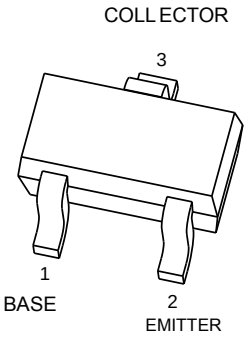
迈拓电子
MAITUO ELECTRONIC

2SC5066 VHF~UHF Band Low Noise Amplifier Applications

- Low noise figure, high gain.
- NF = 1.1dB, $|S_{21e}|^2$ = 12dB (f = 1 GHz)



Marking : 2SC5066O M1
2SC5066Y M2

SOT-523

Absolute Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Rating	Unit
Collector-base voltage	V_{CBO}	20	V
Collector-emitter voltage	V_{CEO}	12	V
Emitter-base voltage	V_{EBO}	3	V
Base current	I_B	15	mA
Collector current	I_C	30	mA
Collector power dissipation	P_C	100	mW
Junction temperature	T_j	125	°C
Storage temperature range	T_{stg}	−55 to 125	°C

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook (“Handling Precautions”/“Derating Concept and Methods”) and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

Microwave Characteristics (Ta = 25°C)

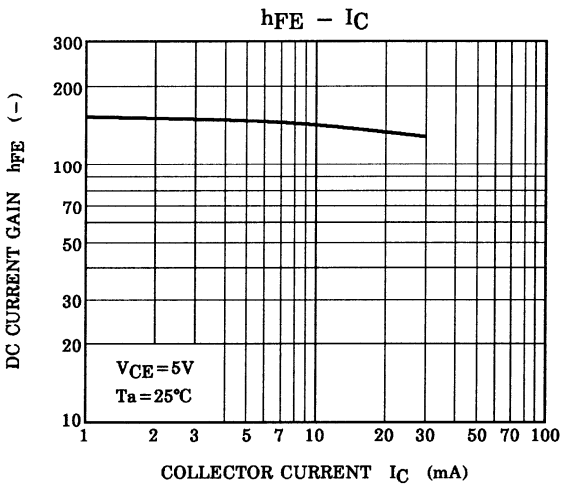
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Transition frequency	f_T	V_{CE} = 5 V, I_C = 10 mA	5	7	—	GHz
Insertion gain	$\|S_{21e}\|^2$ (1)	V_{CE} = 5 V, I_C = 10 mA, f = 500 MHz	—	17	—	dB
	$\|S_{21e}\|^2$ (2)	V_{CE} = 5 V, I_C = 10 mA, f = 1 GHz	8.5	12	—	
Noise figure	NF (1)	V_{CE} = 5 V, I_C = 3 mA, f = 500 MHz	—	1	—	dB
	NF (2)	V_{CE} = 5 V, I_C = 3 mA, f = 1 GHz	—	1.1	2.0	

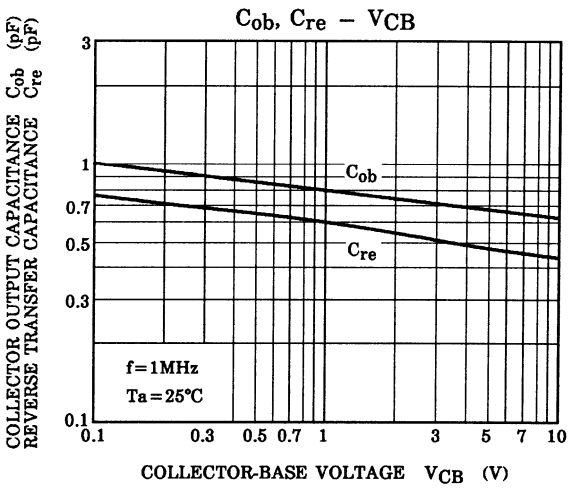
Electrical Characteristics (Ta = 25°C)

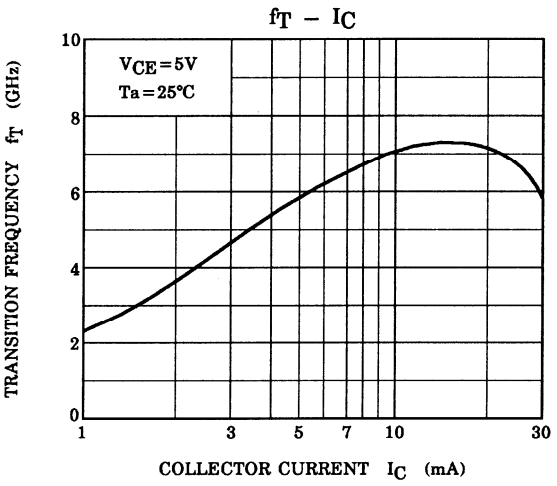
Characteristics	Symbol	Test Condition		Min	Typ.	Max	Unit
Collector cut-off current	I_{CBO}	V_{CB} = 10 V, I_E = 0		—	—	1	μA
Emitter cut-off current	I_{EBO}	V_{EB} = 1 V, I_C = 0		—	—	1	μA
DC current gain	h_{FE} (Note 1)	V_{CE} = 5 V, I_C = 10 mA	O	80	—	160	
			Y	120	—	240	
Output capacitance	C_{ob}	V_{CB} = 5 V, I_E = 0, f = 1 MHz (Note 2)		—	0.7	—	pF
Reverse transfer capacitance	C_{re}			—	0.45	0.9	pF

