

# General Purpose Transistor (50V, 0.15A)

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

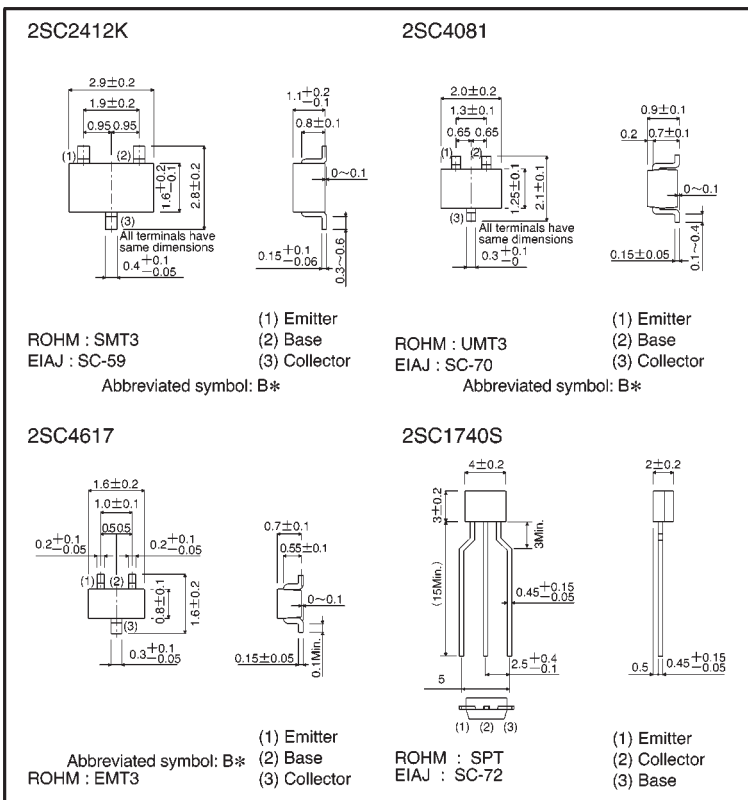
●Features

- 1) Low  $C_{ob}$ .  
 $C_{ob} = 2.0\text{pF (Typ.)}$
- 2) Complements the 2SA1037AK / 2SA1576A / 2SA1774 / 2SA933AS.

●Structure

Epitaxial planar type  
NPN silicon transistor

●External dimensions (Units: mm)



●Absolute maximum ratings ( $T_a = 25^\circ\text{C}$ ) \* Denotes hFE

Parameter	Symbol	Limits	Unit
Collector-base voltage	$V_{CBO}$	60	V
Collector-emitter voltage	$V_{CEO}$	50	V
Emitter-base voltage	$V_{EBO}$	7	V
Collector current	$I_C$	0.15	A
Collector power dissipation	2SC2412K, 2SC4081	0.2	mW
	2SC4617	0.15	
	2SC1740S	0.3	
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	$-55 \sim +150$	$^\circ\text{C}$

●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> =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>	7	—	—	V	I <sub>E</sub> =50 μA
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	TP
		Basic ordering unit (pieces)	3000	3000	3000	5000
2SC2412K	QRS	○	—	—	—	
2SC4081	QRS	—	○	—	—	
2SC4617	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

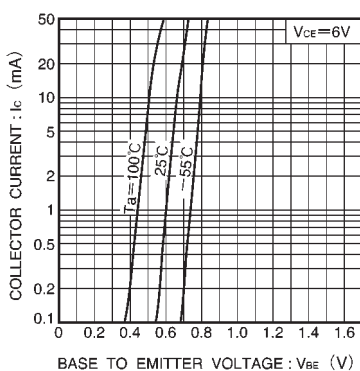


Fig.1 Grounded emitter propagation characteristics

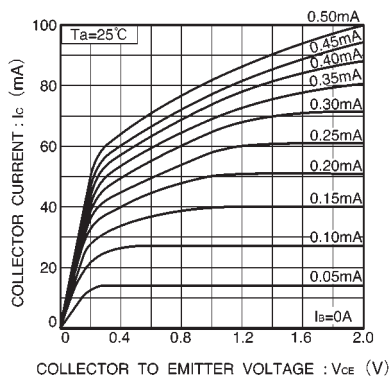


Fig.2 Grounded emitter output characteristics ( I )

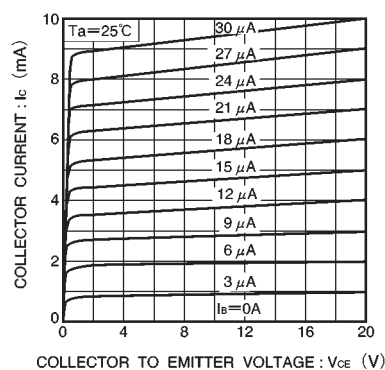


Fig.3 Grounded emitter output characteristics ( II )

