

# 2SB946

Silicon PNP epitaxial planar type

For power switching

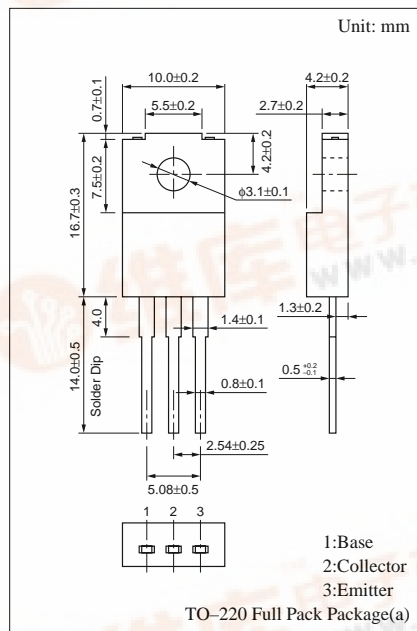
Complementary to 2SD1271

## Features

- Low collector to emitter saturation voltage  $V_{CE(sat)}$
- Satisfactory linearity of forward current transfer ratio  $h_{FE}$
- Large collector current  $I_C$
- 0Full-pack package which can be installed to the heat sink with one screw

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

Parameter	Symbol	Rated	Unit	
Collector to base voltage	$V_{CBO}$	-130	V	
Collector to emitter voltage	$V_{CEO}$	-80	V	
Emitter to base voltage	$V_{EBO}$	-7	V	
Peak collector current	$I_{CP}$	-15	A	
Collector current	$I_C$	-7	A	
Collector power dissipation	$P_C$	$T_C=25^\circ C$	40	W
		$T_a=25^\circ C$	2	
Junction temperature	$T_j$	150	$^\circ C$	
Storage temperature	$T_{stg}$	-55 to +150	$^\circ C$	



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

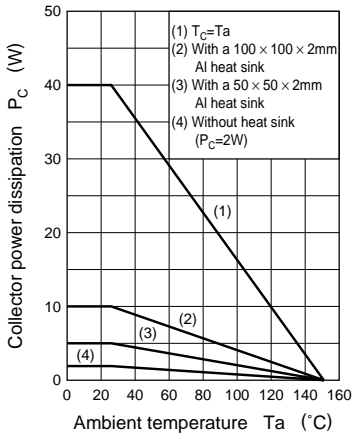
Parameter	Symbol	Conditions	min	typ	max	Unit
Collector cutoff current	$I_{CBO}$	$V_{CB} = -100V, I_E = 0$			-10	$\mu A$
Emitter cutoff current	$I_{EBO}$	$V_{EB} = -5V, I_C = 0$			-50	$\mu A$
Collector to emitter voltage	$V_{CEO}$	$I_C = -10mA, I_B = 0$	-80			V
Forward current transfer ratio	$h_{FE1}$	$V_{CE} = -2V, I_C = -0.1A$	45			
	$h_{FE2}^*$	$V_{CE} = -2V, I_C = -3A$	90		260	
Collector to emitter saturation voltage	$V_{CE(sat)}$	$I_C = -5A, I_B = -0.25A$			-0.5	V
Base to emitter saturation voltage	$V_{BE(sat)}$	$I_C = -5A, I_B = -0.25A$			-1.5	V
Transition frequency	$f_T$	$V_{CE} = -10V, I_C = -0.5A, f = 10MHz$		30		MHz
Turn-on time	$t_{on}$	$I_C = -3A, I_{B1} = -0.3A, I_{B2} = 0.3A$		0.5		$\mu s$
Storage time	$t_{stg}$				1.5	$\mu s$
Fall time	$t_f$				0.1	$\mu s$

## $h_{FE2}$ Rank classification

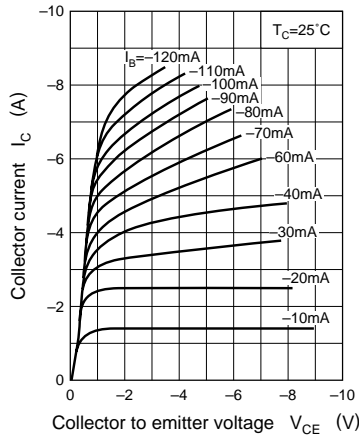
Rank	Q	P
$h_{FE2}$	90 to 180	130 to 260

Note: Ordering can be made by the common rank (PQ rank  $h_{FE2} = 90$  to 260) in the rank classification.

