SURFACE-MOUNT
NPN POWER TRANSISTORS

D70F2T1

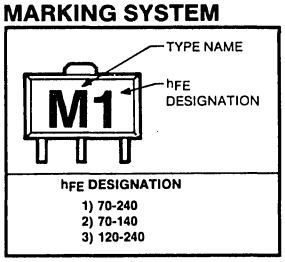
50 VOLTS
2 AMP, 500 mWATTS

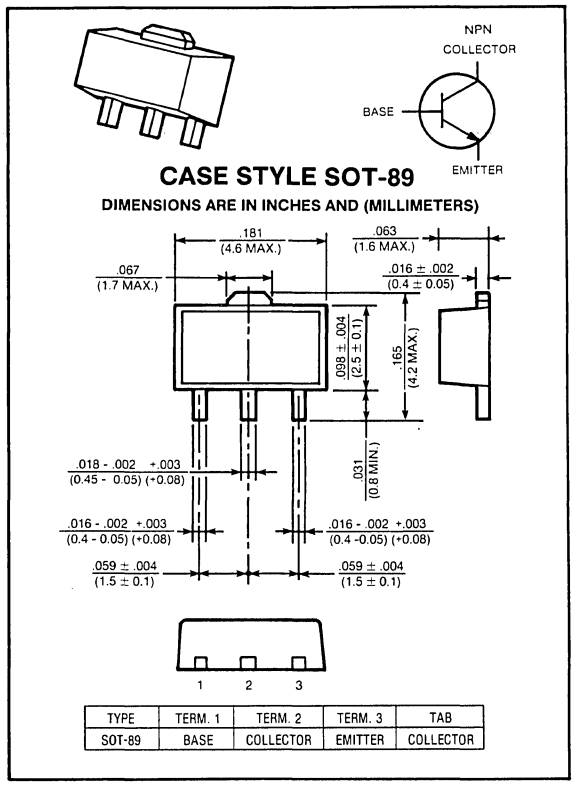
Designed for power amplifier applications, power switching applications.

Features:

- Low saturation voltage
  : $V_{CE(sat)}$ = 0.5V (Max.) (I_C = 1A)
- High speed switching time: t_{stg} = 1.0μs (Typ.)
- P_D=1 ~ 2W (Mounted on ceramic substrate)
- Small flat package
- Complementary to D71F2T1
- See page 840 for mounting and handling considerations.

MARKING SYSTEM





TYPE	TERM. 1	TERM. 2	TERM. 3	TAB
SOT-89	BASE	COLLECTOR	EMITTER	COLLECTOR

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

RATING	SYMBOL	D70F2T1	UNITS
Collector-Emitter Voltage	V_{CEO}	50	Volts
Collector-Base Voltage	V_{CBO}	50	Volts
Emitter Base Voltage	V_{EBO}	5	Volts
Collector Current — Continuous	I_C	2	A
Base Current — Continuous	I_B	0.4	A
Total Power Dissipation @ T_C = 25°C Derate above 25°C @ T_C = 25°C(1)	P_D	500 1000	mWatts
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-55 to +150	°C

thermal characteristics(2)

(1) Mounted on ceramic substrate (250mm^2 × 0.8t).
(2) 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_E = 0)	$V_{(BR)CEO}$	50	—	—	Volts
Collector Cutoff Current (V_{CB} = 50V, I_E = 0)	I_{CBO}	—	—	0.1	μA
Emitter Cutoff Current (V_{EB} = 5V, I_C = 0)	I_{EBO}	—	—	0.1	μA
on characteristics					
DC Current Gain[3] (I_C = 0.5A, V_{CE} = 2V)	h_{FE}	70	—	240	—
(I_C = 2.0A, V_{CE} = 2V)		20	—	—	
Collector-Emitter Saturation Voltage (I_C = 1A, I_B = 0.05A)	$V_{CE(sat)}$	—	—	0.5	V
Base-Emitter Saturation Voltage (I_C = 1A, I_B = 0.05A)	$V_{BE(sat)}$	—	—	1.2	Volts
switching characteristics					
Turn-on Time	V_{CC} = 30V	t_{on}	—	0.1	—	μs
Storage Time	I_{B1} = -I_{B2} = 0.05A	t_{stg}	—	1.0	—	
Fall Time	Duty Cycle ≦ 1%	t_f	—	0.1	—	

(3) See page 44 for h_{FE} ranges.

