

# 2SA2009

## Silicon PNP epitaxial planer type

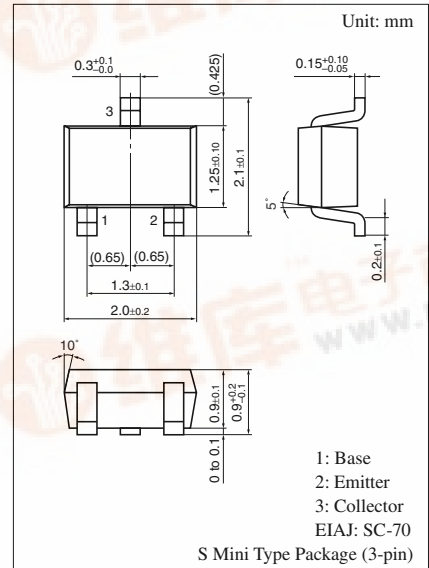
For low-frequency high breakdown voltage amplification

### ■ Features

- High collector to emitter voltage  $V_{CEO}$
- Low noise voltage NV

### ■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

Parameter	Symbol	Rating	Unit
Collector to base voltage	$V_{CBO}$	-120	V
Collector to emitter voltage	$V_{CEO}$	-120	V
Emitter to base voltage	$V_{EBO}$	-5	V
Peak collector current	$I_{CP}$	-50	mA
Collector current	$I_C$	-20	mA
Collector power dissipation	$P_C$	150	mW
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$



Marking Symbol: AR

### ■ Electrical Characteristics $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector cutoff current	$I_{CBO}$	$V_{CB} = -50\text{ V}, I_E = 0$			-100	nA
	$I_{CEO}$	$V_{CE} = -50\text{ V}, I_B = 0$			-1	$\mu\text{A}$
Collector to base voltage	$V_{CBO}$	$I_C = -10\ \mu\text{A}, I_E = 0$	-120			V
Collector to emitter voltage	$V_{CEO}$	$I_C = -1\ \text{mA}, I_B = 0$	-120			V
Emitter to base voltage	$V_{EBO}$	$I_E = -10\ \mu\text{A}, I_C = 0$	-5			V
Forward current transfer ratio *	$h_{FE}$	$V_{CE} = -5\ \text{V}, I_C = -2\ \text{mA}$	180		700	
Collector to emitter saturation voltage	$V_{CE(sat)}$	$I_C = -20\ \text{mA}, I_B = -2\ \text{mA}$			-0.6	V
Noise voltage	NV	$V_{CE} = -40\ \text{V}, I_C = -1\ \text{mA}, G_v = 80\ \text{dB}$ $R_g = 100\ \text{k}\Omega, \text{Function} = \text{FLAT}$		130		mV
Transition frequency	$f_T$	$V_{CB} = -5\ \text{V}, I_E = 2\ \text{mA}, f = 200\ \text{MHz}$		120		MHz

Note) \*: Rank classification

Rank	R	S	T
$h_{FE}$	180 to 360	260 to 520	360 to 700

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