

# General purpose amplification (–30V, –1A)

## 2SB1694

### ●Application

Low frequency amplifier  
Driver

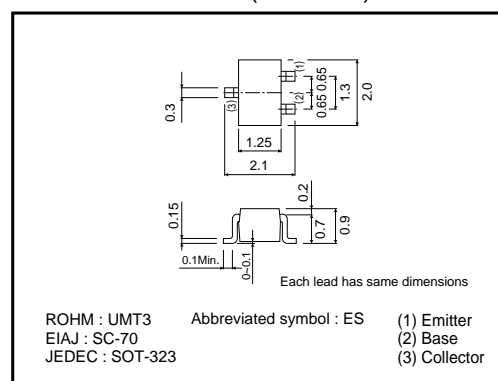
### ●Features

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

$$V_{CE(sat)} \leq -380\text{mV}$$

$$\text{At } I_C = -500\text{mA} / I_B = -25\text{mA}$$

### ●External dimensions (Units : mm)



### ●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-base voltage	$V_{CB0}$	–30	V
Collector-emitter voltage	$V_{CE0}$	–30	V
Emitter-base voltage	$V_{EB0}$	–6	V
Collector current	$I_C$	–1	A
	$I_{CP}$	–2	A*
Power dissipation	$P_C$	200	mW
Junction temperature	$T_j$	150	°C
Range of storage temperature	$T_{stg}$	–55~+150	°C

\*Single pulse,  $P_W=1\text{ms}$

### ●Packaging specifications

Type	Package	Taping
	Code	T106
	Basic ordering unit (pieces)	3000
2SB1694		○

### ●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	$BV_{CB0}$	–30	–	–	V	$I_C = -10\mu\text{A}$
Collector-emitter breakdown voltage	$BV_{CE0}$	–30	–	–	V	$I_C = -1\text{mA}$
Emitter-base breakdown voltage	$BV_{EB0}$	–6	–	–	V	$I_E = -10\mu\text{A}$
Collector cutoff current	$I_{CBO}$	–	–	–100	nA	$V_{CB} = -30\text{V}$
Emitter cutoff current	$I_{EBO}$	–	–	–100	nA	$V_{EB} = -30\text{V}$
Collector-emitter saturation voltage	$V_{CE(sat)}$	–	–180	–380	mV	$I_C = -500\text{mA}$ , $I_B = -25\text{mA}$
DC current gain	$h_{FE}$	270	–	680	–	$V_{CE} = -2\text{V}$ , $I_C = -100\text{mA}$ *1
Transition frequency	$f_T$	–	320	–	MHz	$V_{CE} = -2\text{V}$ , $I_E = 100\text{mA}$ , $f = 100\text{MHz}$ *1
Corrector output capacitance	$C_{ob}$	–	7	–	pF	$V_{CB} = -10\text{V}$ , $I_E = 0\text{A}$ , $f = 1\text{MHz}$

\*1 Pulsed

Transistors

●Electrical characteristic curves

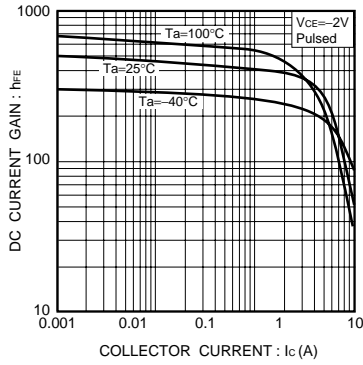


Fig.1 DC current gain vs. collector current

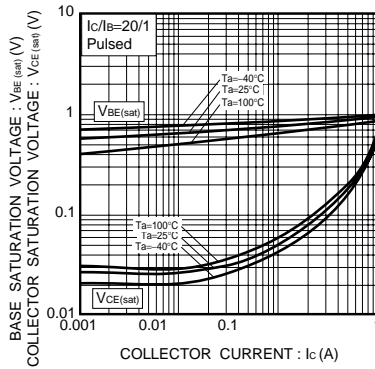


Fig.2 Collector-emitter saturation voltage base-emitter saturation voltage vs. collector current

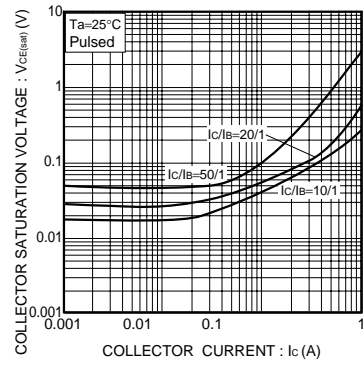


Fig.3 Collector-emitter saturation voltage vs. collector current

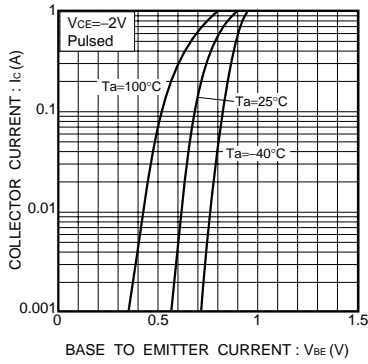


Fig.4 Grounded emitter propagation characteristics

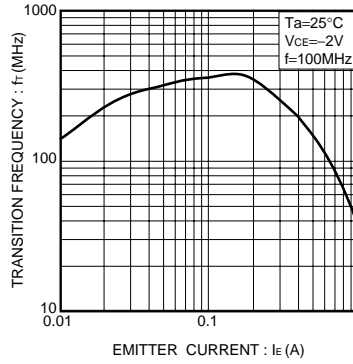


Fig.5 Gain bandwidth product vs. emitter current

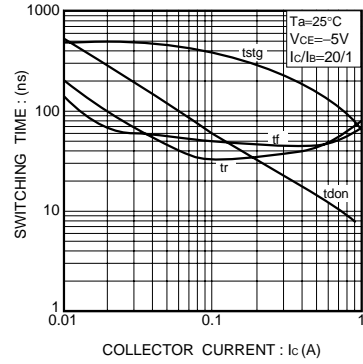


Fig.6 Switching time

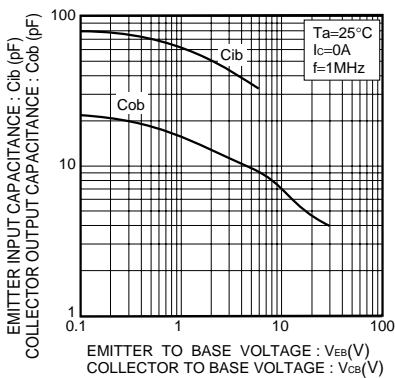


Fig.7 Collector output capacitance vs. collector-base voltage  
Emitter input capacitance vs. emitter-base voltage

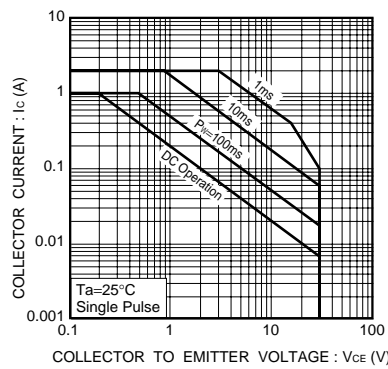


Fig.8 Safe Operating Area