High-Frequency Amplifier Transistor (20V, 50mA, 1.5GHz)

2SC5661 / 2SC4725 / 2SC4082 / 2SC3837K

●Features

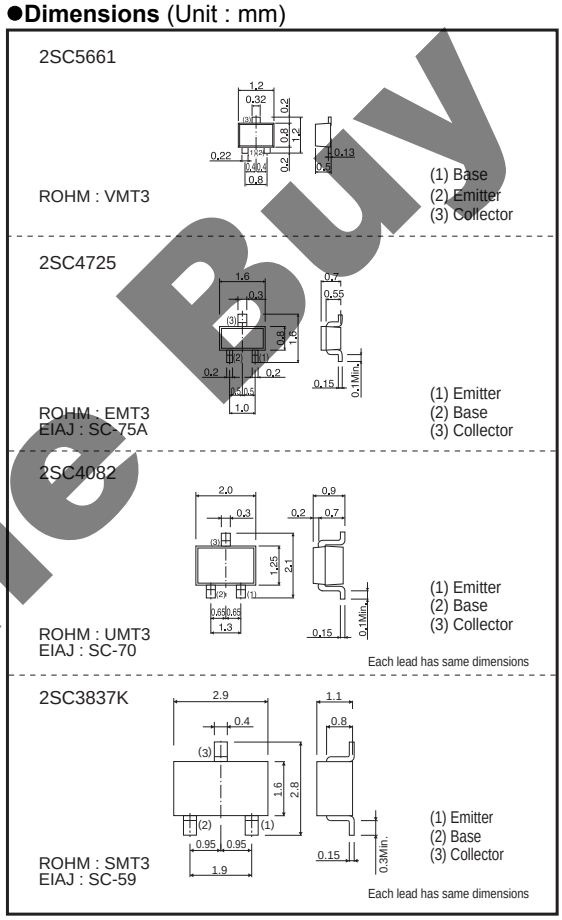
1) High transition frequency. (Typ. f_T = 1.5GHz)
2) Small rbb'·Cc and high gain. (Typ. 6ps)
3) Small NF.

●Packaging specifications and h_{FE}

Type	2SC5661	2SC4725	2SC4082	2SC3837K
Package	VMT3	EMT3	UMT3	SMT3
h_{FE}	NP	NP	NP	NP
Marking	AC*	AC*	1C*	AC*
Code	T2L	TL	T106	T146
Basic ordering unit (pieces)	8000	3000	3000	3000

* Denotes h_{FE}

●Dimensions (Unit : mm)



● Absolute maximum ratings (Ta=25°C)

Parameter		Symbol	Limits	Unit
Collector-base voltage		V_{CBO}	30	V
Collector-emitter voltage		V_{CEO}	20	V
Emitter-base voltage		V_{EBO}	3	V
Collector current		I_C	50	mA
Collector power dissipation	2SC5661, 2SC4725	P_C	0.15	W
	2SC4082, 2SC3837K		0.2	
Junction temperature		Tj	150	°C
Storage temperature		Tstg	−55 to +150	°C

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	30	–	–	V	I_C = 10μA
Collector-emitter breakdown voltage	BV_{CEO}	20	–	–	V	I_C = 1mA
Emitter-base breakdown voltage	BV_{EBO}	3	–	–	V	I_E = 10μA
Collector cutoff current	I_{CBO}	–	–	0.5	μA	V_{CB} = 15V
Emitter cutoff current	I_{EBO}	–	–	0.5	μA	V_{EB} = 2V
Collector-emitter saturation voltage	$V_{CE(sat)}$	–	–	0.5	V	I_C/I_B = 20mA/4mA
DC current transfer ratio	h_{FE}	82	–	180	–	V_{CE}/I_C = 10V/10mA
Transition frequency	f_T	600	1500	–	MHz	V_{CE} = 10V , I_E = −10mA , f = 200MHz
Output capacitance	Cob	–	0.9	1.5	pF	V_{CB} = 10V , I_E = 0A , f = 1MHz
Collector-base time constant	rbb'·Cc	–	6	13	ps	V_{CB} = 10V , I_C = 10mA , f = 31.8MHz
Noise factor	NF	–	4.5	–	dB	V_{CE} = 12V , I_C = 2mA , f = 200MHz , Rg = 50Ω

This product might cause chip aging and breakdown under the large electrified environment.
Please consider to design ESD protection circuit.

