

# High-frequency Amplifier Transistor (25V, 50mA, 300MHz)

2SC5659 / 2SC4618 / 2SC4098 / 2SC2413K

●Features

- 1) Low collector capacitance. (Cob : Typ. 1.3pF)
- 2) Low rbb, high gain, and excellent noise characteristics.

●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-base voltage	V <sub>CB0</sub>	40	V
Collector-emitter voltage	V <sub>CE0</sub>	25	V
Emitter-base voltage	V <sub>EB0</sub>	5	V
Collector current	I <sub>c</sub>	50	mA
Collector power dissipation	2SC5659, 2SC4618	0.15	W
	2SC4098, 2SC2413K	0.2	
Junction temperature	T <sub>j</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55 to +150	°C

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

Type	2SC5659	2SC4618	2SC4098	2SC2413K
Package	VMT3	EMT3	UMT3	SMT3
h <sub>FE</sub>	P	P	P	P
Marking	A*	A*	A*	A*
Code	T2L	TL	T106	T146
Basic ordering unit (pieces)	8000	3000	3000	3000

\* Denotes h<sub>FE</sub>

●Dimensions (Unit : mm)

**2SC5659**

ROHM : VMT3  
SOT-723

(1) Base  
(2) Emitter  
(3) Collector

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**2SC4618**

ROHM : EMT3  
EIAJ : SC-75A

(1) Emitter  
(2) Base  
(3) Collector

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**2SC4098**

ROHM : UMT3  
EIAJ : SC-70

Each lead has same dimensions

(1) Emitter  
(2) Base  
(3) Collector

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**2SC2413K**

ROHM : SMT3  
EIAJ : SC-59

Each lead has same dimensions

(1) Emitter  
(2) Base  
(3) Collector

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV <sub>CB0</sub>	40	-	-	V	I <sub>c</sub> =50μA
Collector-emitter breakdown voltage	BV <sub>CE0</sub>	25	-	-	V	I <sub>c</sub> =1mA
Emitter-base breakdown voltage	BV <sub>EB0</sub>	5	-	-	V	I <sub>E</sub> =50μA
Collector cutoff current	I <sub>cBO</sub>	-	-	0.5	μA	V <sub>CB</sub> =24V
Emitter cutoff current	I <sub>EBO</sub>	-	-	0.5	μA	V <sub>EB</sub> =3V
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	-	0.1	0.3	V	I <sub>c</sub> /I <sub>B</sub> =10mA/1mA
DC current transfer ratio	h <sub>FE</sub>	82	-	180	-	V <sub>CE</sub> =6V, I <sub>c</sub> =1mA
Transition frequency	f <sub>r</sub>	150	300	-	MHz	V <sub>CE</sub> =6V, I <sub>E</sub> =-1mA, f=100MHz
Output capacitance	Cob	-	1.3	2.2	pF	V <sub>CB</sub> =6V, I <sub>E</sub> =0A, f=1MHz

