

# 2SB0933 (2SB933)

## Silicon PNP epitaxial planar type

For Power switching

Complementary to 2SD1256

### ■ Features

- Low collector-emitter saturation voltage  $V_{CE(sat)}$
- Satisfactory linearity of forward current transfer ratio  $h_{FE}$
- Large collector current  $I_C$
- N type package enabling direct soldering of the radiating fin to the printed circuit board, etc. of small electronic equipment.

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

Parameter	Symbol	Rating	Unit
Collector-base voltage (Emitter open)	$V_{CBO}$	-130	V
Collector-emitter voltage (Base open)	$V_{CEO}$	-80	V
Emitter-base voltage (Collector open)	$V_{EBO}$	-7	V
Collector current	$I_C$	-5	A
Peak collector current	$I_{CP}$	-10	A
Collector power dissipation	$P_C$	40	W
	$T_a = 25^\circ\text{C}$	1.3	
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 ~ +150	$^\circ\text{C}$

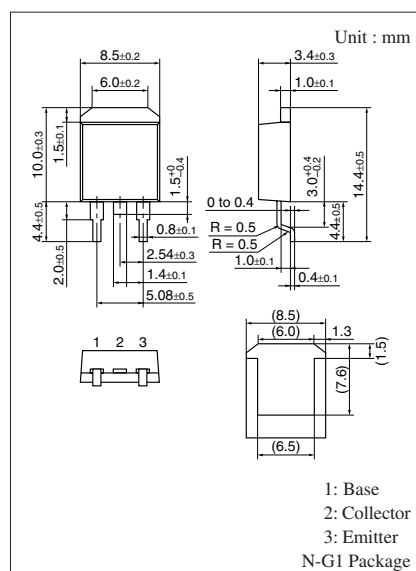
### ■ Electrical Characteristics $T_C = 25^\circ\text{C} \pm 3^\circ\text{C}$

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-emitter voltage (Base open)	$V_{CEO}$	$I_C = -10\text{ mA}$ , $I_B = 0$	-80			V
Collector-base cutoff current (Emitter open)	$I_{CBO}$	$V_{CB} = -100\text{ V}$ , $I_E = 0$			-10	$\mu\text{A}$
Emitter-base cutoff current (Collector open)	$I_{EBO}$	$V_{EB} = -5\text{ V}$ , $I_C = 0$			-50	$\mu\text{A}$
Forward current transfer ratio	$h_{FE1}$	$V_{CE} = -2\text{ V}$ , $I_C = -0.1\text{ A}$	45			—
	$h_{FE2}^*$	$V_{CE} = -2\text{ V}$ , $I_C = -2\text{ A}$	90		260	
Base-emitter voltage	$V_{BE(sat)}$	$I_C = -4\text{ A}$ , $I_B = -0.2\text{ A}$			-1.5	V
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = -4\text{ A}$ , $I_B = -0.2\text{ A}$			-0.5	V
Transition frequency	$f_T$	$V_{CE} = -10\text{ V}$ , $I_C = -0.5\text{ A}$ , $f = 10\text{ MHz}$		30		MHz
Turn-on time	$t_{on}$	$I_C = -2\text{ A}$ , $I_{B1} = -0.2\text{ A}$ , $I_{B2} = 0.2\text{ A}$ $V_{CC} = -50\text{ V}$		0.13		$\mu\text{s}$
Storage time	$t_{stg}$			0.5		$\mu\text{s}$
Fall time	$t_f$			0.13		$\mu\text{s}$

