

# 2SB1148, 2SB1148A

## Silicon PNP epitaxial planar type

For low-voltage switching

Complementary to 2SD1752 and 2SD1752A

### Features

- Low collector to emitter saturation voltage  $V_{CE(sat)}$
- High-speed switching
- I type package enabling direct soldering of the radiating fin to the printed circuit board, etc. of small electronic equipment.

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

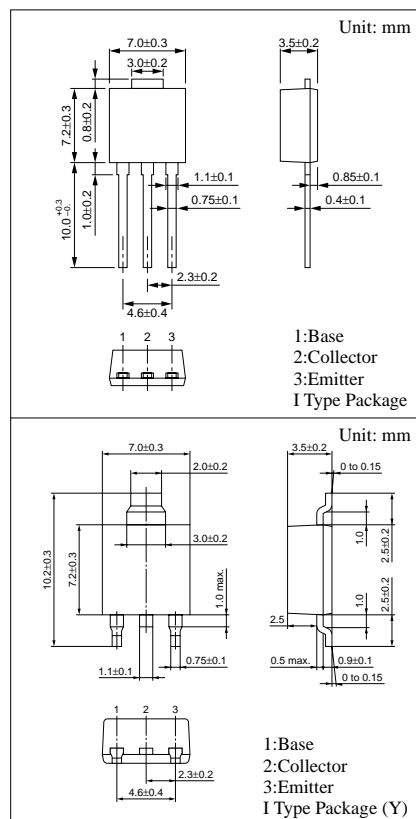
Parameter		Symbol	Ratings	Unit
Collector to base voltage	2SB1148	$V_{CBO}$	-40	V
	2SB1148A		-50	
Collector to emitter voltage	2SB1148	$V_{CEO}$	-20	V
	2SB1148A		-40	
Emitter to base voltage		$V_{EBO}$	-7	V
Peak collector current		$I_{CP}$	-20	A
Collector current		$I_C$	-10	A
Collector power dissipation	$T_C=25^{\circ}C$	$P_C$	15	W
	$T_a=25^{\circ}C$		1.3	
Junction temperature		$T_j$	150	$^{\circ}C$
Storage temperature		$T_{stg}$	-55 to +150	$^{\circ}C$

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

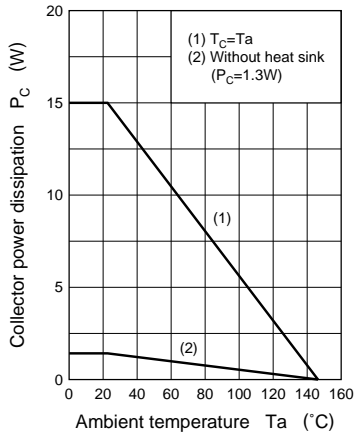
Parameter	Symbol	Conditions	min	typ	max	Unit
Collector cutoff current	$I_{CBO}$	2SB1148 $V_{CB} = -40\text{V}, I_E = 0$			-50	$\mu\text{A}$
		2SB1148A $V_{CB} = -50\text{V}, I_E = 0$			-50	
Emitter cutoff current	$I_{EBO}$	$V_{EB} = -5\text{V}, I_C = 0$			-50	$\mu\text{A}$
Collector to emitter voltage	$V_{CEO}$	$I_C = -10\text{mA}, I_B = 0$	2SB1148 -20			V
			2SB1148A -40			
Forward current transfer ratio	$h_{FE1}$	$V_{CE} = -2\text{V}, I_C = -0.1\text{A}$	45			
	$h_{FE2}^*$	$V_{CE} = -2\text{V}, I_C = -3\text{A}$	90		260	
Collector to emitter saturation voltage	$V_{CE(sat)}$	$I_C = -10\text{A}, I_B = -0.33\text{A}$			-0.6	V
Base to emitter saturation voltage	$V_{BE(sat)}$	$I_C = -10\text{A}, I_B = -0.33\text{A}$			-1.5	V
Transition frequency	$f_T$	$V_{CE} = -10\text{V}, I_C = -0.5\text{A}, f = 10\text{MHz}$		100		MHz
Collector output capacitance	$C_{ob}$	$V_{CB} = -10\text{V}, I_E = 0, f = 1\text{MHz}$		400		pF
Turn-on time	$t_{on}$	$I_C = -3\text{A}, I_{B1} = -0.1\text{A}, I_{B2} = 0.1\text{A}, V_{CC} = -20\text{V}$		0.1		$\mu\text{s}$
Storage time	$t_{stg}$			0.5		$\mu\text{s}$
Fall time	$t_f$			0.1		$\mu\text{s}$

