts
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

THERMAL CHARACTERISTICS ⁽¹⁾

Maximum Lead Temperature for Soldering Purposes: $\frac{1}{8}$ " from Case for 5 Seconds	T_L	260	$^\circ\text{C}$
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(1) See page 7-16 for thermal considerations.

D72F5T1, D72F5T2

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$) (unless otherwise specified)

CHARACTERISTIC	SYMBOL	MIN	TYP	MAX	UNIT
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OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage ($I_C = 10\text{mA}$, $I_B = 0$)	$V_{(BR)CEO}$	50	—	—	Volts
Collector Cut-off Current ($V_{CB} = 50\text{V}$, $I_E = 0$)	I_{CBO}	—	—	1	μA
Emitter Cutoff Current ($V_{EB} = 5\text{V}$, $I_C = 0$)	I_{EBO}	—	—	1	μA

SECOND BREAKDOWN

Second Breakdown with Base Forward Biased	FBSOA	SEE FIGURE 11			
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ON CHARACTERISTICS

DC Current Gain ($I_C = 1\text{A}$, $V_{CE} = 1\text{V}$) ($I_C = 3\text{A}$, $V_{CE} = 1\text{V}$)	h_{FE}	70	—	240	—
Collector-Emitter Saturation Voltage ($I_C = 3\text{A}$, $I_B = 0.15\text{A}$)	$V_{CE(sat)}$	—	0.2	0.4	V
Base-Emitter Saturation Voltage ($I_C = 3\text{A}$, $I_B = 0.15\text{A}$)	$V_{BE(sat)}$	—	0.9	1.2	Volts

SWITCHING CHARACTERISTICS

Turn-on Time	$V_{CC} = 30\text{V}$	t_{on}	—	0.1	—	μs
Storage Time	$I_{B1} = -I_{B2} = 0.15\text{A}$	t_{stg}	—	1.0	—	
Fall Time	Duty Cycle $\leq 1\%$	t_f	—	0.1	—	

