

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

## Silicon PNP epitaxial planar type Darlington

For midium-speed power switching

Complementary to 2SD1262, 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	Rating	Unit	
Collector-base voltage (Emitter open)	2SB0939	$V_{CBO}$	-60	V
	2SB0939A		-80	
Collector-emitter voltage (Base open)	2SB0939	$V_{CEO}$	-60	V
	2SB0939A		-80	
Emitter-base voltage (Collector open)	$V_{EBO}$	-7	V	
Collector current	$I_C$	-8	A	
Peak collector current	$I_{CP}$	-12	A	
Collector power dissipation	$P_C$		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	$^\circ\text{C}$	

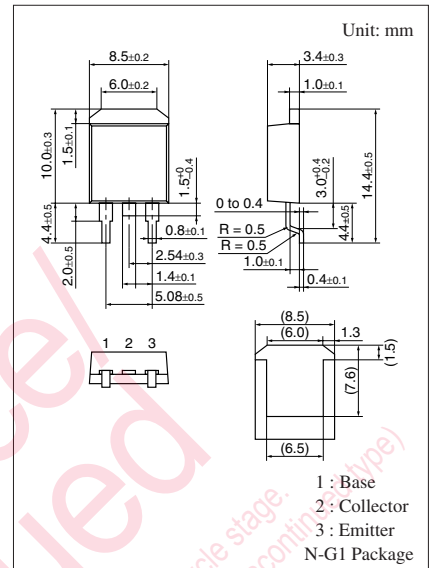
### ■ Electrical Characteristics $T_C = 25^\circ\text{C} \pm 3^\circ\text{C}$

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-emitter voltage (Base open)	2SB0939	$V_{CEO}$ $I_C = -30\text{ mA}, I_B = 0$	-60			V
	2SB0939A		-80			
Collector-base cut-off current (Emitter open)	2SB0939	$I_{CBO}$ $V_{CB} = -60\text{ V}, I_E = 0$			-100	$\mu\text{A}$
	2SB0939A	$V_{CB} = -80\text{ V}, I_E = 0$			-100	
Emitter-base cutoff current (Collector open)	$I_{EBO}$	$V_{EB} = -7\text{ V}, I_C = 0$			-2	mA
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			
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C = -4\text{ A}, I_B = -8\text{ mA}$			-2	V
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = -4\text{ A}, I_B = -8\text{ mA}$			-1.5	V
Transition frequency	$f_T$	$V_{CE} = -10\text{ V}, I_C = -0.5\text{ A}, f = 1\text{ MHz}$		20		MHz
Turn-on time	$t_{on}$	$I_C = -4\text{ A}$		0.5		$\mu\text{s}$
Strage time	$t_{stg}$	$I_{B1} = -8\text{ mA}, I_{B2} = 8\text{ mA}$		2		$\mu\text{s}$
Fall time	$t_f$	$V_{CC} = -50\text{ V}$		1		$\mu\text{s}$

