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

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

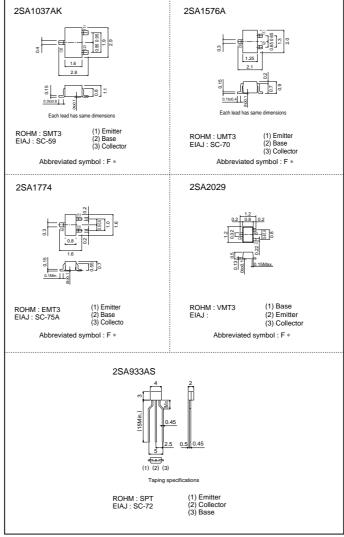
#### Features

- 1) Excellent hee linearity.
- 2) Complements the 2SC2412K / 2SC4081 / 2SC4617 / 2SC5658 / 2SC1740S.

#### Structure

Epitaxial planar type. PNP silicon transistor

### External dimensions (Units : mm)



\* Denotes hre

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

Р	Symbol	Limits	Unit	
Collector-base voltage		Vсво	-60	V
Collector-emitter voltage		Vceo	-50	V
Emitter-base voltage		Vево	-6	V
Collector curren	lc	-0.15	A (DC)	
Collector power dissipation	2SA1037AK, 2SA1576A		0.2	W
	2SA2029, 2SA1774	Pc	0.15	
	2SA933AS		0.3	
Junction tempera	ature	Tj	150	°C
Storage tempera	Tstg	-55~+150	°C	

# ●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions
Collector-base breakdown voltage	ВУсво	-60	_	-	V	lc=-50μA
Collector-emitter breakdown voltage	BVceo	-50	_	-	V	Ic=-1μA
Emitter-base breakdown voltage	ВVево	-6	-	-	V	Iε=-50μA
Collector cutoff current	Ісво	_	_	-0.1	μΑ	Vcb=-60V
Emitter cutoff current	ІЕВО	-	-	-0.1	μΑ	V <sub>EB</sub> =-6V
Collector-emitter saturation voltage	VCE(sat)	-	-	-0.5	V	Ic/Iв=-50mA/-5mA
DC current transfer ratio	hfe	120	_	560	-	Vce=-6V, Ic=-1mA
Transition frequency	f⊤	-	140	-	MHz	Vce=-12V, Ie=2mA, f=30MHz
Output capacitance	Cob	-	4.0	5.0	pF	Vcb=-12V, Ie=0A, f=1MHz

## ●Packaging specifications and hFE

		Package Taping					
		Code	T146	T106	TL	T2L	TP
Туре	hfe	Basic ordering unit (pieces)	3000	3000	3000	8000	5000
2SA2029	QRS		_	_	_	0	_
2SA1037AK	QRS		0	-	-	-	-
2SA1576A	QRS		_	0	_	_	_
2SA1774	QRS		-	-	0	-	-
2SA933AS	QRS		_	_	_	_	0

# hre values are classified as follows:

Item	Q	R	S
hfe	120~270	180~390	270~560

#### Electrical characteristic curves

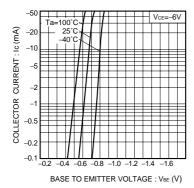


Fig.1 Grounded emitter propagation characteristics

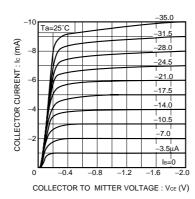


Fig.2 Grounded emitter output characteristics (I)

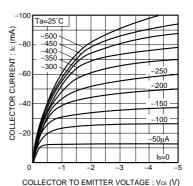


Fig.3 Grounded emitter output characteristics (II)

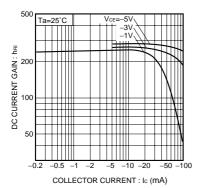


Fig.4 DC current gain vs. collector current (I)

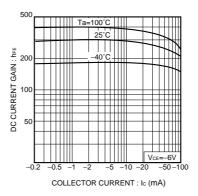


Fig.5 DC current gain vs. collector current (II)

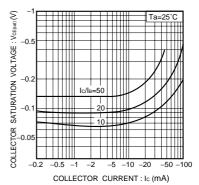


Fig.6 Collector-emitter saturation voltage vs. collector current (I)

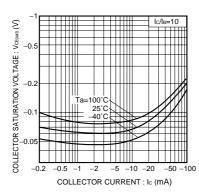


Fig.7 Collector-emitter saturation voltage vs. collector current (II)

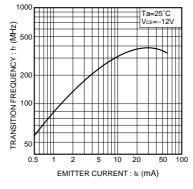


Fig.8 Gain bandwidth product vs. emitter current

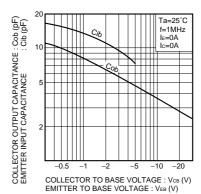


Fig.9 Collector output capacitance vs. collector-base voltage Emitter inputcapacitance vs. emitter-base voltage

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