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●Electrical characteristic curves

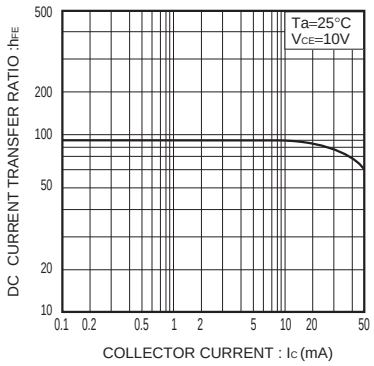


Fig.1 DC current gain vs. collector current

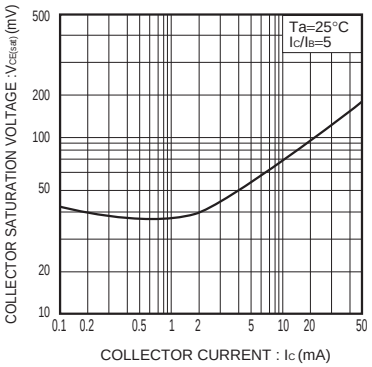


Fig.2 Collector-emitter saturation voltage vs. collector current

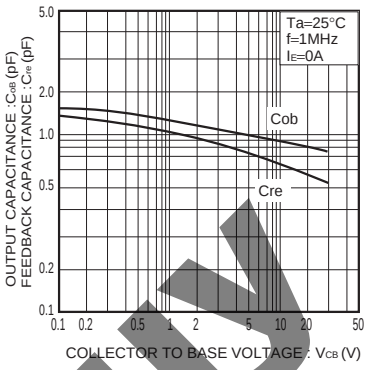


Fig.3 Capacitance vs. reverse bias voltage

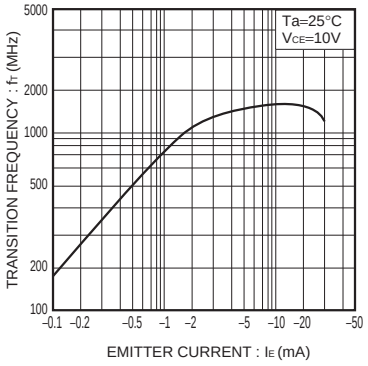


Fig.4 Gain bandwidth product vs. emitter current

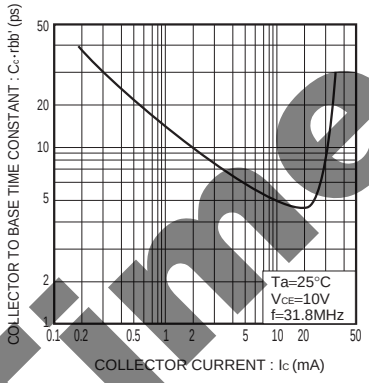


Fig.5 Collector to base time constance vs. collector current

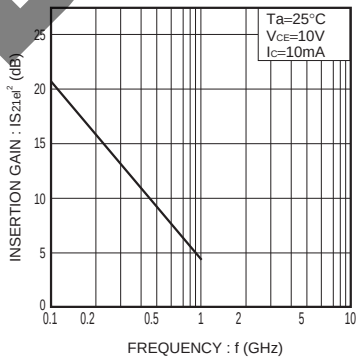


Fig.6 Insertion gain vs. frequency

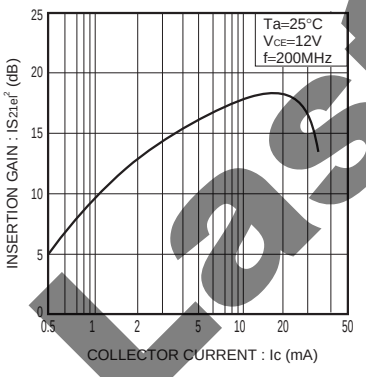


Fig.7 Insertion gain vs. collector current

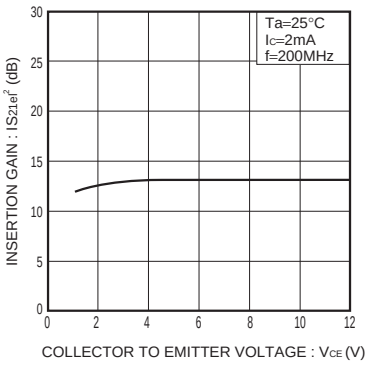


Fig.8 Insertion gain vs. collector voltage

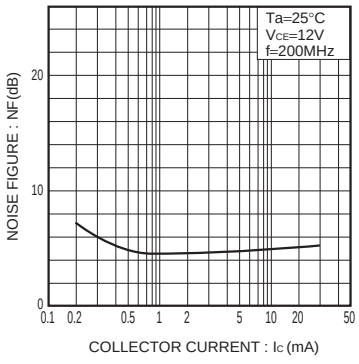


Fig.9 Noise factor vs. collector current

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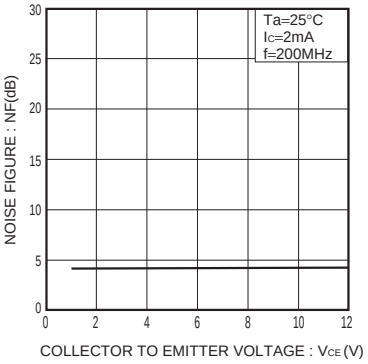


Fig.10 Noise factor vs. collector voltage

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