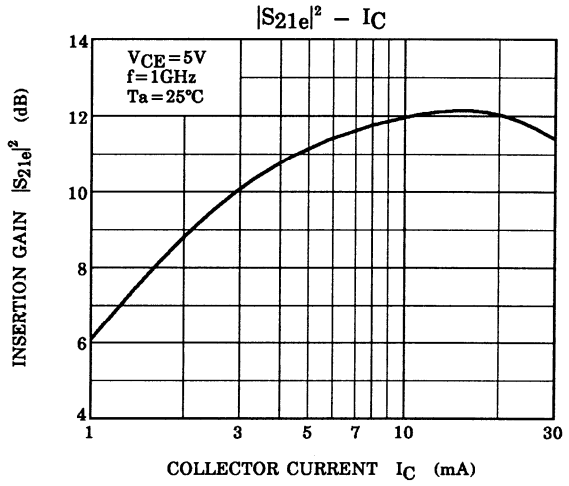
Note 1: h_{FE} classification O: 80 to 160, Y: 120 to 240

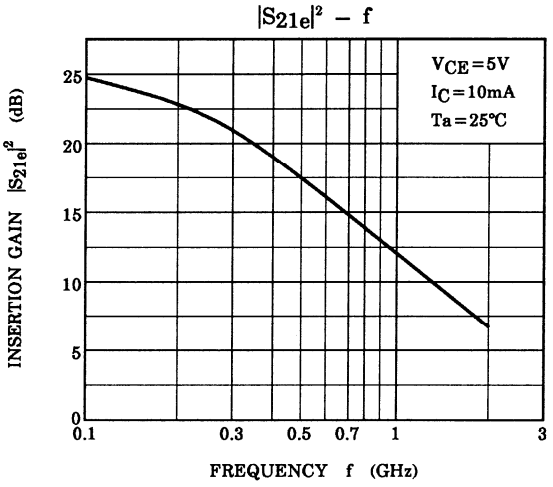
Note 2: C_{re} is measured by 3 terminal method with capacitance bridge.

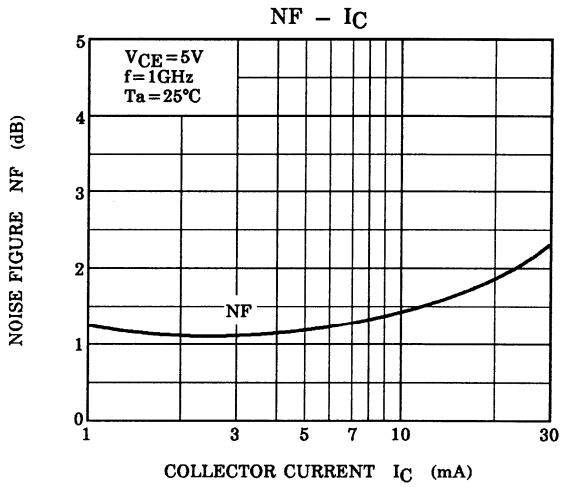

hFE – IC
DC CURRENT GAIN hFE (–)
300
200
100
70
50
30
20
10
VCE=5V
Ta=25°C
1
2
3
5
7
10
20
30
50
70
100
COLLECTOR CURRENT IC (mA)