\* $h_{FE2}$  Rank classification

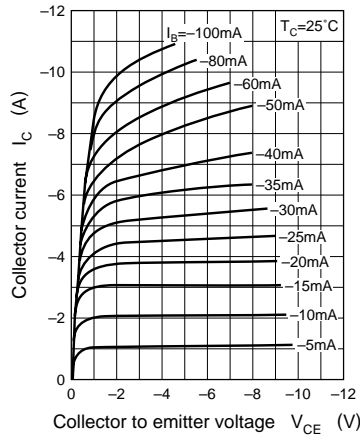
Rank	Q	P
$h_{FE2}$	90 to 180	130 to 260



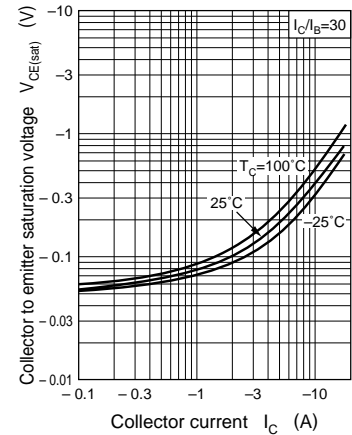
$P_C - T_a$



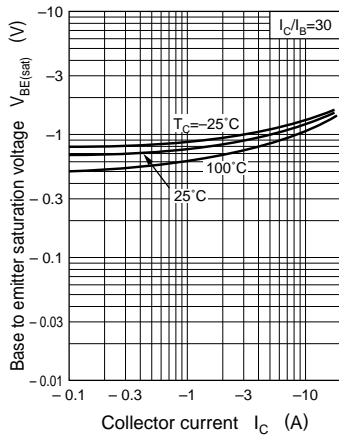
$I_C - V_{CE}$



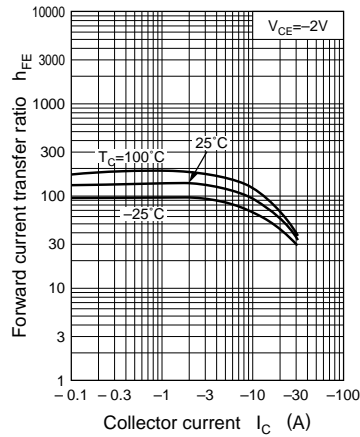
$V_{CE(sat)} - I_C$



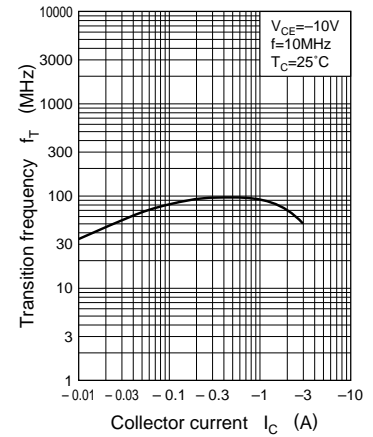
$V_{BE(sat)} - I_C$



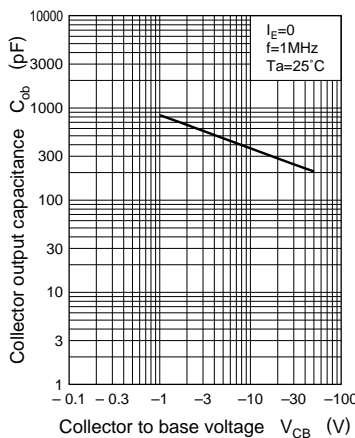
$h_{FE} - I_C$



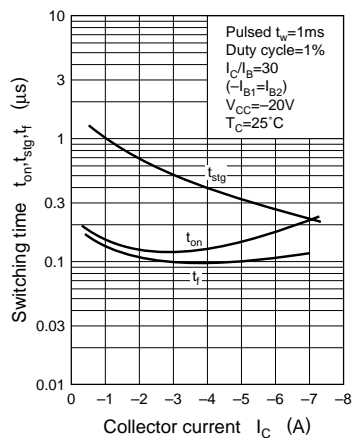
$f_T - I_C$



$C_{ob} - V_{CB}$



$t_{on}, t_{stg}, t_f - I_C$



Area of safe operation (ASO)

