

# 2SB1393, 2SB1393A

Silicon PNP epitaxial planar type

For power amplification

Complementary to 2SD1985 and 2SD1985A

## Features

- Satisfactory linearity of forward current transfer ratio  $h_{FE}$
- Low collector to emitter saturation voltage  $V_{CE(sat)}$
- Full-pack package which can be installed to the heat sink with one screw

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

Parameter	Symbol	Rated	Unit
Collector to base voltage	$V_{CBO}$	-60	V
2SB1393A		-80	
Collector to emitter voltage	$V_{CEO}$	-60	V
2SB1393A		-80	
Emitter to base voltage	$V_{EBO}$	-5	V
Peak collector current	$I_{CP}$	-5	A
Collector current	$I_C$	-3	A
Collector power dissipation	$P_C$	25	W
$T_C=25^\circ\text{C}$ $T_a=25^\circ\text{C}$		2.0	
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	$I_{CEO}$	$V_{CE} = -30\text{V}, I_B = 0$			-300	$\mu\text{A}$
2SB1393A		$V_{CE} = -60\text{V}, I_B = 0$			-300	
Collector cutoff current	$I_{CES}$	$V_{CE} = -60\text{V}, V_{BE} = 0$			-200	$\mu\text{A}$
2SB1393A		$V_{CE} = -80\text{V}, V_{BE} = 0$			-200	
Emitter cutoff current	$I_{EBO}$	$V_{EB} = -5\text{V}, I_C = 0$			-1	mA
Collector to emitter voltage	$V_{CEO}$	$I_C = -30\text{mA}, I_B = 0$	-60			V
2SB1393A			-80			
Forward current transfer ratio	$h_{FE1}^*$	$V_{CE} = -4\text{V}, I_C = -1\text{A}$	70		250	
	$h_{FE2}$	$V_{CE} = -4\text{V}, I_C = -3\text{A}$	10			
Base to emitter voltage	$V_{BE}$	$V_{CE} = -4\text{V}, I_C = -3\text{A}$			-1.8	V
Collector to emitter saturation voltage	$V_{CE(sat)}$	$I_C = -3\text{A}, I_B = -0.375\text{A}$			-1.2	V
Transition frequency	$f_T$	$V_{CE} = -5\text{V}, I_C = -0.1\text{A}, f = 1\text{MHz}$		20		MHz
Turn-on time	$t_{on}$	$I_C = -1\text{A}, I_{B1} = -0.1\text{A}, I_{B2} = 0.1\text{A}, V_{CC} = -50\text{V}$		0.5		$\mu\text{s}$
Storage time	$t_{stg}$			1.2		$\mu\text{s}$
Fall time	$t_f$			0.3		$\mu\text{s}$

\* $h_{FE1}$  Rank classification

Rank	Q	P
$h_{FE1}$	70 to 150	120 to 250



