

# 2SB939, 2SB939A

Silicon PNP Epitaxial Planar Darlington Type

Medium Speed Power Switching  
Complementary Pair with 2SD1262, 2SD1262A

### Features

- High DC current gain ( $h_{FE}$ )
- High speed switching
- "N Type" package configuration with a cooling fin for direct soldering on PC board of a small-size electronic equipment

### Absolute Maximum Ratings ( $T_c=25^\circ\text{C}$ )

Item	Symbol	Value	Unit
Collector-base voltage	2SB939	-60	V
	2SB939A	-80	
Collector-emitter voltage	2SB939	-60	V
	2SB939A	-80	
Emitter-base voltage	$V_{EBO}$	-7	V
Peak collector current	$I_{CP}$	-12	A
Collector current	$I_C$	-8	A
Collector power dissipation	$T_c=25^\circ\text{C}$	45	W
	$T_a=25^\circ\text{C}$	1.3	
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 ~ +150	$^\circ\text{C}$

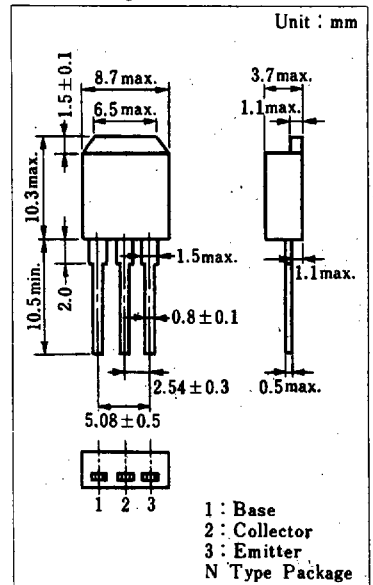
### Electrical Characteristics ( $T_c=25^\circ\text{C}$ )

Item	Symbol	Condition	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-emitter voltage	2SB939	$I_C = -30\text{ mA}, I_B = 0$	-60			V
	2SB939A		-80			
DC current gain	$h_{FE1}^*$	$V_{CE} = -3\text{ V}, I_C = -4\text{ A}$	1000		10000	
	$h_{FE2}$	$V_{CE} = -3\text{ V}, I_C = -8\text{ A}$	500			
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = -4\text{ A}, I_B = -8\text{ mA}$			-1.5	V
Base-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	$t_{on}$	$I_C = -4\text{ A}, I_{B1} = -8\text{ mA}, I_{B2} = 8\text{ mA}$		0.5		$\mu\text{s}$
Storage time	$t_{stg}$				2	$\mu\text{s}$
Collector current fall time	$t_f$				1	$\mu\text{s}$

### \* $h_{FE1}$ Classifications

Class	R	Q	P
$h_{FE1}$	1000 ~ 2500	2000 ~ 5000	4000 ~ 10000

### Package Dimensions



\*Surface-mount type is also available. (Refer to p.82.)

### Inner Circuit