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

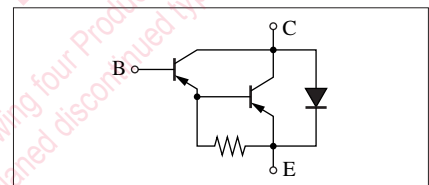
2. \*: Rank classification

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

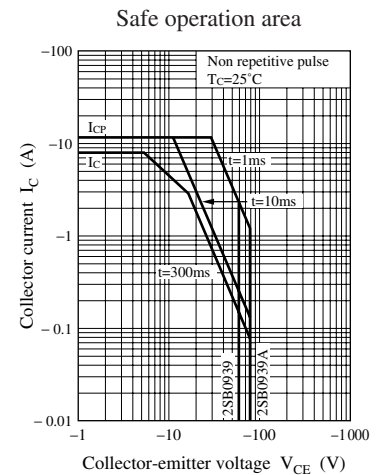
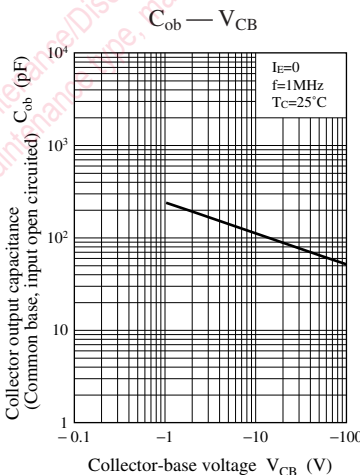
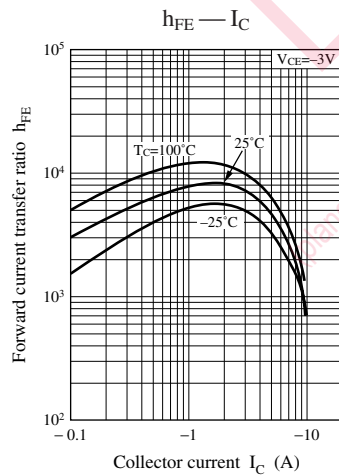
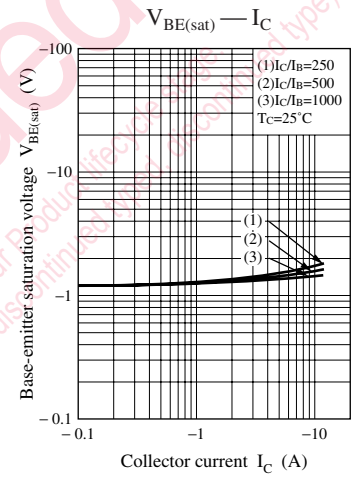
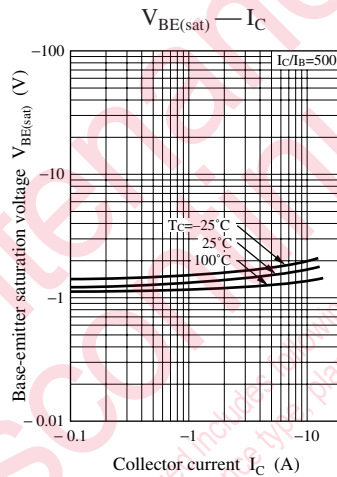
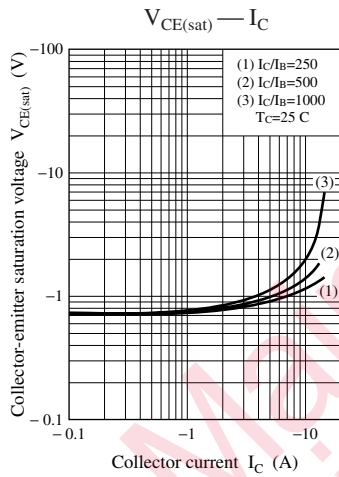
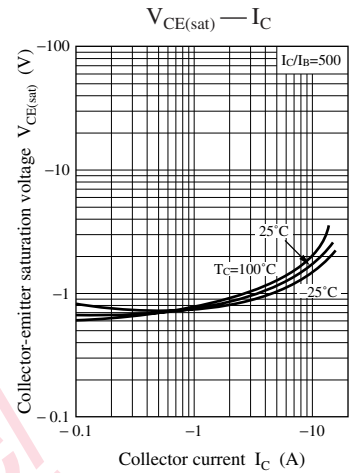
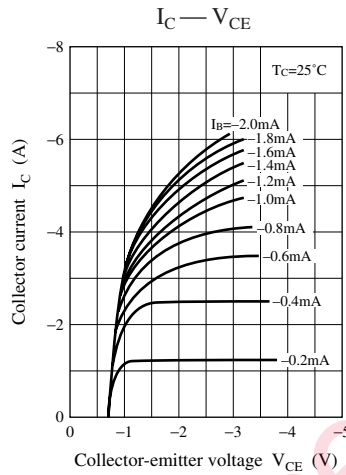
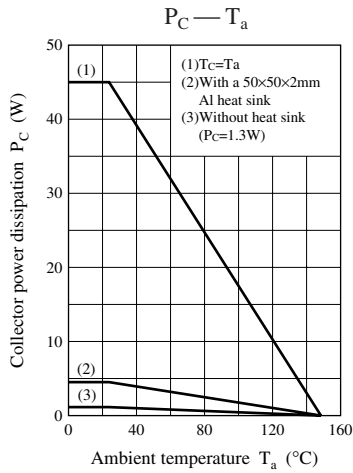


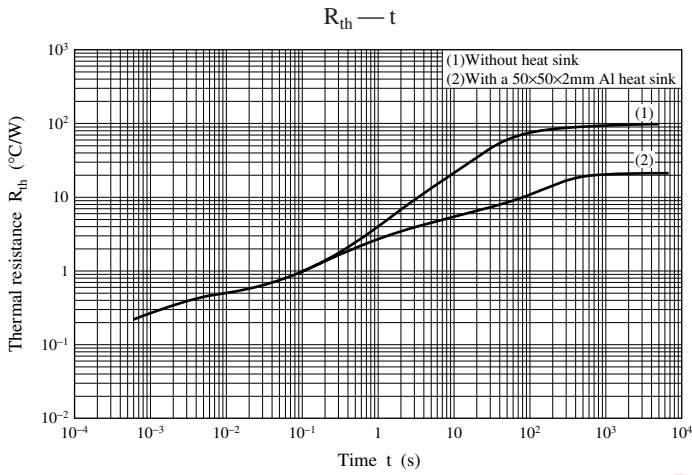
Note) Self-supported type package is also prepared.

### Internal Connection



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





Maintenance/Discontinued

Maintenance/Discontinued includes following four Product lifecycle stage.  
(planned maintenance type, maintenance type, planned discontinued type, discontinued type)

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