

General purpose amplification(−12V, −2A)

2SB1690

●Applications

Low frequency amplifier
Driver

●Features

- 1) A collector current is large.
- 2) Collector saturation voltage is low.

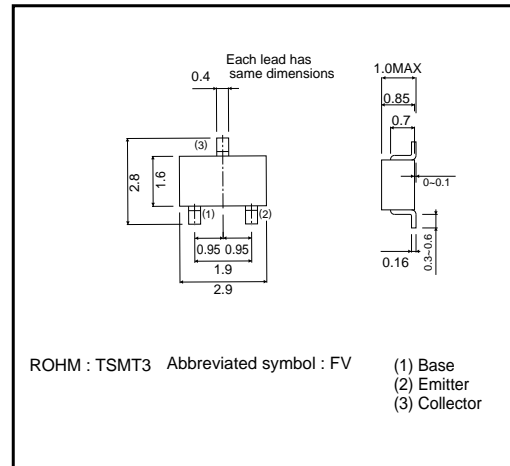
$$V_{CE(sat)} \leq -180\text{mV}$$

at $I_C = -1\text{A} / I_B = -50\text{mA}$

●Packaging specifications

Type	Package	Taping
	Code	TL
	Basic ordering unit (pieces)	3000
2SB1690		○

●External dimensions (Unit : mm)



●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-base voltage	V_{CBO}	-15	V
Collector-emitter voltage	V_{CEO}	-12	V
Emitter-base voltage	V_{EBO}	-6	V
Collector current	I_C	-2	A
	I_{CP}	-4	A*
Collector power dissipation	P_C	500	mW
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	-55 to +150	°C

* Single pulse $P_w=1\text{ms}$

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	-15	-	-	V	$I_C = -10\mu\text{A}$
Collector-emitter breakdown voltage	BV_{CEO}	-12	-	-	V	$I_C = -1\text{mA}$
Emitter-base breakdown voltage	BV_{EBO}	-6	-	-	V	$I_E = -10\mu\text{A}$
Collector cutoff current	I_{CBO}	-	-	-100	nA	$V_{CB} = -15\text{V}$
Emitter cutoff current	I_{EBO}	-	-	-100	nA	$V_{EB} = -6\text{V}$
Collector-emitter saturation voltage	$V_{CE(sat)}$	-	-120	-180	mV	$I_C = -1\text{mA}, I_B = -50\text{mA}$
DC current transfer ratio	h_{FE}	270	-	680	-	$V_{CE} = -2\text{V}, I_C = -200\text{mA}^*$
Transition frequency	f_T	-	360	-	MHz	$V_{CE} = -2\text{V}, I_E = 200\text{mA}, f = 100\text{MHz}^*$
Output capacitance	C_{ob}	-	15	-	pF	$V_{CB} = -10\text{V}, I_E = 0\text{mA}, f = 1\text{MHz}$

* Pulsed

Transistors

●Electrical characteristic curves

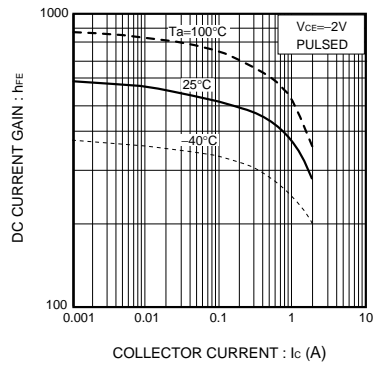


Fig.1 DC current gain vs. collector current

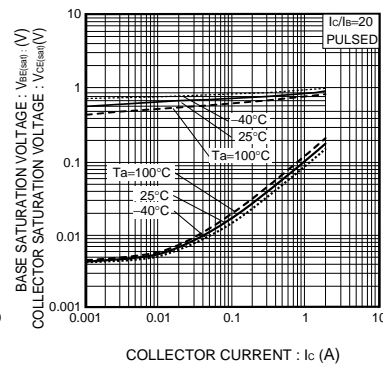


Fig.2 Collector-emitter saturation voltage base-emitter saturation voltage vs. collector current

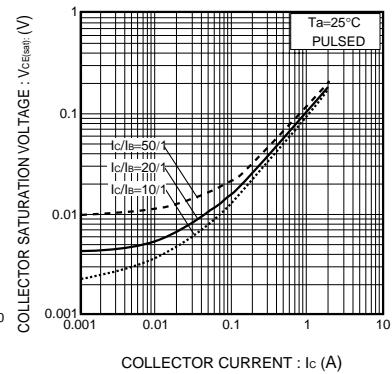


Fig.3 Collector-emitter saturation voltage vs. collector current

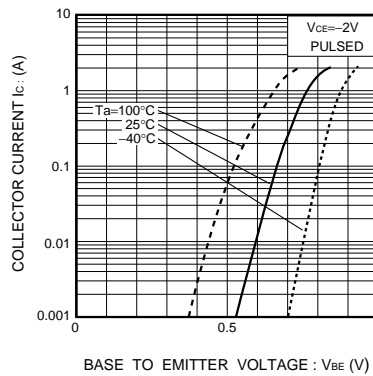


Fig.4 Grounded emitter propagation characteristics

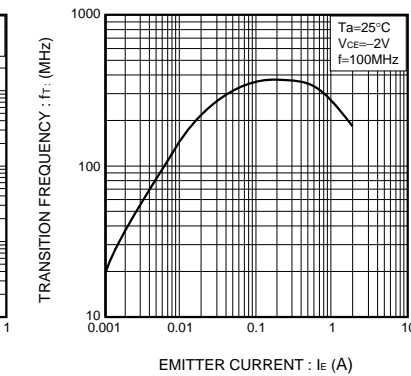


Fig.5 Gain bandwidth product vs. emitter current

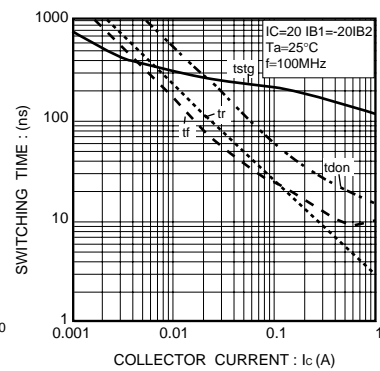


Fig.6 Switching time

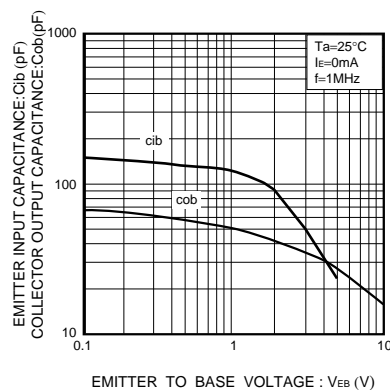


Fig.7 Collector output capacitance vs. collector-base voltage
Emitter input capacitance vs. emitter-base voltage

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