

# 2SD1302

## Silicon NPN epitaxial planar type

For low-voltage output amplification

For muting

For DC-DC converter

### ■ Features

- Low collector-emitter saturation voltage  $V_{CE(sat)}$
- Low ON resistance  $R_{on}$
- High forward current transfer ratio  $h_{FE}$

### ■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

Parameter	Symbol	Rating	Unit
Collector-base voltage (Emitter open)	$V_{CBO}$	25	V
Collector-emitter voltage (Base open)	$V_{CEO}$	20	V
Emitter-base voltage (Collector open)	$V_{EBO}$	12	V
Collector current	$I_C$	0.5	A
Peak collector current	$I_{CP}$	1	A
Collector power dissipation	$P_C$	600	mW
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

### ■ Electrical Characteristics $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

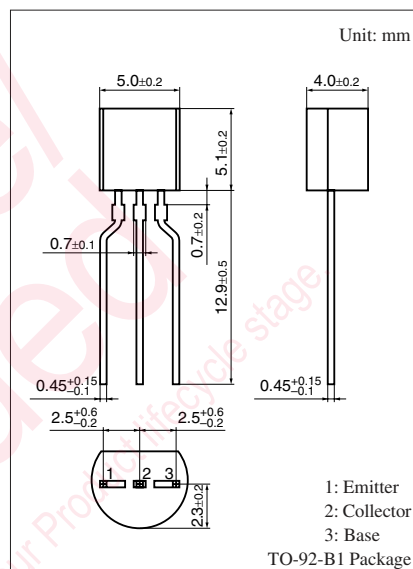
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-base voltage (Emitter open)	$V_{CBO}$	$I_C = 10 \mu\text{A}, I_E = 0$	25			V
Collector-emitter voltage (Base open)	$V_{CEO}$	$I_C = 1 \text{ mA}, I_B = 0$	20			V
Emitter-base voltage (Collector open)	$V_{EBO}$	$I_E = 10 \mu\text{A}, I_C = 0$	12			V
Collector-base cutoff current (Emitter open)	$I_{CBO}$	$V_{CB} = 25 \text{ V}, I_E = 0$			100	nA
Forward current transfer ratio *1	$h_{FE1}$ *2	$V_{CE} = 2 \text{ V}, I_C = 0.5 \text{ A}$	200		800	—
	$h_{FE2}$	$V_{CE} = 2 \text{ V}, I_C = 1 \text{ A}$	60			
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 0.5 \text{ A}, I_B = 20 \text{ mA}$		0.13	0.40	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C = 0.5 \text{ A}, I_B = 50 \text{ mA}$			1.2	V
Transition frequency	$f_T$	$V_{CB} = 10 \text{ V}, I_E = -50 \text{ mA}, f = 200 \text{ MHz}$		200		MHz
Collector output capacitance (Common base, input open circuited)	$C_{ob}$	$V_{CB} = 10 \text{ V}, I_E = 0, f = 1 \text{ MHz}$		10		pF
ON resistance *3	$R_{on}$			1.0		$\Omega$

Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

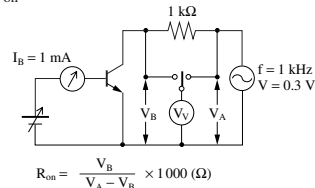
2. \*1: Pulse measurement

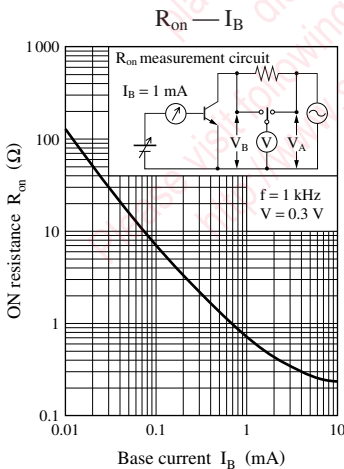
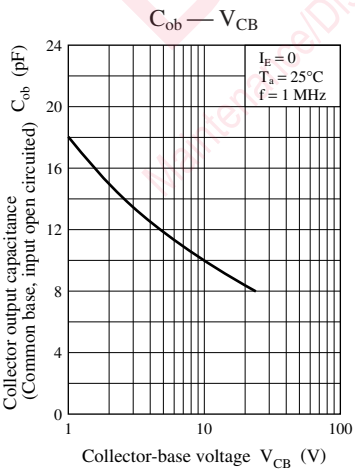
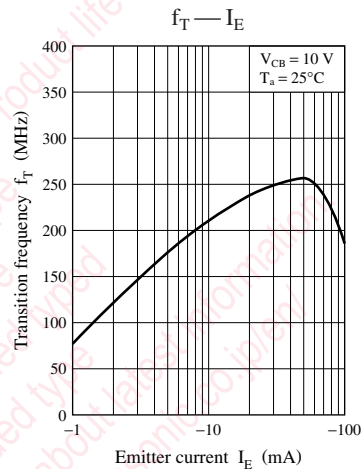
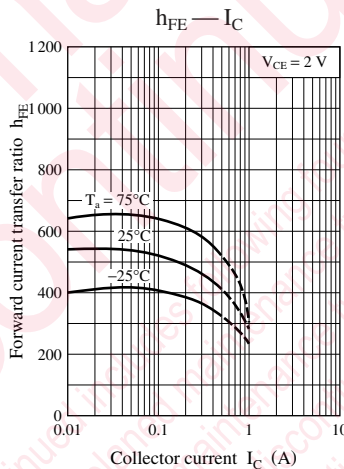
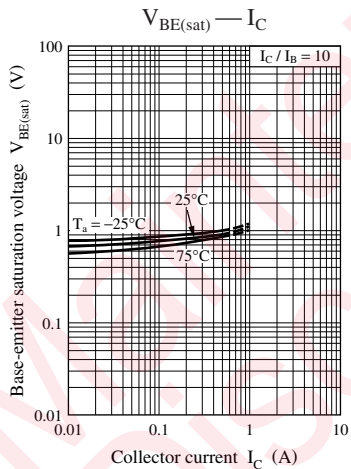
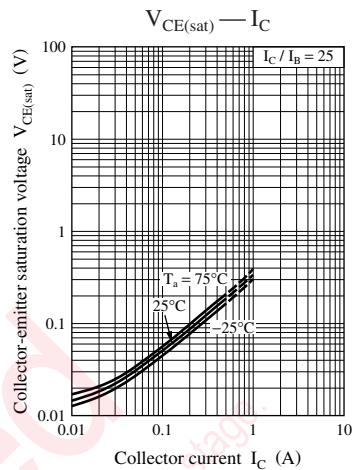
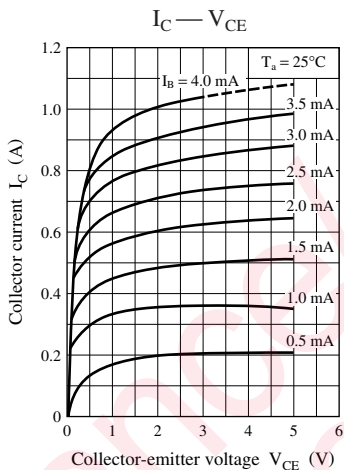
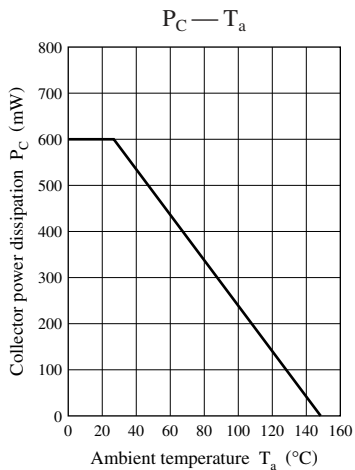
\*2: Rank classification

Rank	R	S	T
$h_{FE1}$	200 to 350	300 to 500	400 to 800



\*3:  $R_{on}$  Measurement circuit





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