

# General purpose transistor (50V, 0.15A)

## 2SC2412K / 2SC4081 / 2SC4617 / 2SC5658 / 2SC1740S

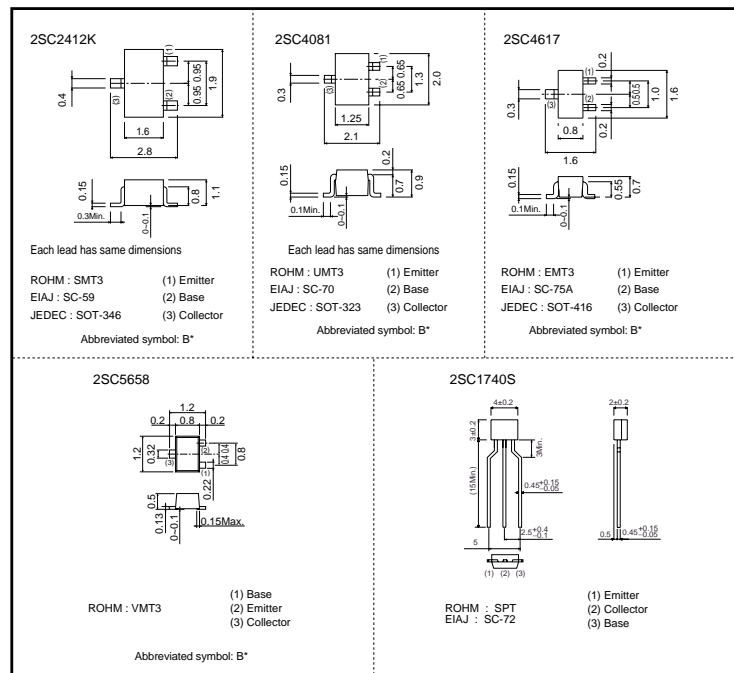
### ●Features

- 1) Low Cob.  
Cob=2.0pF (Typ.)
- 2) Complements the 2SA1037AK /  
2SA1576A / 2SA1774H /  
2SA2029 / 2SA933AS.

### ●Structure

Epitaxial planar type  
NPN silicon transistor

### ●External dimensions (Units : mm)



\* Denotes hFE

### ●Absolute maximum (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-base voltage	V <sub>CB0</sub>	60	V
Collector-emitter voltage	V <sub>CE0</sub>	50	V
Emitter-base voltage	V <sub>EB0</sub>	7	V
Collector current	I <sub>c</sub>	0.15	A
Collector power dissipation	2SC2412K, 2SC4081	0.2	W
	2SC4617, 2SC5658	0.15	
	2SC1740S	0.3	
Junction temperature	T <sub>j</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55~+150	°C

# 2SC2412K / 2SC4081 / 2SC4617 / 2SC5658 / 2SC1740S

## Transistors

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV <sub>CBO</sub>	60	–	–	V	I <sub>c</sub> =50μA
Collector-emitter breakdown voltage	BV <sub>CEO</sub>	50	–	–	V	I <sub>c</sub> =1mA
Emitter-base breakdown voltage	BV <sub>EBO</sub>	7	–	–	V	I <sub>E</sub> =50μA
Collector cutoff current	I <sub>CBO</sub>	–	–	0.1	μA	V <sub>CB</sub> =60V
Emitter cutoff current	I <sub>EBO</sub>	–	–	0.1	μA	V <sub>EB</sub> =7V
DC current transfer ratio	h <sub>FE</sub>	120	–	560	–	V <sub>CE</sub> =6V, I <sub>c</sub> =1mA
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	–	–	0.4	V	I <sub>c</sub> /I <sub>B</sub> =50mA/5mA
Transition frequency	f <sub>T</sub>	–	180	–	MHz	V <sub>CE</sub> =12V, I <sub>E</sub> =–2mA, f=100MHz
Output capacitance	C <sub>ob</sub>	–	2	3.5	pF	V <sub>CE</sub> =12V, I <sub>E</sub> =0A, f=1MHz

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

Type	h <sub>FE</sub>	Package	Taping				Bulk
		Code	T146	T106	TL	T2L	TP
		Basic ordering unit (pieces)	3000	3000	3000	8000	5000
2SC2412K	QRS	○	–	–	–	–	
2SC4081	QRS	–	○	–	–	–	
2SC4617	QRS	–	–	○	–	–	
2SC5658	QRS	–	–	–	○	–	
2SC1740S	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

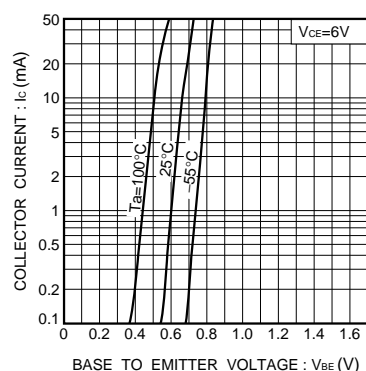


Fig.1 Grounded emitter propagation characteristics

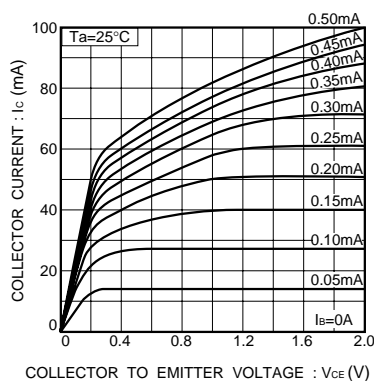


Fig.2 Grounded emitter output characteristics ( I )

