

# 2SB933

## Silicon PNP epitaxial planar type

For power switching

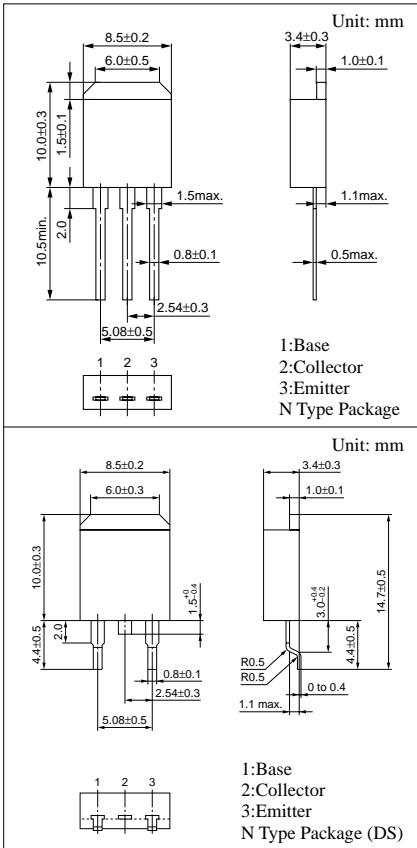
Complementary to 2SD1256

### ■ Features

- Low collector to 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	Ratings	Unit
Collector to base voltage	$V_{CBO}$	-130	V
Collector to emitter voltage	$V_{CEO}$	-80	V
Emitter to base voltage	$V_{EBO}$	-7	V
Peak collector current	$I_{CP}$	-10	A
Collector current	$I_C$	-5	A
Collector power dissipation	$P_C$	40	W
		1.3	
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

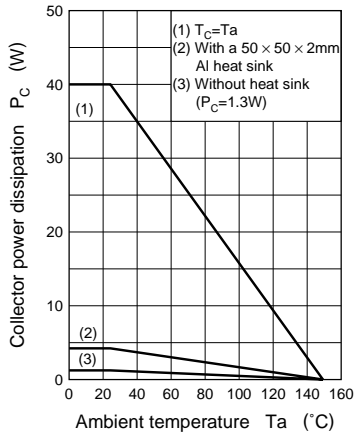
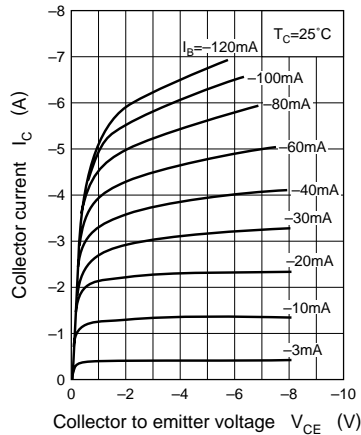
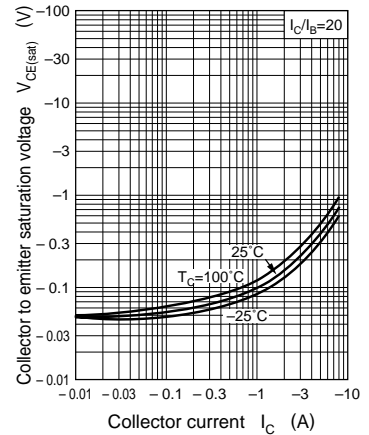
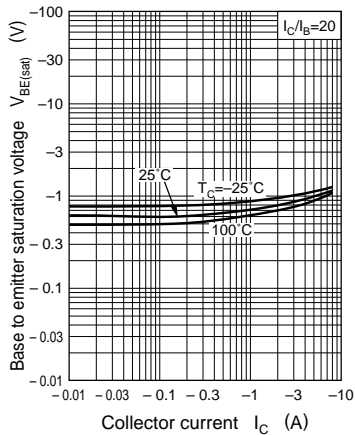
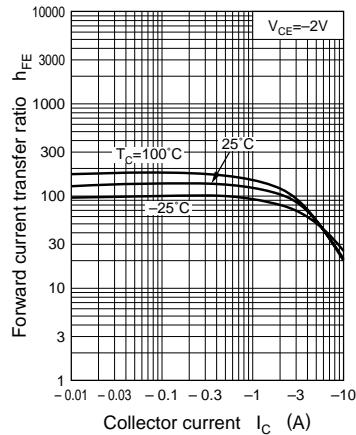
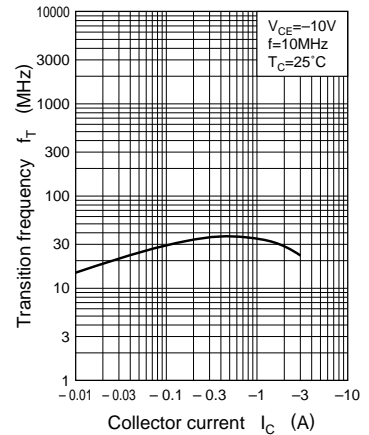
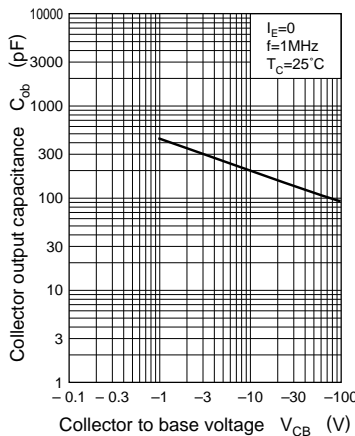
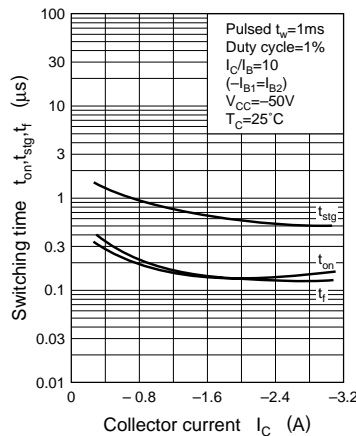


### ■ Electrical Characteristics ( $T_C=25^\circ\text{C}$ )

Parameter	Symbol	Conditions	min	typ	max	Unit
Collector cutoff current	$I_{CBO}$	$V_{CB} = -100\text{V}, I_E = 0$			-10	$\mu\text{A}$
Emitter cutoff current	$I_{EBO}$	$V_{EB} = -5\text{V}, I_C = 0$			-50	$\mu\text{A}$
Collector to emitter voltage	$V_{CEO}$	$I_C = -10\text{mA}, I_B = 0$	-80			V
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	
Collector to emitter saturation voltage	$V_{CE(sat)}$	$I_C = -4\text{A}, I_B = -0.2\text{A}$			-0.5	V
Base to emitter saturation voltage	$V_{BE(sat)}$	$I_C = -4\text{A}, I_B = -0.2\text{A}$			-1.5	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	$t_{on}$	$I_C = -2\text{A}, I_{B1} = -0.2\text{A}, I_{B2} = 0.2\text{A}$		0.13		$\mu\text{s}$
Storage time	$t_{stg}$			1.5		$\mu\text{s}$
Fall time	$t_f$			0.13		$\mu\text{s}$

\* $h_{FE2}$  Rank classification

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

$P_C - T_a$  $I_C - V_{CE}$  $V_{CE(sat)} - I_C$  $V_{BE(sat)} - I_C$  $h_{FE} - I_C$  $f_T - I_C$  $C_{ob} - V_{CB}$  $t_{on}, t_{stg}, t_f - I_C$ 

Area of safe operation (ASO)

