

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

**2SA1037AK / 2SA1576A / 2SA1774 / 2SA2029 /
2SA933AS**

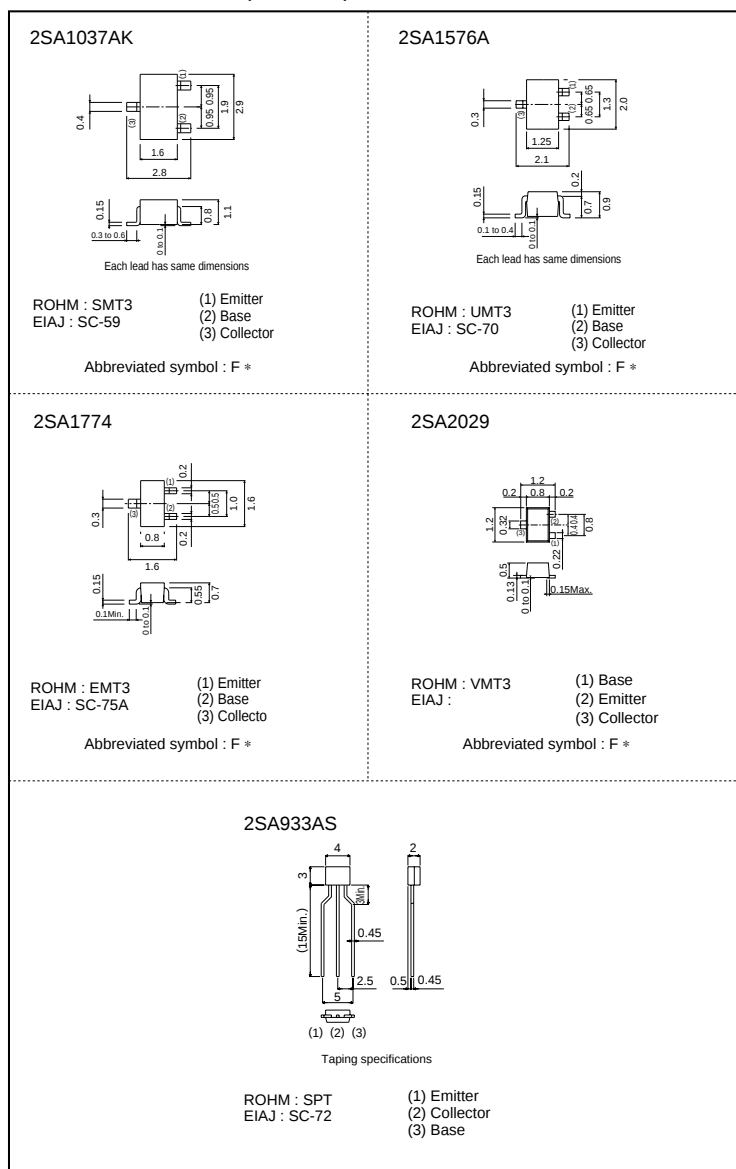
●Features

- 1) Excellent h_{FE} linearity.
- 2) Complements the 2SC2412K / 2SC4081 / 2SC4617 / 2SC5658 / 2SC1740S.

●Structure

Epitaxial planar type.
PNP silicon transistor

●External dimensions (Unit : mm)



* Denotes h_{FF}

2SA1037AK / 2SA1576A / 2SA1774 / 2SA2029 / 2SA933AS

Transistors

●Absolute maximum ratings (Ta=25°C)

Parameter		Symbol	Limits	Unit
Collector-base voltage		V_{CB0}	-60	V
Collector-emitter voltage		V_{CE0}	-50	V
Emitter-base voltage		V_{EB0}	-6	V
Collector current		I_C	-0.15	A (DC)
Collector power dissipation	2SA1037AK, 2SA1576A	P_C	0.2	W
	2SA2029, 2SA1774		0.15	
	2SA933AS		0.3	
Junction temperature		T_j	150	°C
Storage temperature		T_{stg}	-55 to +150	°C

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CB0}	-60	-	-	V	$I_C = -50\mu A$
Collector-emitter breakdown voltage	BV_{CE0}	-50	-	-	V	$I_C = -1mA$
Emitter-base breakdown voltage	BV_{EB0}	-6	-	-	V	$I_E = -50\mu A$
Collector cutoff current	I_{CBO}	-	-	-0.1	μA	$V_{CB} = -60V$
Emitter cutoff current	I_{EBO}	-	-	-0.1	μA	$V_{EB} = -6V$
Collector-emitter saturation voltage	$V_{CE(sat)}$	-	-	-0.5	V	$I_C/I_E = -50mA/-5mA$
DC current transfer ratio	h_{FE}	120	-	560	-	$V_{CE} = -6V, I_C = -1mA$
Transition frequency	f_T	-	140	-	MHz	$V_{CE} = -12V, I_E = 2mA, f = 100MHz$
Output capacitance	C_{ob}	-	4.0	5.0	pF	$V_{CB} = -12V, I_E = 0A, f = 1MHz$

●Packaging specifications and h_{FE}

Type	h_{FE}	Package	Taping				
		Code	T146	T106	TL	T2L	TP
		Basic ordering unit (pieces)	3000	3000	3000	8000	5000
2SA2029	QRS		-	-	-	○	-
2SA1037AK	QRS		○	-	-	-	-
2SA1576A	QRS		-	○	-	-	-
2SA1774	QRS		-	-	○	-	-
2SA933AS	QRS		-	-	-	-	○

h_{FE} values are classified as follows:

Item	Q	R	S
h_{FE}	120 to 270	180 to 390	270 to 560

Transistors

●Electrical characteristic curves

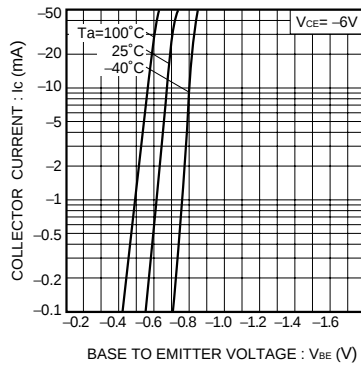


Fig.1 Grounded emitter propagation characteristics

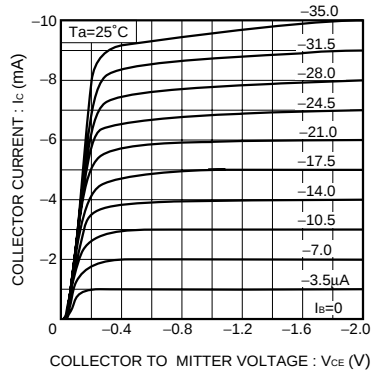


Fig.2 Grounded emitter output characteristics (I)

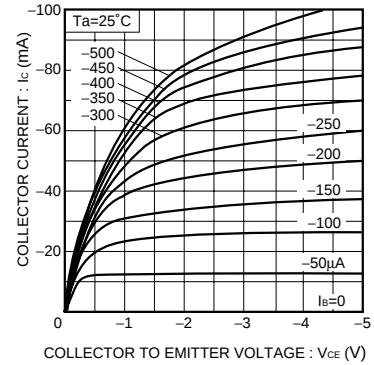


Fig.3 Grounded emitter output characteristics (II)

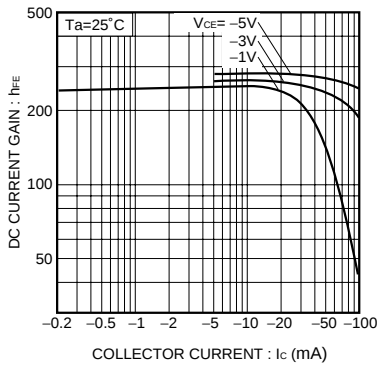


Fig.4 DC current gain vs. collector current (I)

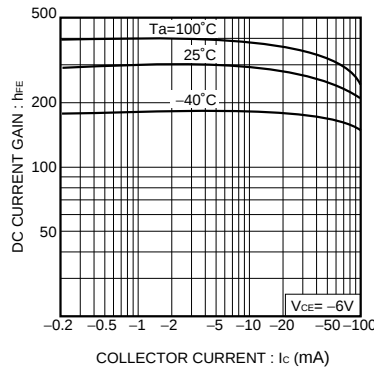


Fig.5 DC current gain vs. collector current (II)

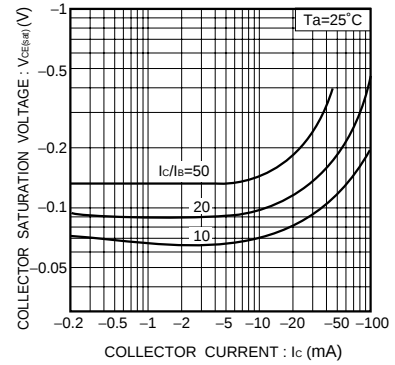


Fig.6 Collector-emitter saturation voltage vs. collector current (I)

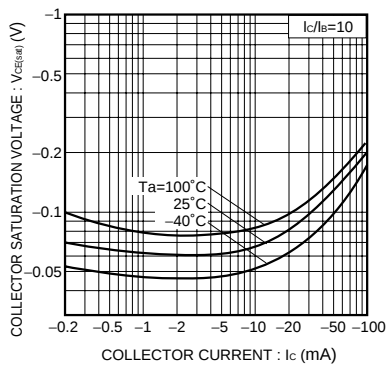


Fig.7 Collector-emitter saturation voltage vs. collector current (II)

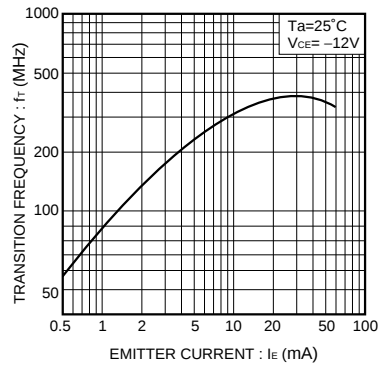


Fig.8 Gain bandwidth product vs. emitter current

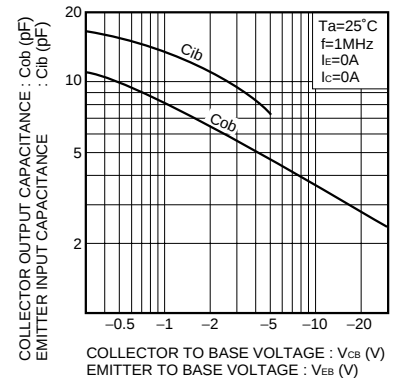


Fig.9 Collector output capacitance vs. collector-base voltage
Emitter input capacitance vs. emitter-base voltage

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