

# 2SB0938 (2SB938), 2SB0938A (2SB938A)

Silicon PNP epitaxial planar type Darlington

For power amplification and switching

Complementary to 2SD1261, 2SD1261A

## ■ 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)	2SB0938 2SB0938A	$V_{CBO}$	-60 -80	V
Collector-emitter voltage (Base open)	2SB0938 2SB0938A	$V_{CEO}$	-60 -80	V
Emitter-base voltage (Collector open)	$V_{EBO}$	-5	V	
Collector current	$I_C$	-4	A	
Peak collector current	$I_{CP}$	-8	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 to +150	$^\circ\text{C}$	

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

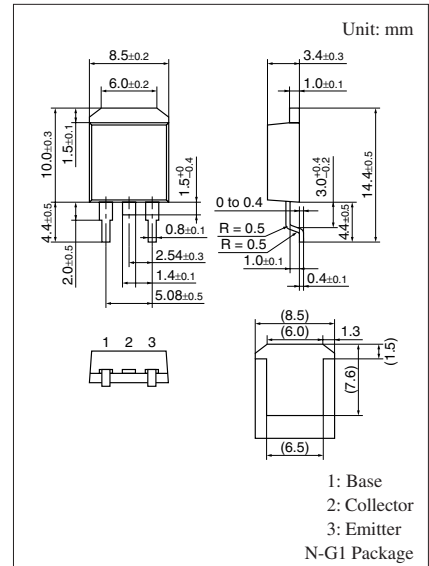
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-emitter voltage (Base open)	2SB0938 2SB0938A	$V_{CEO}$ $I_C = -30\text{ mA}, I_B = 0$	-60 -80			V
Base-emitter voltage	$V_{BE}$	$V_{CE} = -3\text{ V}, I_C = -3\text{ A}$			-2.5	V
Collector-base cutoff current (Emitter open)	2SB0938 2SB0938A	$I_{CBO}$ $V_{CB} = -60\text{ V}, I_E = 0$ $V_{CB} = -80\text{ V}, I_E = 0$			-200 -200	$\mu\text{A}$
Collector-emitter cutoff current (Base open)	2SB0938 2SB09378	$I_{CEO}$ $V_{CE} = -30\text{ V}, I_B = 0$ $V_{CE} = -40\text{ V}, I_B = 0$			-500 -500	$\mu\text{A}$
Emitter-base cutoff current (Collector open)	$I_{EBO}$	$V_{EB} = -5\text{ V}, I_C = 0$			-2	mA
Forward current transfer ratio	$h_{FE1}$ $h_{FE2}^*$	$V_{CE} = -3\text{ V}, I_C = -0.5\text{ A}$ $V_{CE} = -3\text{ V}, I_C = -3\text{ A}$	1000 2000		10000	—
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = -3\text{ A}, I_B = -12\text{ mA}$ $I_C = -5\text{ A}, I_B = -20\text{ mA}$			-2 -4	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	$t_{on}$	$I_C = -3\text{ A}$		0.3		$\mu\text{s}$
Storage time	$t_{stg}$	$I_{B1} = -12\text{ mA}, I_{B2} = 12\text{ mA}$		2		$\mu\text{s}$
Fall time	$t_f$	$V_{CC} = -50\text{ V}$		0.5		$\mu\text{s}$

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

2. \*: Rank classification

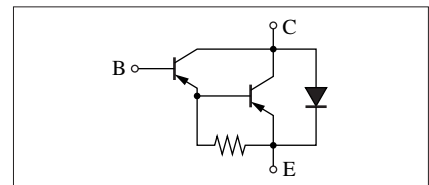
Rank	Q	P
$h_{FE1}$	2000 to 5000	4000 to 10000