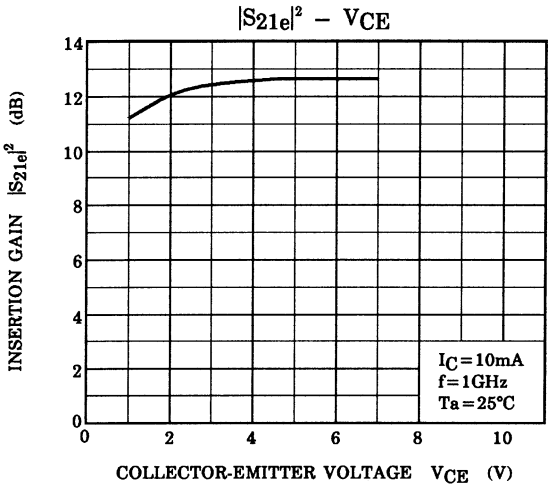

Cob, Cre – VCB
COLLECTOR OUTPUT CAPACITANCE Cob (pF)
REVERSE TRANSFER CAPACITANCE Cre (pF)
3
1
0.7
0.5
0.3
0.1
Cob
Cre
f=1MHz
Ta=25°C
0.1
0.3
0.5
0.7
1
3
5
7
10
COLLECTOR-BASE VOLTAGE VCB (V)

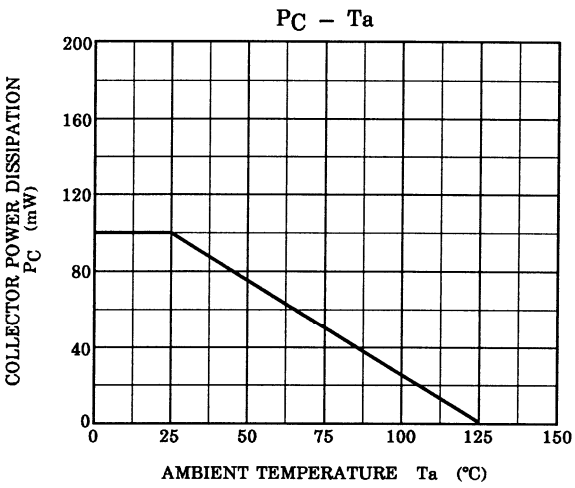

fT – IC
TRANSITION FREQUENCY fT (GHz)
10
8
6
4
2
0
VCE=5V
Ta=25°C
1
3
5
7
10
30
COLLECTOR CURRENT IC (mA)


|S21e|² – IC
INSERTION GAIN |S21e|² (dB)
14
12
10
8
6
4
VCE=5V
f=1GHz
Ta=25°C
1
3
5
7
10
30
COLLECTOR CURRENT IC (mA)


|S21e|² – f
INSERTION GAIN |S21e|² (dB)
25
20
15
10
5
0
VCE=5V
IC=10mA
Ta=25°C
0.1
0.3
0.5
0.7
1
3
FREQUENCY f (GHz)


NF – IC
NOISE FIGURE NF (dB)
5
4
3
2
1
0
VCE=5V
f=1GHz
Ta=25°C
NF
1
3
5
7
10
30
COLLECTOR CURRENT IC (mA)





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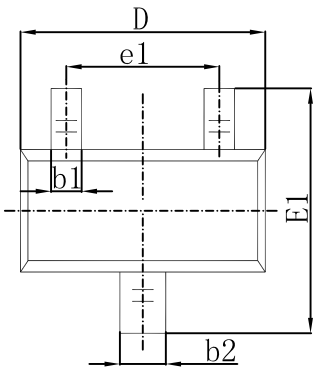
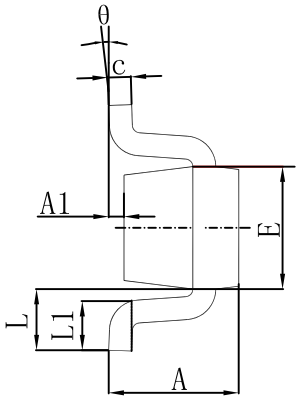
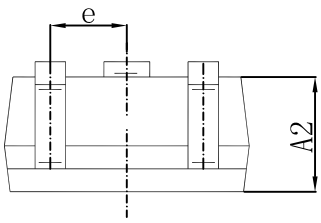
SOT-523 Package Outline Dimensions

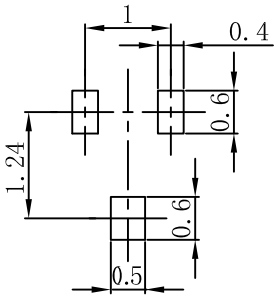






Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.900	0.028	0.035
A1	0.000	0.100	0.000	0.004
A2	0.700	0.800	0.028	0.031
b1	0.150	0.250	0.006	0.010
b2	0.250	0.350	0.010	0.014
c	0.100	0.200	0.004	0.008
D	1.500	1.700	0.059	0.067
E	0.700	0.900	0.028	0.035
E1	1.450	1.750	0.057	0.069
e	0.500 TYP.		0.020 TYP.	
e1	0.900	1.100	0.035	0.043
L	0.400 REF.		0.016 REF.	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

SOT-523 Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:±0.05mm.
3.The pad layout is for reference purposes only.