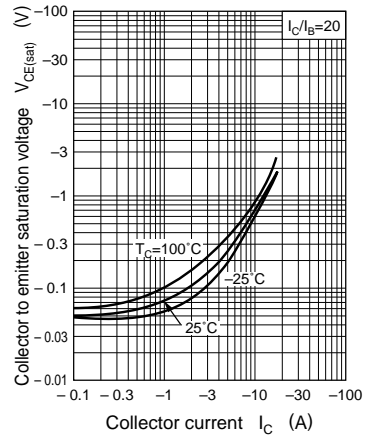
$P_C - T_a$



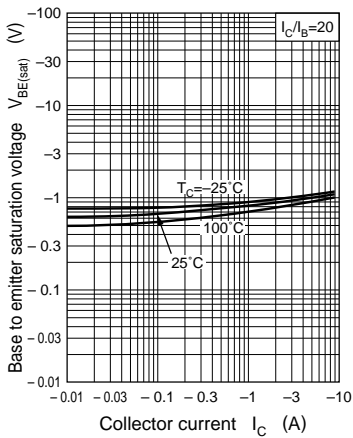
$I_C - V_{CE}$



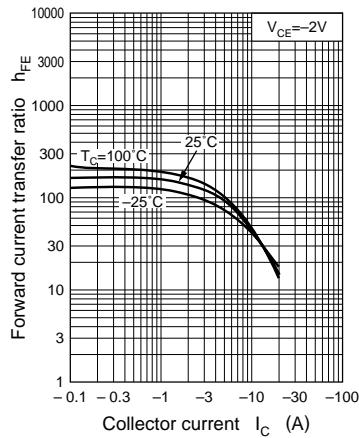
$V_{CE(sat)} - I_C$



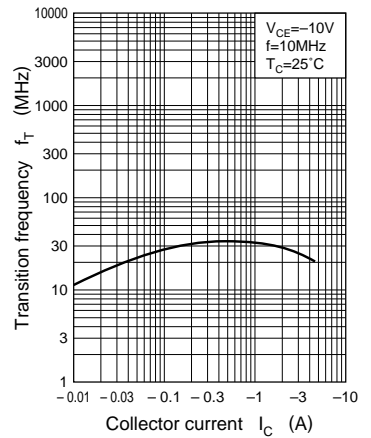
$V_{BE(sat)} - I_C$



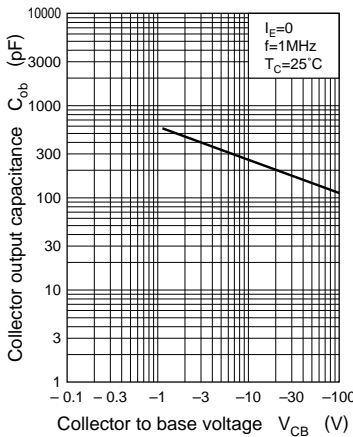
$h_{FE} - I_C$



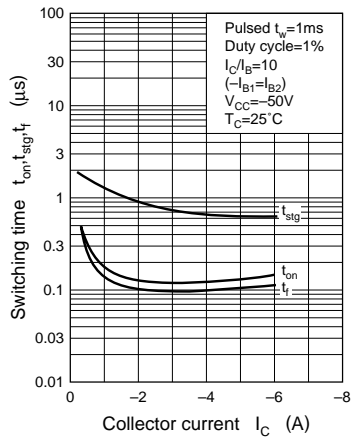
$f_T - I_C$



$C_{ob} - I_C$



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



Area of safe operation (ASO)

