

# 2SB0939, 2SB0939A (2SB939, 2SB939A)

Silicon PNP epitaxial planar type Darlington

For midium-speed power switching

Complementary to 2SD1262 and 2SD1262A

## Features

- High forward current transfer ratio  $h_{FE}$
- High-speed switching
- 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	Rated	Unit	
Collector to base voltage	$V_{CBO}$	-60	V	
2SB0939A		-80		
Collector to emitter voltage	$V_{CEO}$	-60	V	
2SB0939A		-80		
Emitter to base voltage	$V_{EBO}$	-7	V	
Peak collector current	$I_{CP}$	-12	A	
Collector current	$I_C$	-8	A	
Collector power dissipation	$P_C$	$T_C=25^\circ\text{C}$	45	W
		$T_a=25^\circ\text{C}$	1.3	
Junction temperature	$T_j$	150	$^\circ\text{C}$	
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$	

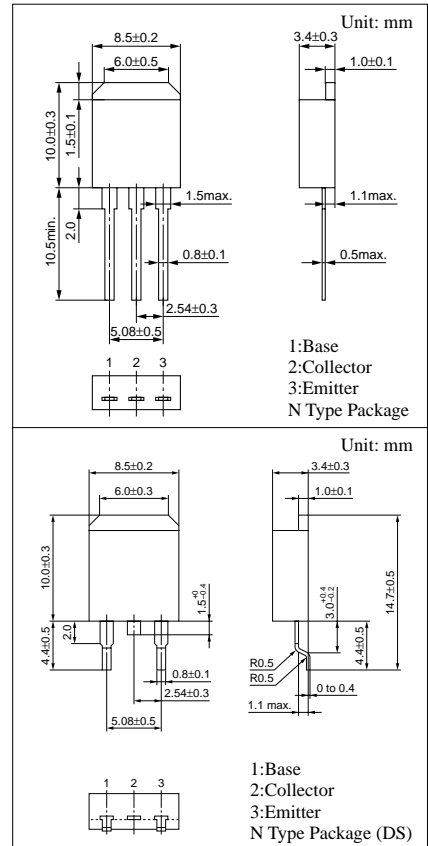
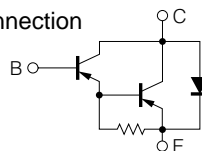
## Electrical Characteristics ( $T_C=25^\circ\text{C}$ )

Parameter	Symbol	Conditions	min	typ	max	Unit
Collector cutoff current	$I_{CBO}$	$V_{CB} = -60\text{V}, I_E = 0$			-100	$\mu\text{A}$
		$V_{CB} = -80\text{V}, I_E = 0$			-100	
Emitter cutoff current	$I_{EBO}$	$V_{EB} = -7\text{V}, I_C = 0$			-2	mA
Collector to emitter voltage	$V_{CEO}$	$I_C = -30\text{mA}, I_B = 0$	-60			V
			-80			
Forward current transfer ratio	$h_{FE1}^*$	$V_{CE} = -3\text{V}, I_C = -4\text{A}$	2000		10000	
	$h_{FE2}$	$V_{CE} = -3\text{V}, I_C = -8\text{A}$	500			
Collector to emitter saturation voltage	$V_{CE(sat)}$	$I_C = -4\text{A}, I_B = -8\text{mA}$			-1.5	V
Base to emitter saturation voltage	$V_{BE(sat)}$	$I_C = -4\text{A}, I_B = -8\text{mA}$			-2	V
Transition frequency	$f_T$	$V_{CE} = -10\text{V}, I_C = -0.5\text{A}, f = 1\text{MHz}$		15		MHz
Turn-on time	$t_{on}$	$I_C = -4\text{A}, I_{B1} = -8\text{mA}, I_{B2} = 8\text{mA}, V_{CC} = -50\text{V}$		0.5		$\mu\text{s}$
Storage time	$t_{stg}$			2		$\mu\text{s}$
Fall time	$t_f$			1		$\mu\text{s}$

