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_{CBO}	40	V
Collector-emitter voltage		V_{CEO}	25	V
Emitter-base voltage		V_{EBO}	5	V
Collector current		I_C	50	mA
Collector power dissipation	2SC5659, 2SC4618	P_C	0.15	W
	2SC4098, 2SC2413K		0.2	
Junction temperature		Tj	150	˚C
Storage temperature		Tstg	−55 to +150	˚C

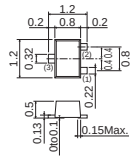
●Packaging specifications and h_{FE}

Type	2SC5659	2SC4618	2SC4098	2SC2413K
Package	VMT3	EMT3	UMT3	SMT3
h_{FE}	P	P	P	P
Marking	A✻	A✻	A✻	A✻
Code	T2L	TL	T106	T146
Basic ordering unit (pieces)	8000	3000	3000	3000

✻ Denotes h_{FE}

●Dimensions (Unit : mm)

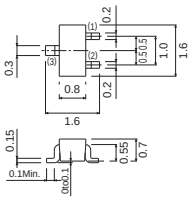
2SC5659



ROHM : VMT3

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

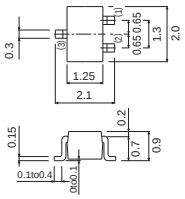
2SC4618



ROHM : EMT3
EIAJ : SC-75A

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

2SC4098

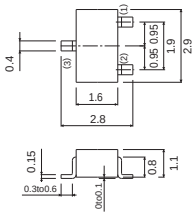


ROHM : UMT3
EIAJ : SC-70

Each lead has same dimensions

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

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_{CBO}	40	–	–	V	I_C=50μA
Collector-emitter breakdown voltage	BV_{CEO}	25	–	–	V	I_C=1mA
Emitter-base breakdown voltage	BV_{EBO}	5	–	–	V	I_E=50μA
Collector cutoff current	I_{CBO}	–	–	0.5	μA	V_{CB}=24V
Emitter cutoff current	I_{EBO}	–	–	0.5	μA	V_{EB}=3V
Collector-emitter saturation voltage	$V_{CE(sat)}$	–	0.1	0.3	V	I_C/I_B=10mA/1mA
DC current transfer ratio	h_{FE}	82	–	180	–	V_{CE}=6V, I_C=1mA
Transition frequency	f_T	150	300	–	MHz	V_{CE}=6V, I_E= −1mA, f=100MHz
Output capacitance	Cob	–	1.3	2.2	pF	V_{CB}=6V, I_E=0A, f=1MHz

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●Electrical characteristics curves

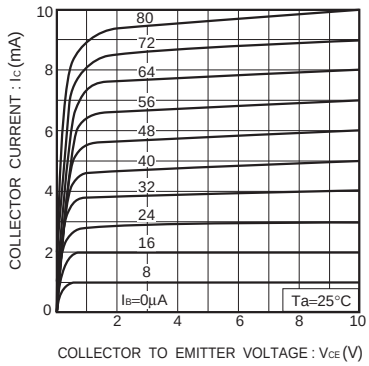

Fig.1 Ground emitter output characteristics

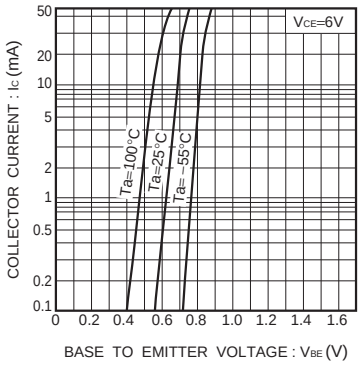

Fig.2 Ground emitter propagation characteristics

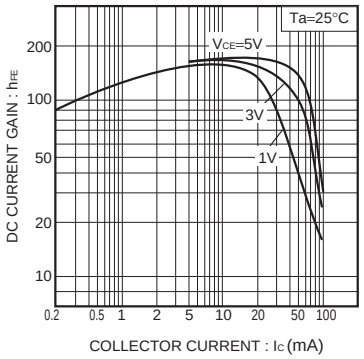

Fig.3 DC current gain vs. collector current (I)

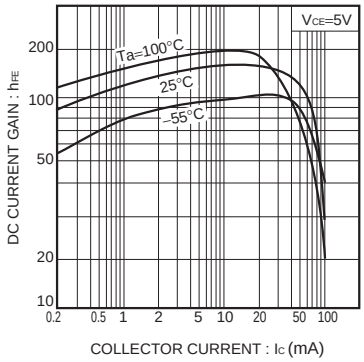

Fig.4 DC current gain vs. collector current (II)

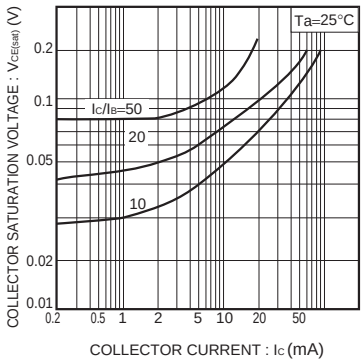

Fig.5 Collector-emitter saturation voltage vs. collector current (I)

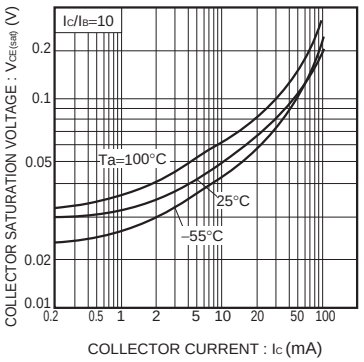

Fig.6 Collector-emitter saturation voltage vs. collector current (II)

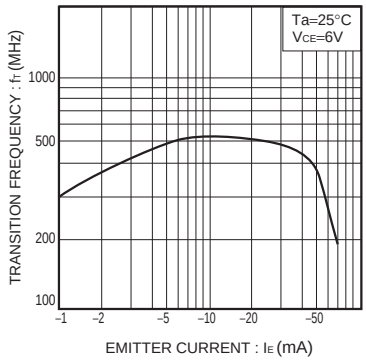

Fig.7 Gain bandwidth product vs.emitter current

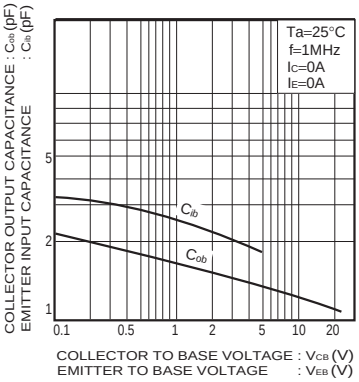

Fig.8 Capacitance vs. voltage

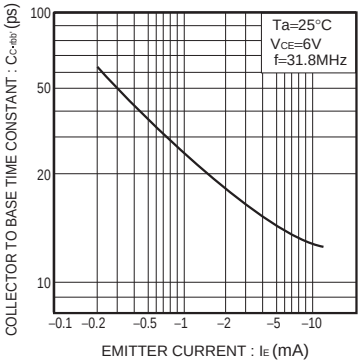

Fig.9 Collector to base time constance vs. emitter current

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