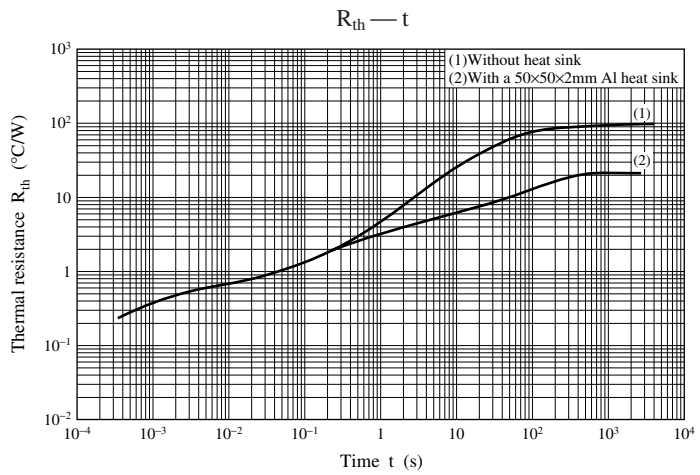
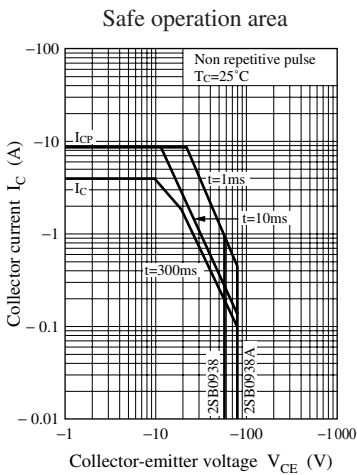
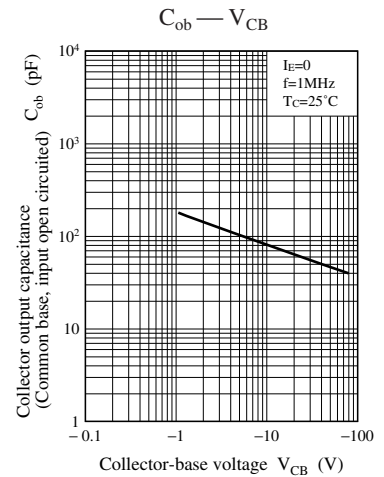
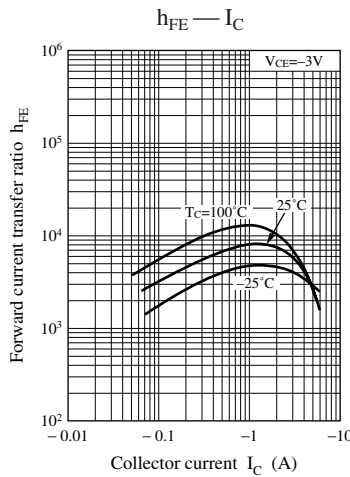
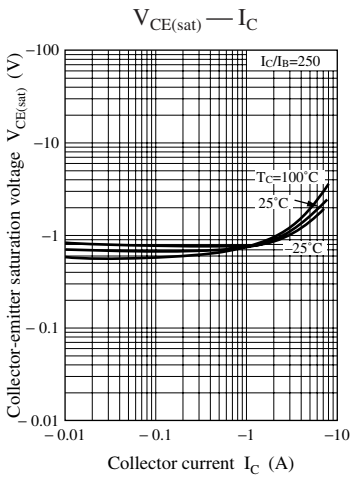
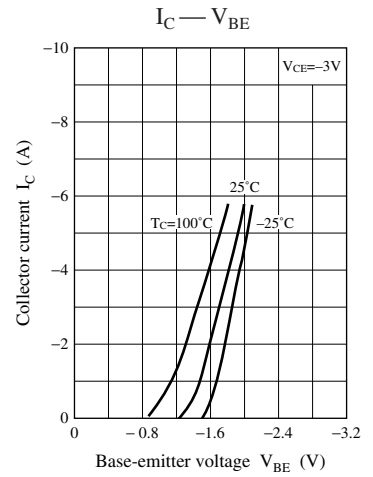
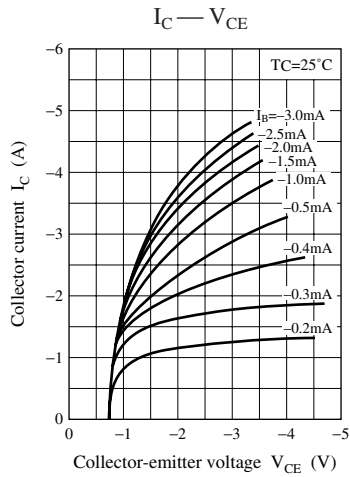
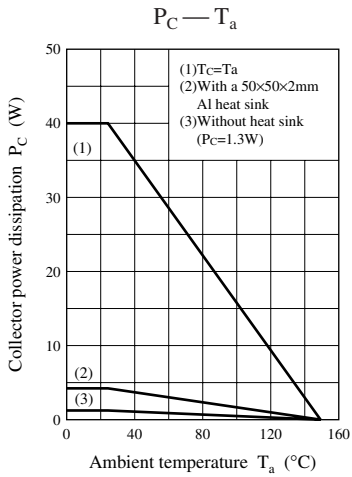
Note) The part number in the parenthesis shows conventional part number.



Note) Self-supported type package is also prepared.

## Internal Connection





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