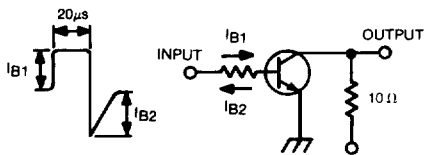


FIG. 1 SWITCHING TIME TEST CIRCUIT

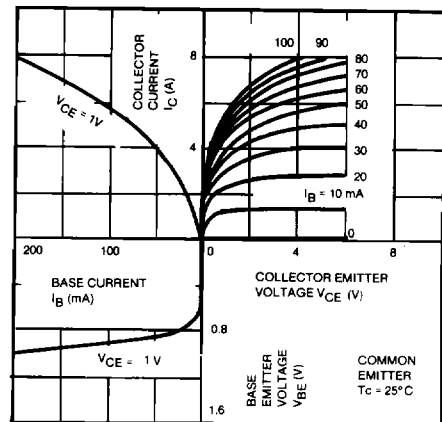


FIG. 2 STATIC CHARACTERISTICS

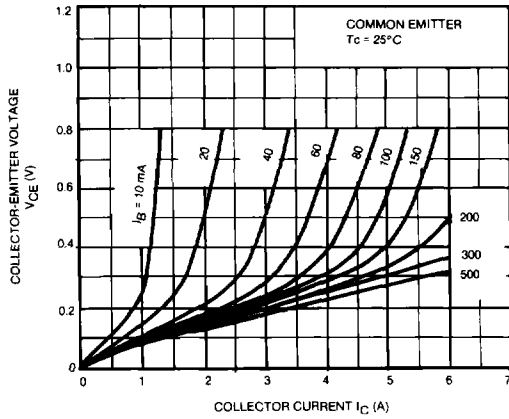


FIG. 3 V_{CE} - I_C

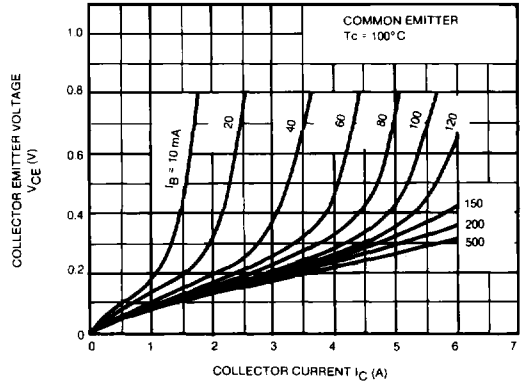


FIG. 4 V_{CE} - I_C

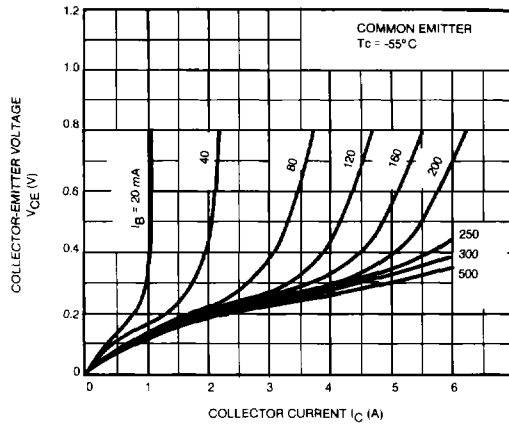


FIG. 5 V_{CE} - I_C

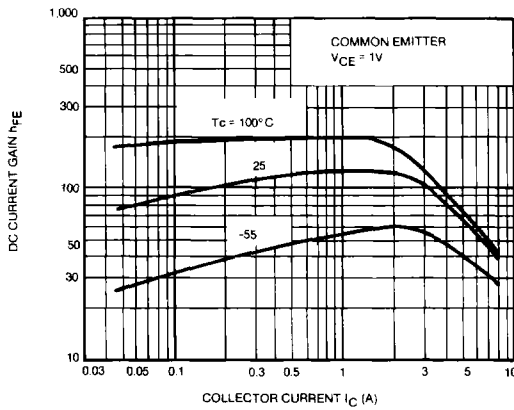


FIG. 6 h_{FE} - I_C

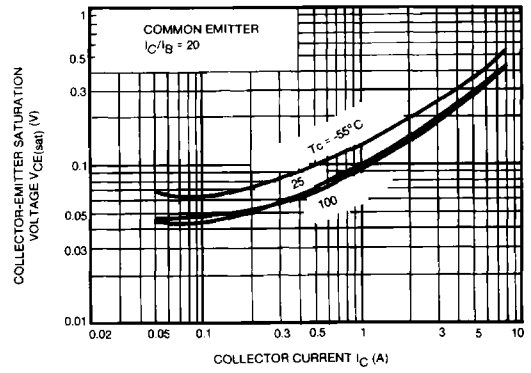


FIG. 7 V_{CE(sat)} - I_C

D72F5T1, D72F5T2

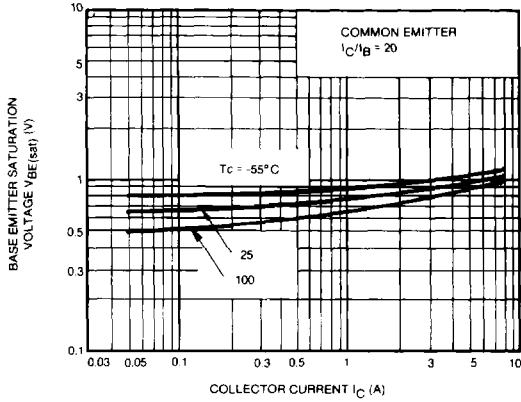


FIG. 8 $V_{BE(sat)} - I_C$

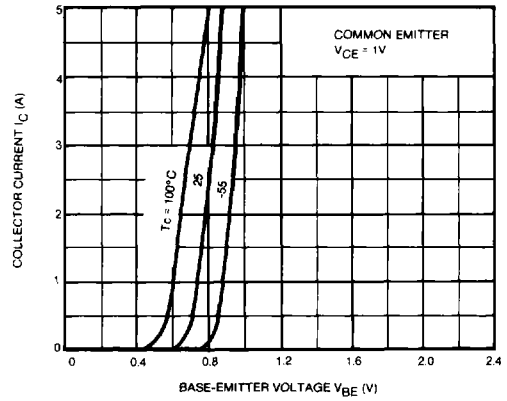


FIG. 9 $I_C - V_{BE}$

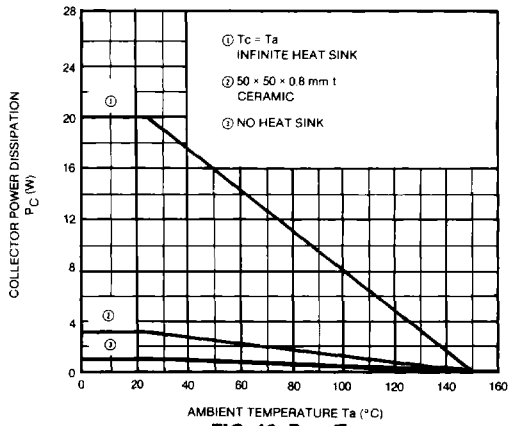


FIG. 10 $P_C - T_a$

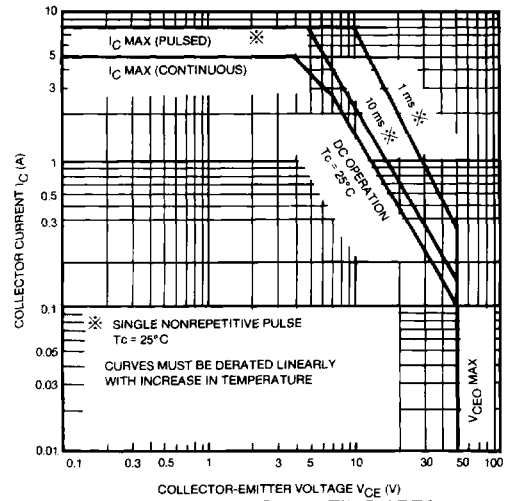


FIG. 11 SAFE OPERATING AREA

2
POWER TRANSISTORS