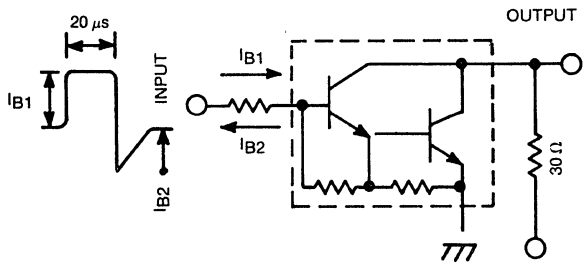


FIG. 1 SWITCHING TIME TEST CIRCUIT

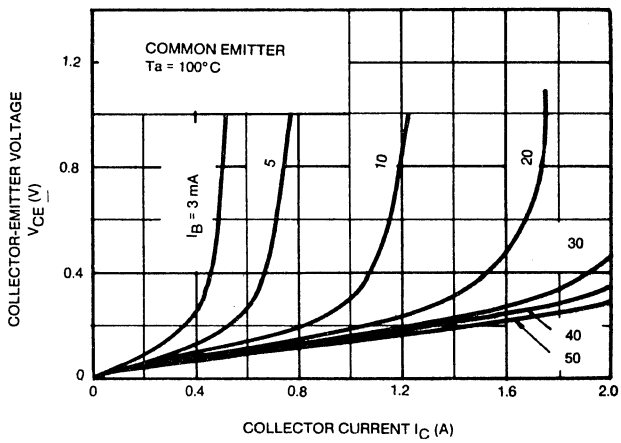


FIG. 2 V_{CE} - I_C

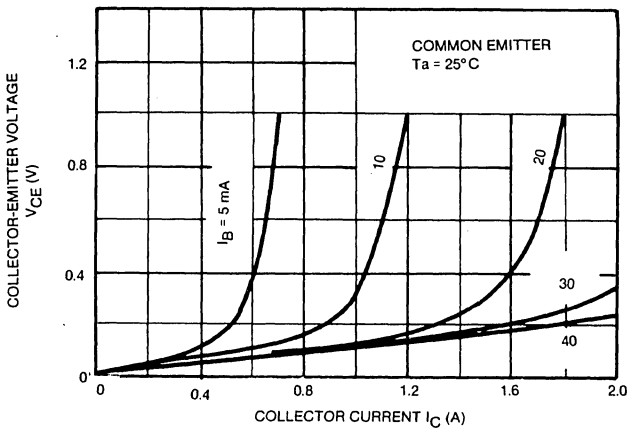


FIG. 3 V_{CE} - I_C

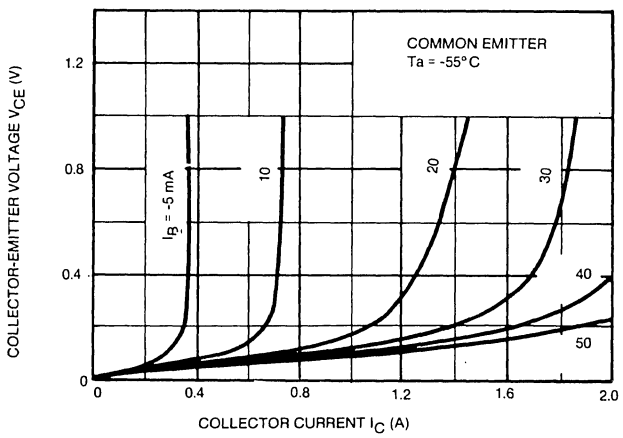


FIG. 4 V_{CE} - I_C

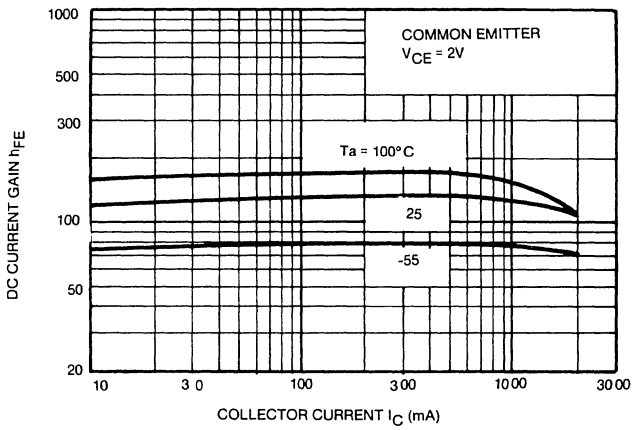


FIG. 5 h_{FE} - I_C