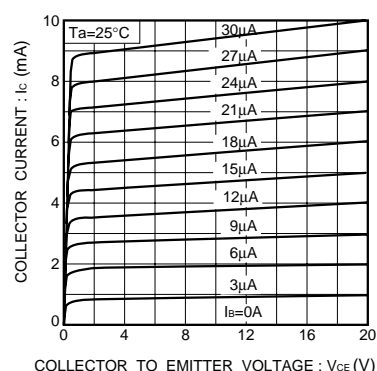


Fig.3 Grounded emitter output characteristics ( II )

Transistors

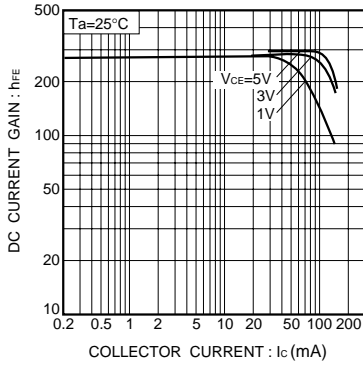


Fig.4 DC current gain vs. collector current ( I )

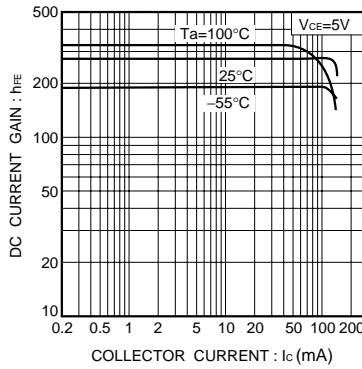


Fig.5 DC current gain vs. collector current ( II )

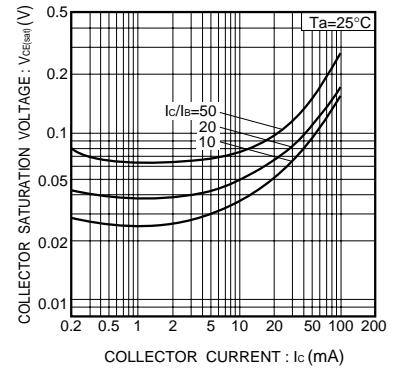


Fig. 6 Collector-emitter saturation voltage vs. collector current

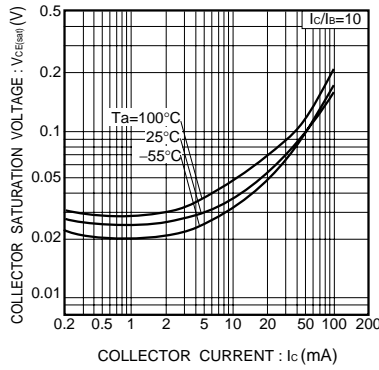


Fig.7 Collector-emitter saturation voltage vs. collector current ( I )

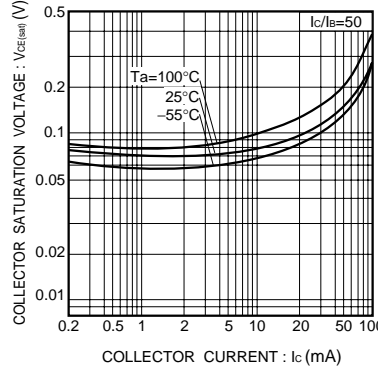


Fig.8 Collector-emitter saturation voltage vs. collector current (II)

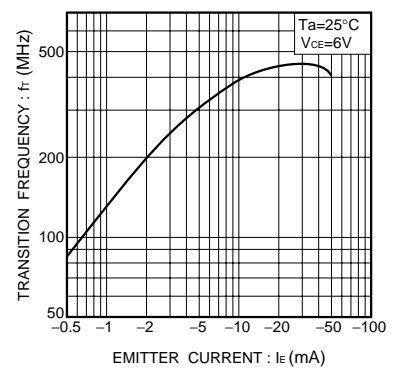


Fig.9 Gain bandwidth product vs. emitter current

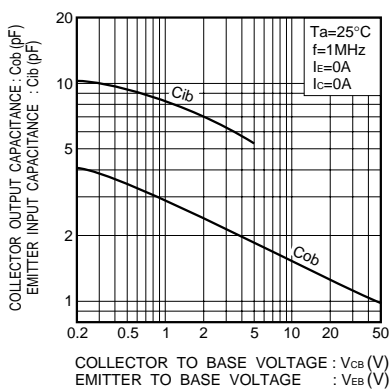


Fig.10 Collector output capacitance vs. collector-base voltage  
Emitter input capacitance vs. emitter-base voltage

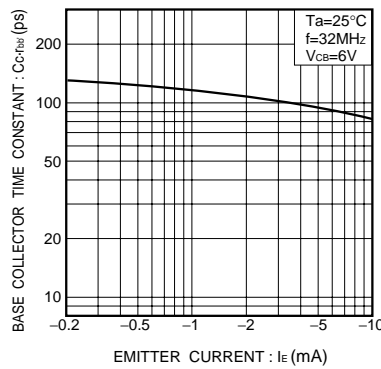


Fig.11 Base-collector time constant vs. emitter current