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

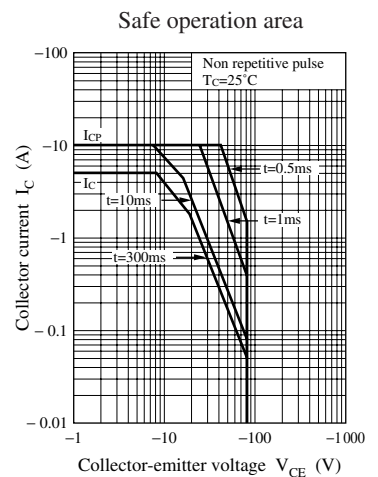
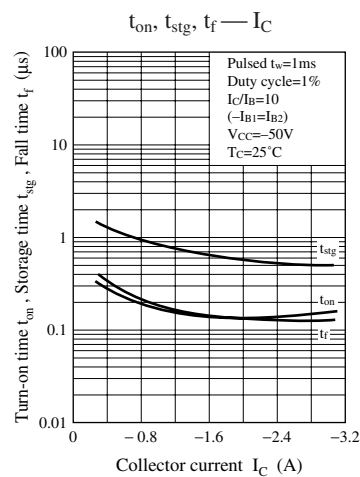
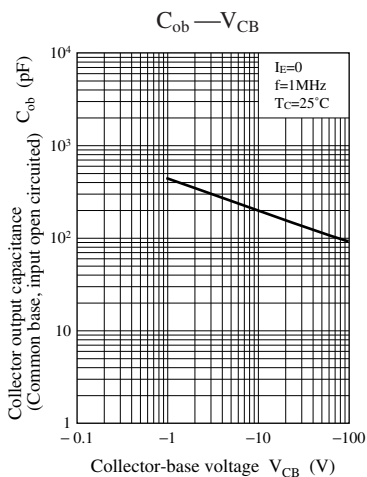
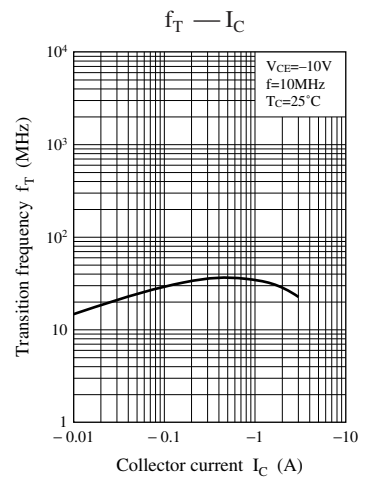
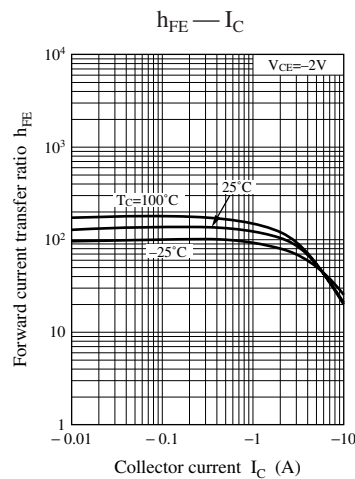
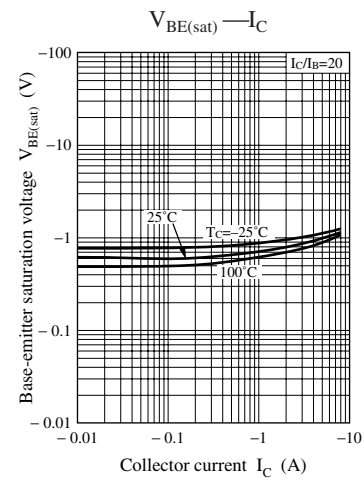
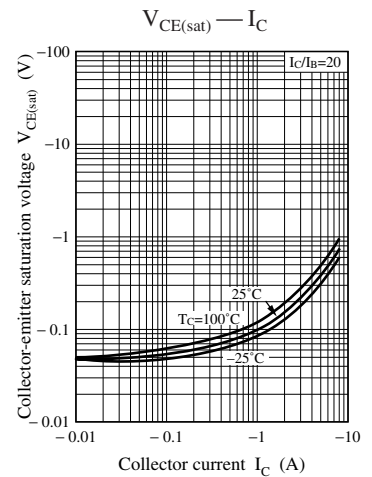
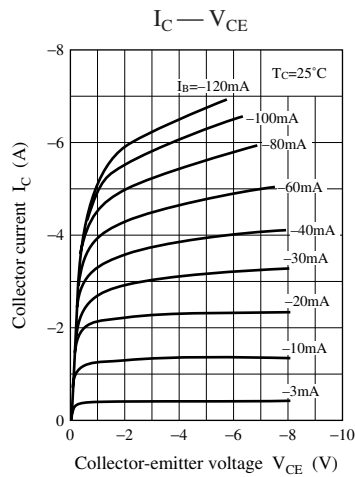
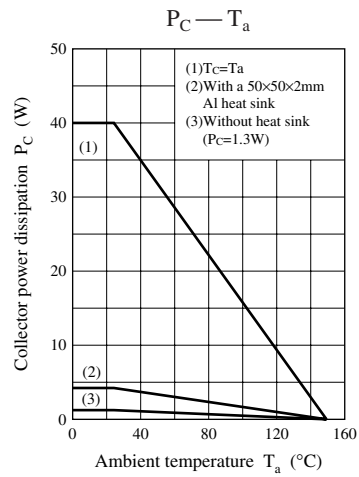
2. \*: Rank classification

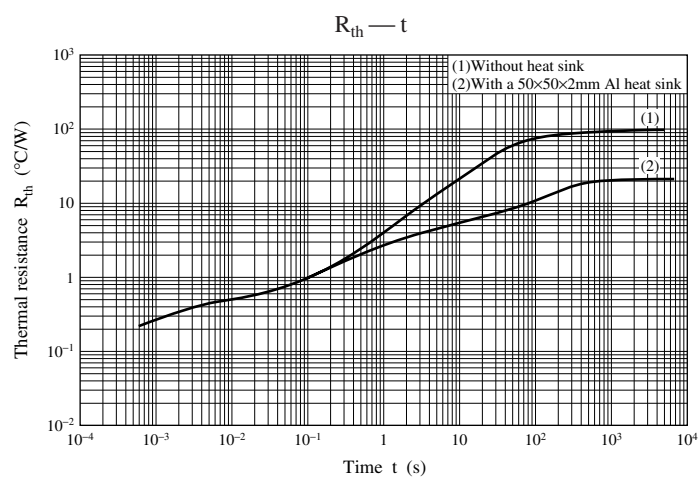
Rank	Q	P
$h_{FE2}$	90 to 180	130 to 260



Note) Self-supported type package is also prepared.

Note) The part number in the parenthesis shows conventional part number.





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