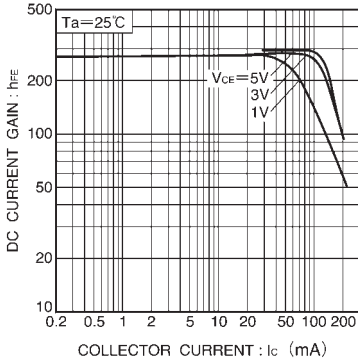


Fig. 4 DC current gain vs. collector current ( I )

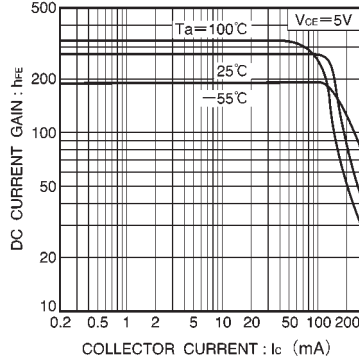


Fig. 5 DC current gain vs. collector current ( II )

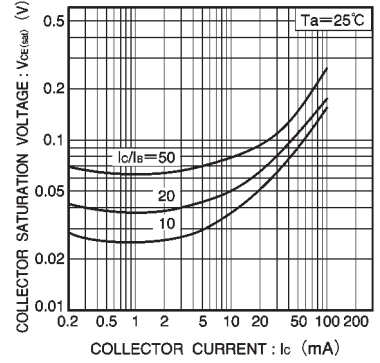


Fig. 6 Collector-emitter saturation voltage vs. collector current

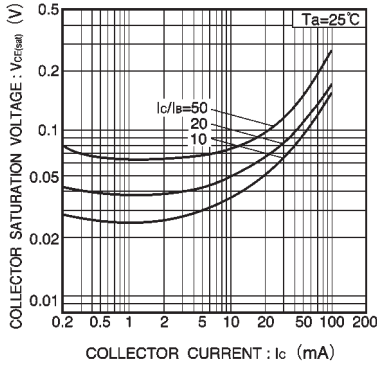


Fig. 7 Collector-emitter saturation voltage vs. collector current ( I )

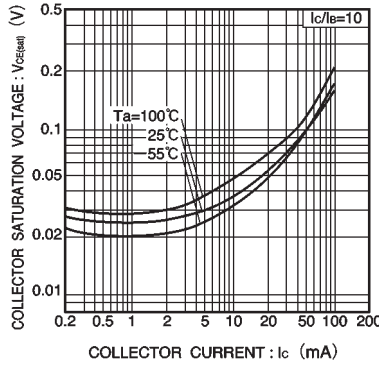


Fig. 8 Collector-emitter saturation voltage vs. collector current ( II )

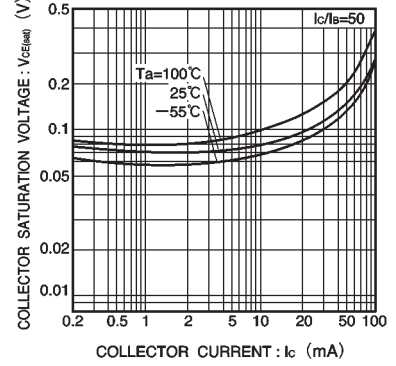


Fig. 9 Collector-emitter saturation voltage vs. collector current ( III )

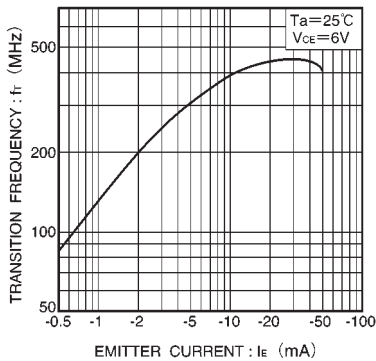


Fig. 10 Gain bandwidth product vs. emitter current

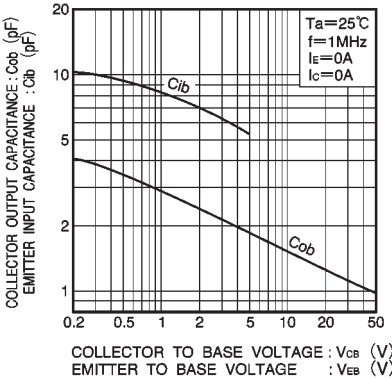


Fig. 11 Collector output capacitance vs. collector-base voltage  
Emitter input capacitance vs. emitter-base voltage

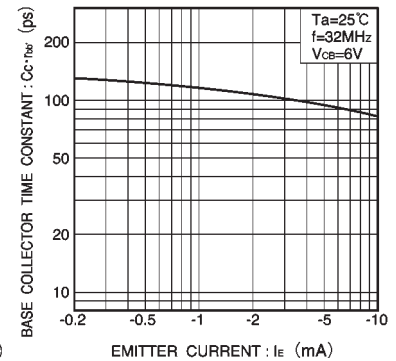


Fig. 12 Base-collector time constant vs. emitter current