

# Low frequency amplifier

## 2SB1705

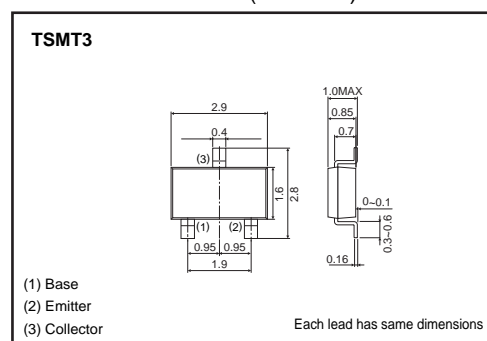
### ●Application

Low frequency amplifier  
Driver

### ●Features

- 1) A collector current is large.
- 2)  $V_{CE(sat)} \leq -250\text{mV}$   
At  $I_C = -1.5\text{A} / I_B = -30\text{mA}$

### ●External dimensions (Unit : mm)



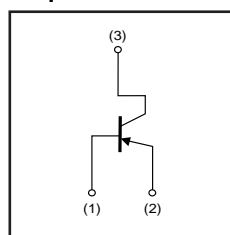
### ●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-base voltage	$V_{CB0}$	-15	V
Collector-emitter voltage	$V_{CE0}$	-12	V
Emitter-base voltage	$V_{EB0}$	-6	V
Collector current	$I_C$	-3	A
	$I_{CP}$	-6	A* <sup>1</sup>
Power dissipation	$P_C$	500	mW* <sup>2</sup>
Junction temperature	$T_J$	150	°C
Range of storage temperature	$T_{stg}$	-55 to +150	°C

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

\*2 Each Terminal Mounted on a Recommended

### ●Equivalent circuit



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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	$BV_{CB0}$	-15	-	-	V	$I_C = -10\mu\text{A}$
Collector-emitter breakdown voltage	$BV_{CE0}$	-12	-	-	V	$I_C = -1\text{mA}$
Emitter-base breakdown voltage	$BV_{EB0}$	-6	-	-	V	$I_E = -10\mu\text{A}$
Collector cutoff current	$I_{CB0}$	-	-	-100	nA	$V_{CB} = -15\text{V}$
Emitter cutoff current	$I_{EB0}$	-	-	-100	nA	$V_{EB} = -6\text{V}$
Collector-emitter saturation voltage	$V_{CE(sat)}$	-	-120	-250	mV	$I_C = -1.5\text{A}, I_B = -30\text{mA}$
DC current gain	$h_{FE}$	270	-	680	-	$V_{CE} = -2\text{V}, I_C = -500\text{mA}^*$
Transition frequency	$f_T$	-	280	-	MHz	$V_{CE} = -2\text{V}, I_E = 500\text{mA}, f = 100\text{MHz}^*$
Collector output capacitance	$C_{ob}$	-	30	-	pF	$V_{CB} = -10\text{V}, I_E = 0\text{A}, f = 1\text{MHz}$

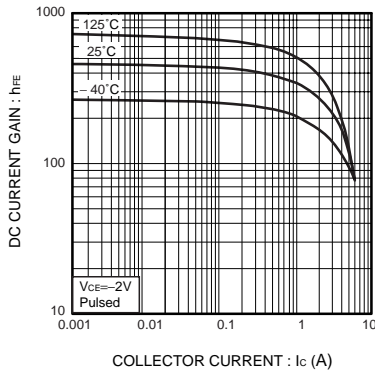
\* Pulsed

Transistors

●Packaging specifications

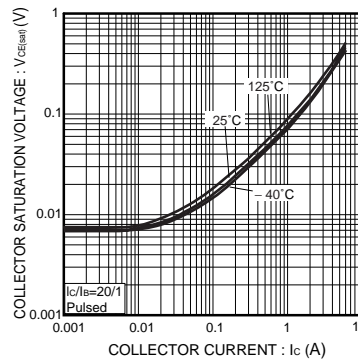
Type	Package	Taping
	Code	TL
	Basic ordering unit (pieces)	3000
2SB1705		○

●Electrical characteristic curves



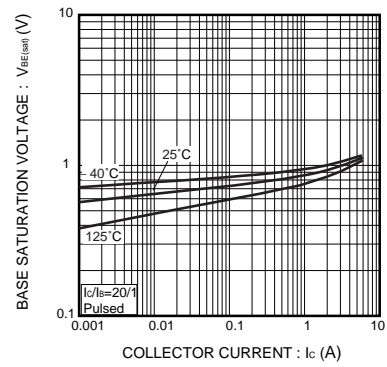
COLLECTOR CURRENT :  $I_c$  (A)

Fig.1. DC current gain vs. collector current



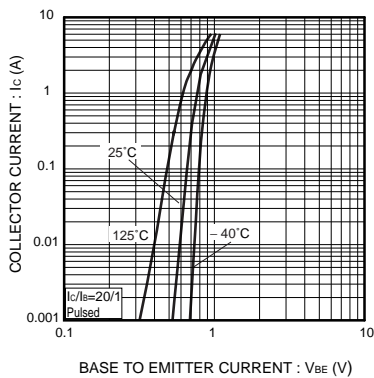
COLLECTOR CURRENT :  $I_c$  (A)

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



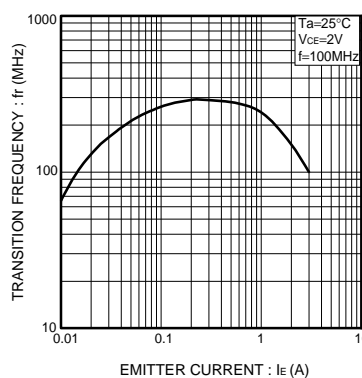
COLLECTOR CURRENT :  $I_c$  (A)

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



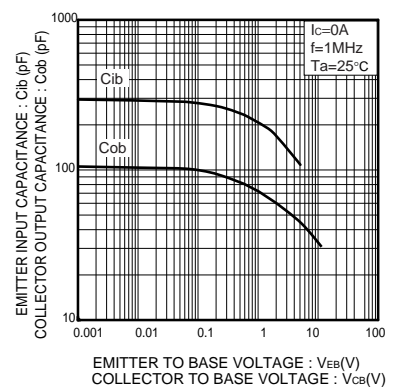
BASE TO EMITTER CURRENT :  $V_{BE}$  (V)

Fig.4 Grounded emitter propagation characteristics



EMITTER CURRENT :  $I_e$  (A)

Fig.5 Gain bandwidth product vs. emitter current



EMITTER TO BASE VOLTAGE :  $V_{BE}$  (V)  
COLLECTOR TO BASE VOLTAGE :  $V_{CB}$  (V)

Fig.6. Collector output capacitance vs. collector-base voltage  
Emitter input capacitance vs. emitter-base voltage

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