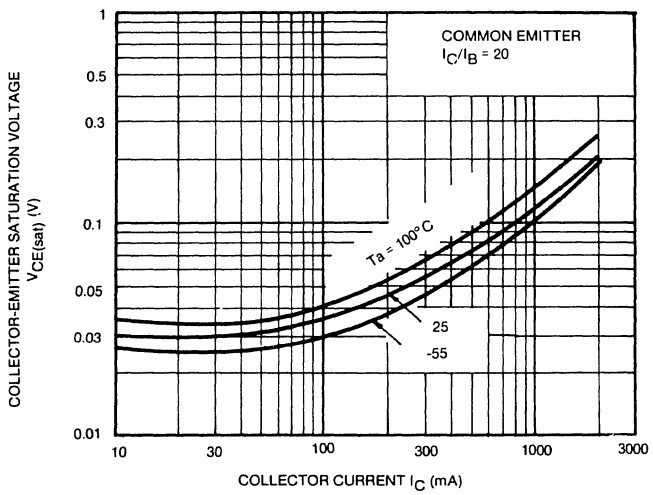


FIG. 6 $V_{CE(sat)}$ - I_C

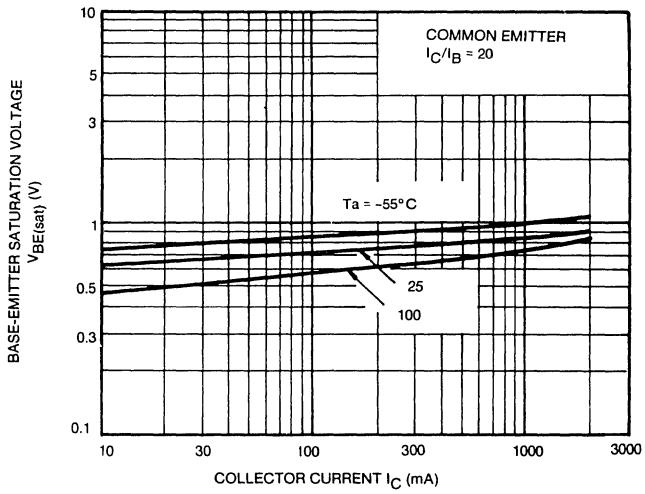


FIG. 7 $V_{BE(sat)}$ - I_C

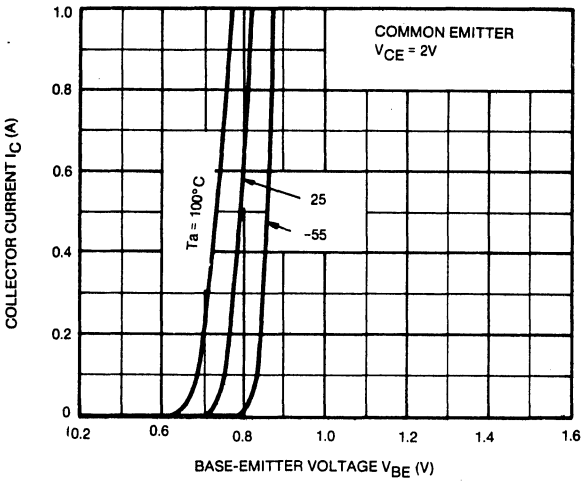


FIG. 8 I_C - V_{BE}

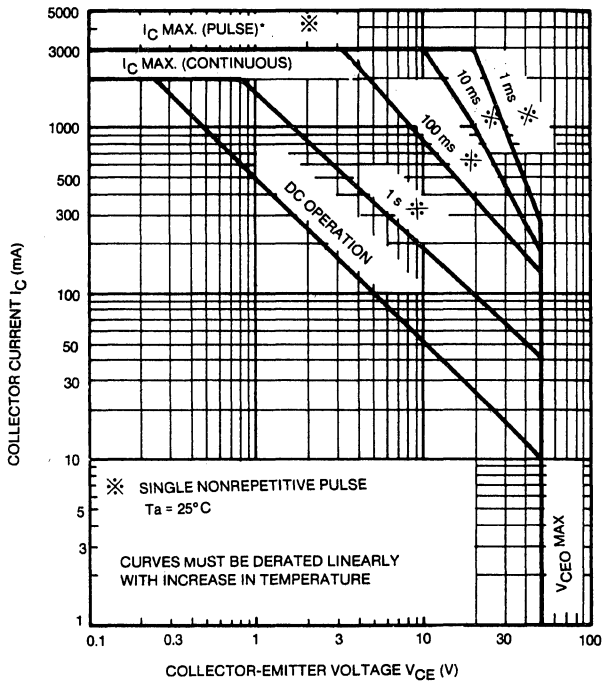


FIG. 9 SAFE OPERATING AREA

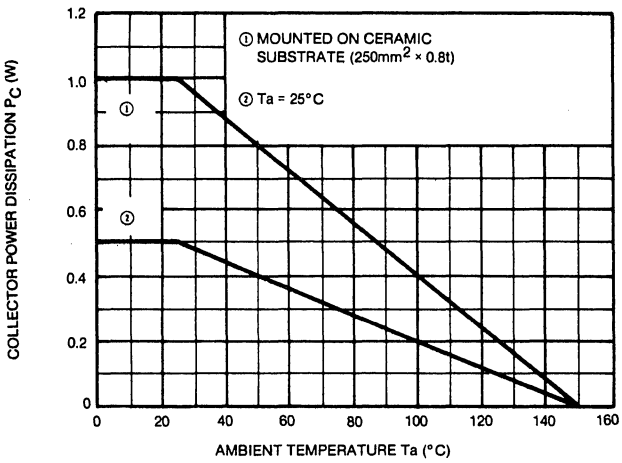


FIG. 10 P_C - Ta