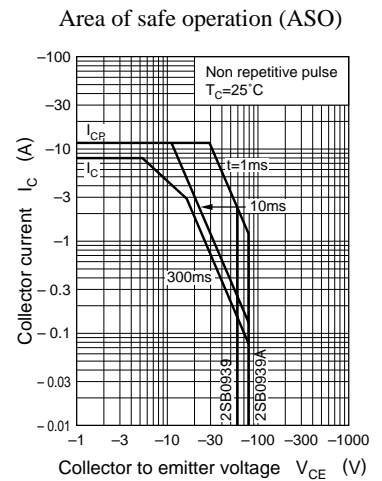
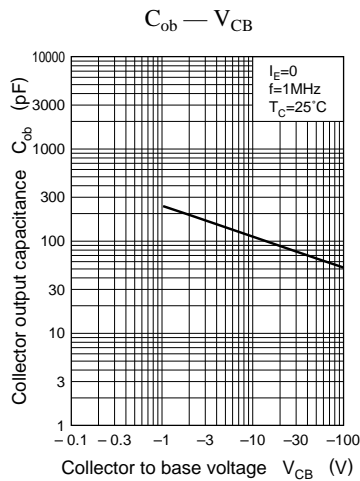
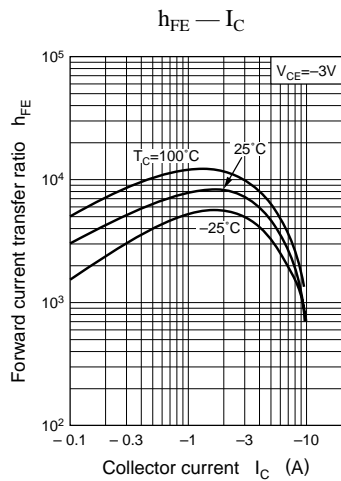
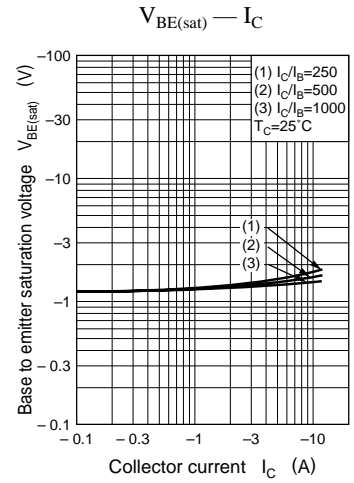
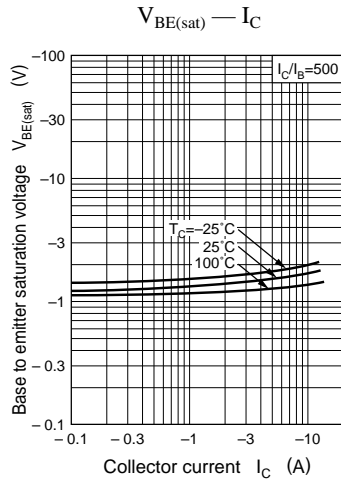
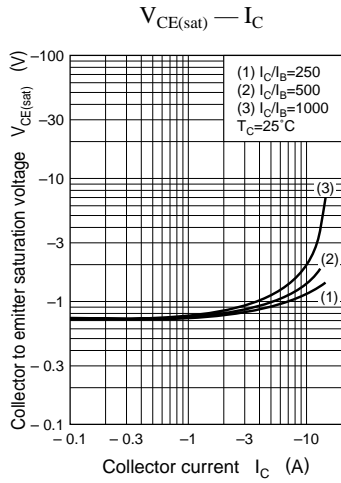
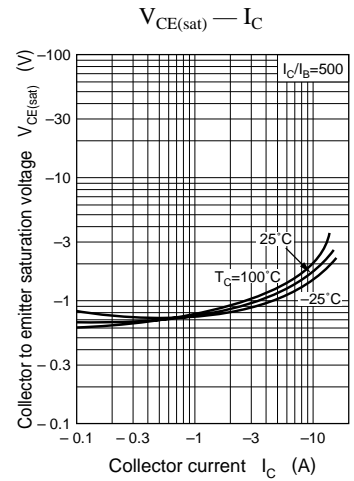
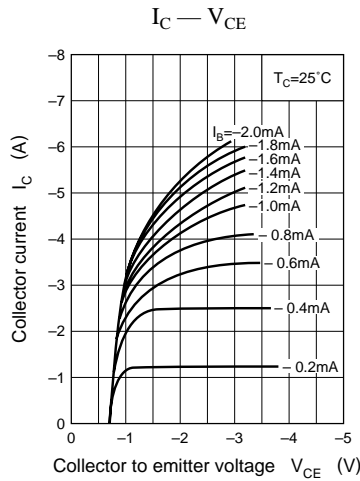
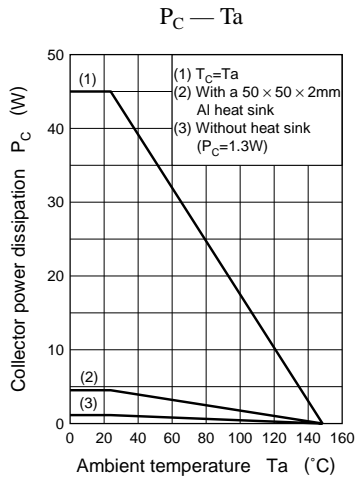
\* $h_{FE1}$  Rank classification

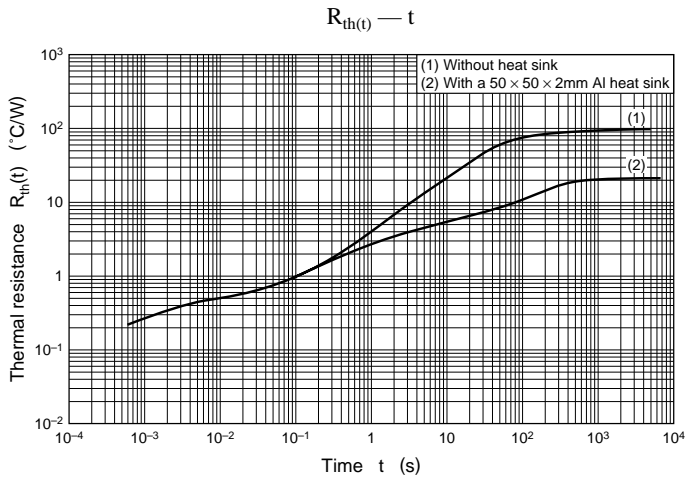
Rank	Q	P
$h_{FE1}$	2000 to 5000	4000 to 10000

Internal Connection



Note) The part numbers in the parenthesis show conventional part number.





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