

# 2SA1806

## Silicon PNP epitaxial planer type

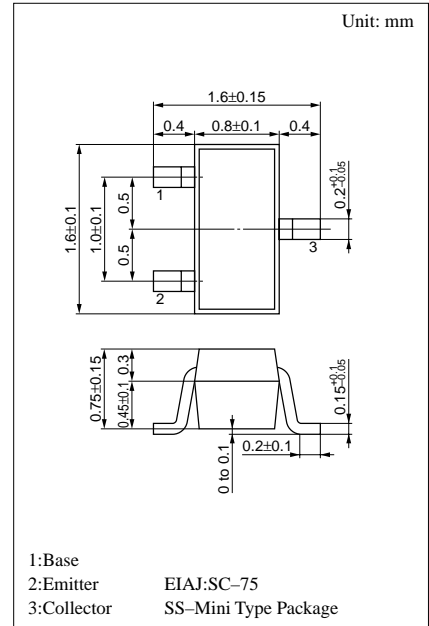
For high speed switching

### Features

- High-speed switching.
- Low collector to emitter saturation voltage  $V_{CE(sat)}$ .
- SS-Mini type package, allowing downsizing of the equipment and automatic insertion through the tape packing and the magazine packing.

### Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rated	Unit
Collector to base voltage	$V_{CBO}$	-15	V
Collector to emitter voltage	$V_{CEO}$	-15	V
Emitter to base voltage	$V_{EBO}$	-4	V
Peak collector current	$I_{CP}$	-100	mA
Collector current	$I_C$	-50	mA
Collector power dissipation	$P_C$	125	mW
Junction temperature	$T_j$	125	°C
Storage temperature	$T_{stg}$	-55 ~ +125	°C



Marking symbol : AK

### Electrical Characteristics (Ta=25°C)

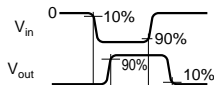
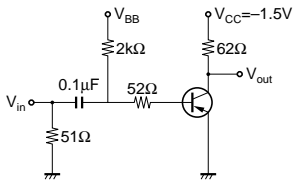
Parameter	Symbol	Conditions	min	typ	max	Unit
Collector cutoff current	$I_{CBO}$	$V_{CB} = -8V, I_E = 0$			-0.1	$\mu A$
Emitter cutoff current	$I_{EBO}$	$V_{EB} = -3V, I_C = 0$			-0.1	$\mu A$
Forward current transfer ratio	$h_{FE1}^*$	$V_{CE} = -1V, I_C = -10mA$	50		150	
	$h_{FE2}$	$V_{CE} = -1V, I_C = -1mA$	30			
Collector to emitter saturation voltage	$V_{CE(sat)}$	$I_C = -10mA, I_B = -1mA$		-0.1	-0.2	V
Transition frequency	$f_T$	$V_{CB} = -10V, I_E = 10mA, f = 200MHz$	800	1500		MHz
Collector output capacitance	$C_{ob}$	$V_{CB} = -5V, I_E = 0, f = 1MHz$		1		pF
Turn-on time	$t_{on}$	(Note 1) Next page		12		ns
Turn-off time	$t_{off}$	(Note 1) Next page		20		ns
Storage time	$t_{stg}$	(Note 1) Next page		19		ns

\* $h_{FE1}$  Rank classification

Rank	Q	R
$h_{FE1}$	50 ~ 120	90 ~ 150
Marking Symbol	AKQ	AKR

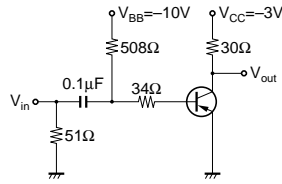
Switching time measurement circuit

$t_{on}$ ,  $t_{off}$  Test Circuit



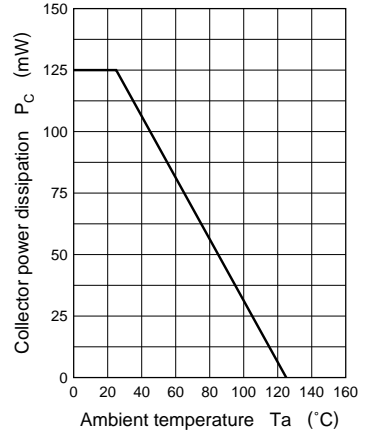
$V_{in} = -5.8V$   $V_{in} = 9.8V$   
 $V_{BB} = \text{Ground}$   $V_{BB} = -8.0V$

$t_{stg}$  Test Circuit

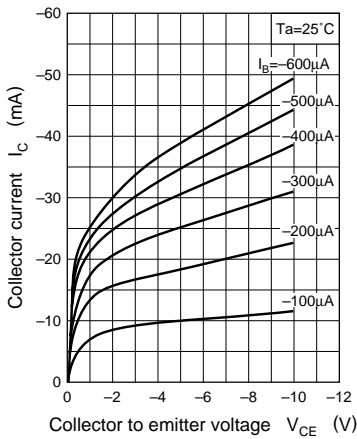


$V_{in} = 9.0V$

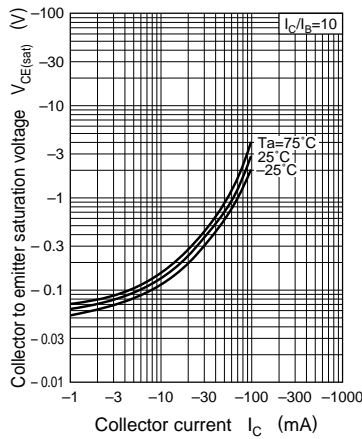
$P_C - T_a$



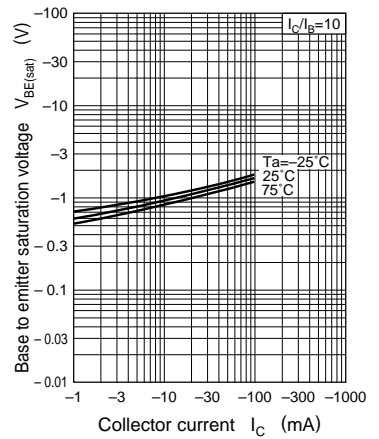
$I_C - V_{CE}$



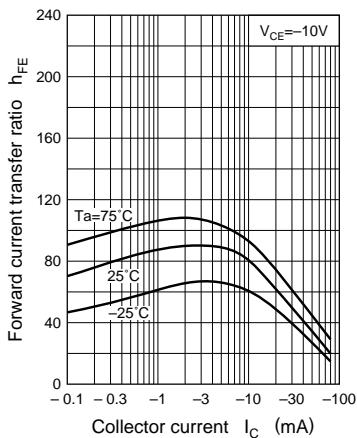
$V_{CE(sat)} - I_C$



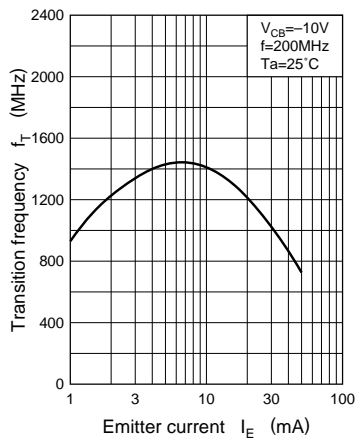
$V_{BE(sat)} - I_C$



$h_{FE} - I_C$



$f_T - I_E$



$C_{ob} - V_{CB}$

