

# General Purpose Transistor (-50V, -0.15A)

## 2SA1037AK / 2SA1576A / 2SA1774 / 2SA933AS

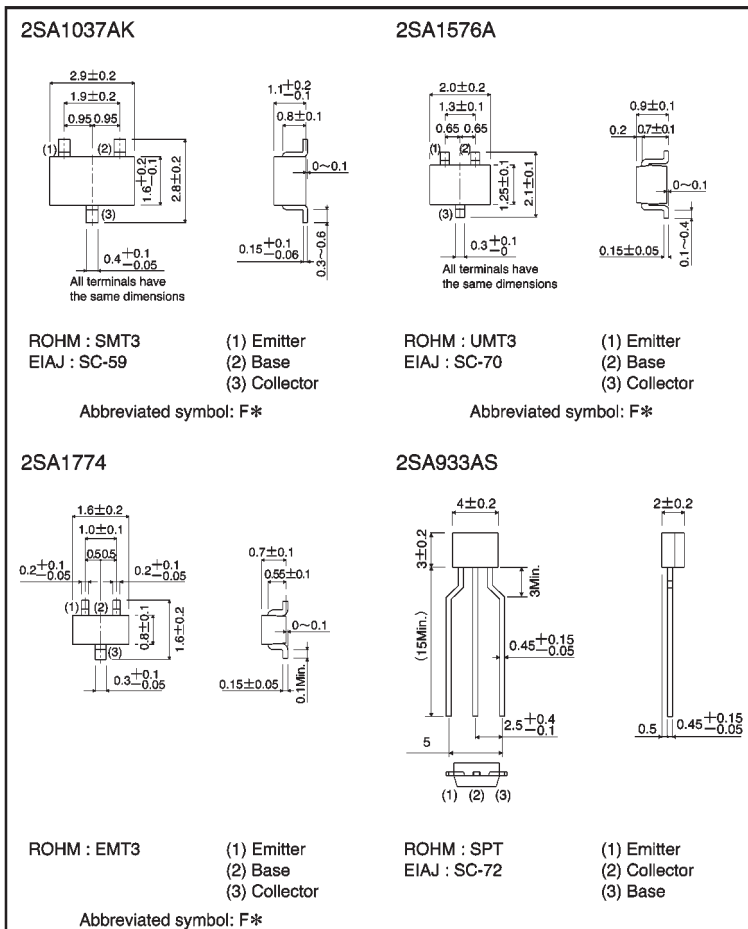
●Features

- 1) Excellent  $h_{FE}$  linearity.
- 2) Complements the 2SC2412K / 2SC4081 / 2SC4617 / 2SC1740S.

●Structure

Epitaxial planar type  
PNP silicon transistor

●External dimensions (Units: mm)



\* Denotes  $h_{FE}$

## ● Absolute maximum ratings (Ta = 25°C)

Parameter	Symbol	Limits	Unit
Collector-base voltage	V <sub>CB0</sub>	-60	V
Collector-emitter voltage	V <sub>CEO</sub>	-50	V
Emitter-base voltage	V <sub>EBO</sub>	-6	V
Collector current	I <sub>c</sub>	-0.15	A (DC)
Collector power dissipation	2SA1037AK, 2SA1576A	0.2	W
	2SA1774	0.15	
	2SA933AS	0.3	
Junction temperature	T <sub>j</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55~+150	°C

## ● Electrical characteristics (Ta = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV <sub>CB0</sub>	-60	—	—	V	I <sub>c</sub> = -50 μA
Collector-emitter breakdown voltage	BV <sub>CEO</sub>	-50	—	—	V	I <sub>c</sub> = -1mA
Emitter-base breakdown voltage	BV <sub>EBO</sub>	-6	—	—	V	I <sub>E</sub> = -50 μA
Collector cutoff current	I <sub>CB0</sub>	—	—	-0.1	μA	V <sub>CB</sub> = -60V
Emitter cutoff current	I <sub>EBO</sub>	—	—	-0.1	μA	V <sub>EB</sub> = -6V
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	—	—	-0.5	V	I <sub>c</sub> /I <sub>B</sub> = -50mA/-5mA
DC current transfer ratio	h <sub>FE</sub>	120	—	560	—	V <sub>CE</sub> = -6V, I <sub>c</sub> = -1mA
Transition frequency	f <sub>r</sub>	—	140	—	MHz	V <sub>CE</sub> = -12V, I <sub>E</sub> = 2mA, f = 30MHz
Output capacitance	C <sub>ob</sub>	—	4.0	5.0	pF	V <sub>CB</sub> = -12V, I <sub>E</sub> = 0A, f = 1MHz

● Packaging specifications and h<sub>FE</sub>

Type	h <sub>FE</sub>	Package	Taping			
		Code	T146	T106	TL	TP
		Basic ordering unit (pieces)	3000	3000	3000	5000
2SA1037AK	QRS	○	—	—	—	
2SA1576A	QRS	—	○	—	—	
2SA1774	QRS	—	—	○	—	
2SA933AS	QRS	—	—	—	○	

h<sub>FE</sub> values are classified as follows:

Item	Q	R	S
h <sub>FE</sub>	120~270	180~390	270~560

●Electrical characteristic curves

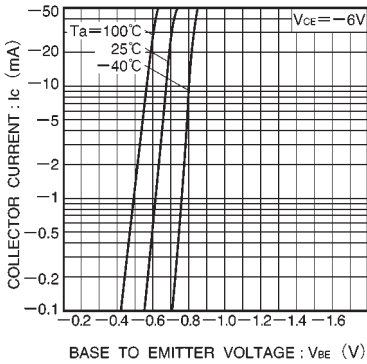


Fig.1 Grounded emitter propagation characteristics

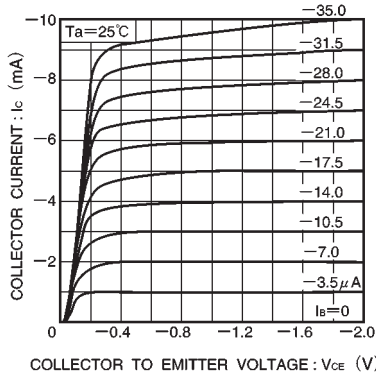


Fig.2 Grounded emitter output characteristics ( I )

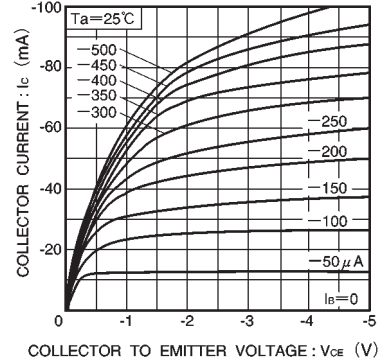


Fig.3 Grounded emitter output characteristics ( II )

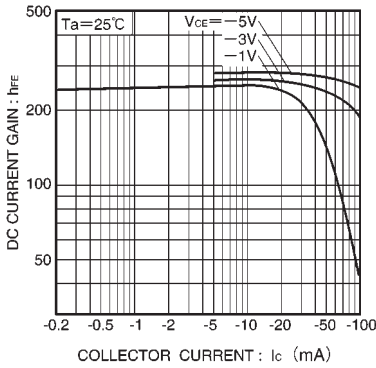


Fig.4 DC current gain vs. collector current ( I )

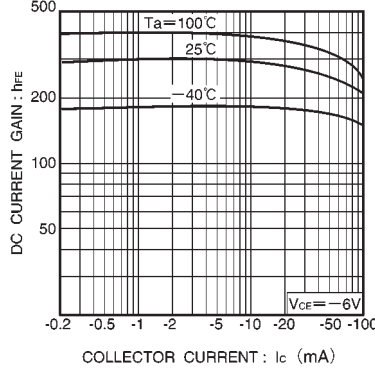


Fig.5 DC current gain vs. collector current ( II )

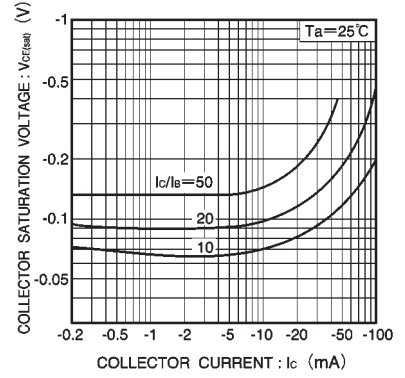


Fig.6 Collector-emitter saturation voltage vs. collector current ( I )

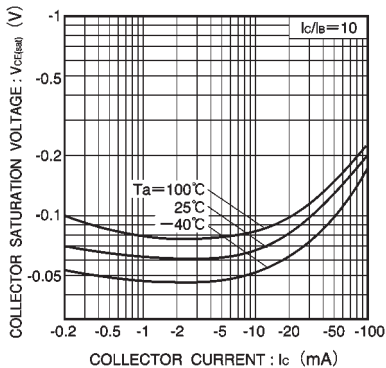


Fig.7 Collector-emitter saturation voltage vs. collector current ( II )

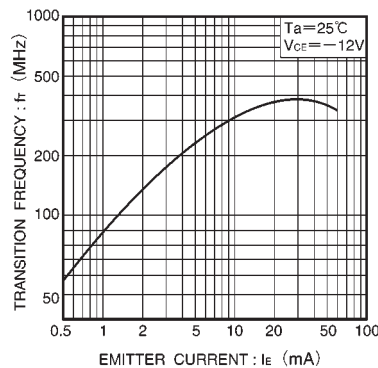


Fig.8 Gain bandwidth product vs. emitter current

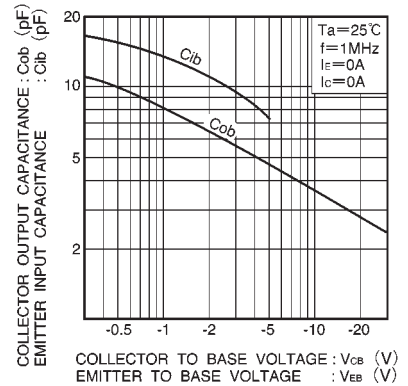


Fig.9 Collector output capacitance vs. collector-base voltage  
Emitter input capacitance vs. emitter-base voltage