●Electrical characteristics curves

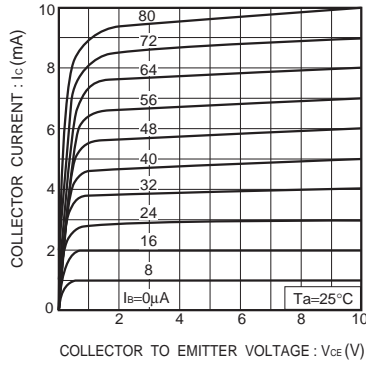


Fig.1 Ground emitter output characteristics

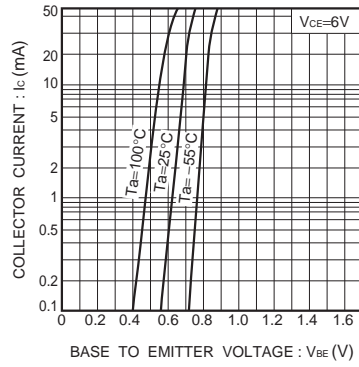


Fig.2 Ground emitter propagation characteristics

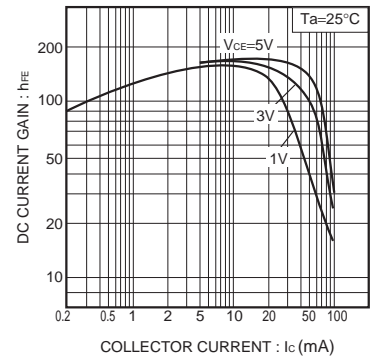


Fig.3 DC current gain vs. collector current ( I )

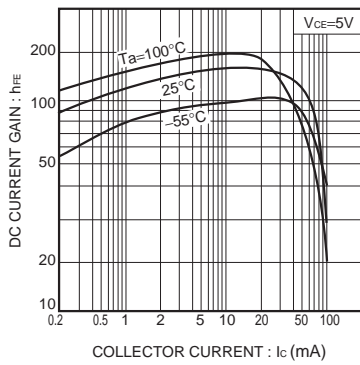


Fig.4 DC current gain vs. collector current ( II )

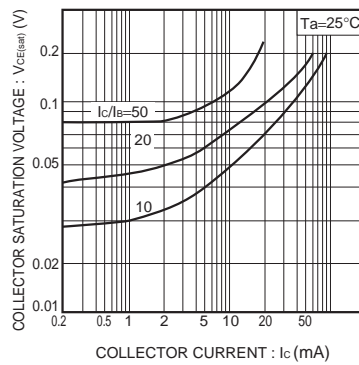


Fig.5 Collector-emitter saturation voltage vs. collector current ( I )

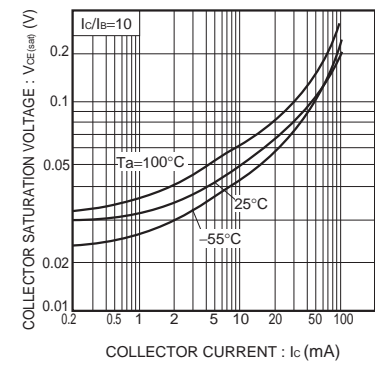


Fig.6 Collector-emitter saturation voltage vs. collector current ( II )

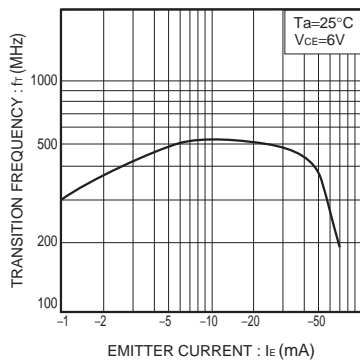


Fig.7 Gain bandwidth product vs. emitter current

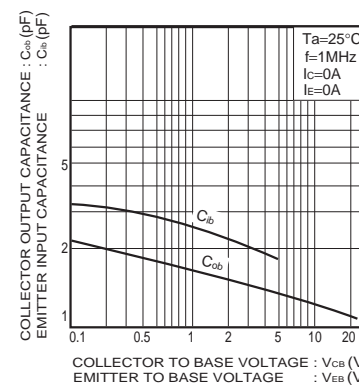


Fig.8 Capacitance vs. voltage

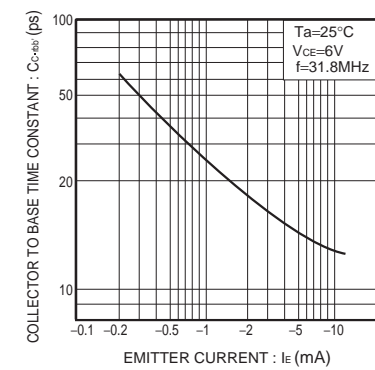


Fig.9 Collector to base time constant vs. emitter current

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