

2SC4270

UHF Converter, Local Oscillator Applications

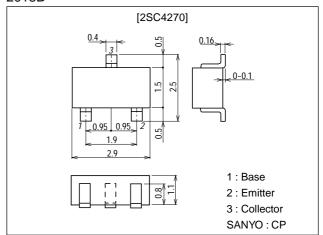
Features

Small noise figure : NF=3.0dB typ (f=0.9GHz)
High power gain : PG=12dB typ (f=0.9GHz)

· High cutoff frequency : $f_T=3.0GHz$ typ

Package Dimensions

unit:mm 2018B



Specifications

Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V _{CBO}		25	V
Collector-to-Emitter Voltage	VCEO		15	V
Emitter-to-Base Voltage	V _{EBO}		3	V
Collector Current	lc		50	mA
Base Current	I _B		20	mA
Collector Dissipation	PC		250	mW
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		-55 to +150	°C

Electrical Characteristics at Ta = 25°C

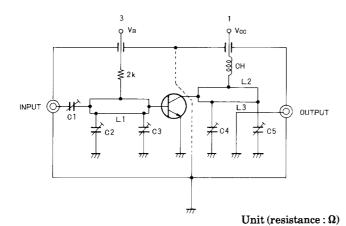
Parameter	Symbol	Conditions		Ratings		
Falametei	Symbol			typ	max	Unit
Collector Cutoff Current	ICBO	V _{CB} =20V, I _E =0			0.1	μA
Emitter Cutoff Current	IEBO	V _{EB} =2V, I _C =0			10	μA
DC Current Gain	hFE	V _{CE} =10V, I _C =5mA	40*		200*	
Gain-Bandwidth Product	f _T	V _{CE} =10V, I _C =10mA	1.5	3.0		GHz
Output Capacitance	C _{ob}	V _{CB} =10V, f=1MHz		0.7	1.0	pF
Reverse Transfer Capacitance	C _{re}	V _{CB} =10V, f=1MHz		0.45		pF
Power Gain	PG	V _{CE} =10V, I _C =10mA, f=0.9GHz		12		dB
Noise Figure	NF	V _{CE} =10V, I _C =3mA, f=0.9GHz		3.0		dB

* : The 2SC4270 is classified by 5mA h_{FE} as follows : $\begin{bmatrix} 40 & 2 & 80 & 60 & 3 & 120 & 100 & 4 & 200 \end{bmatrix}$

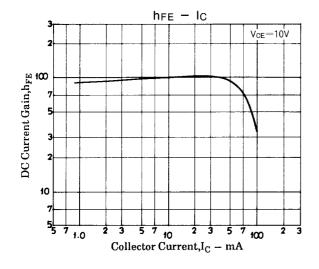
(Note) Marking: KT h_{FE} rank: 2, 3, 4

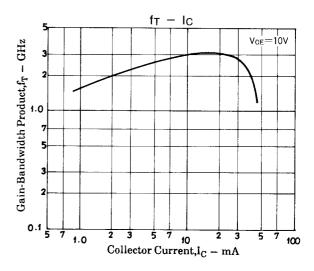
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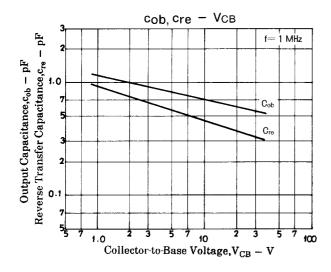
PG, NF Test Circuit

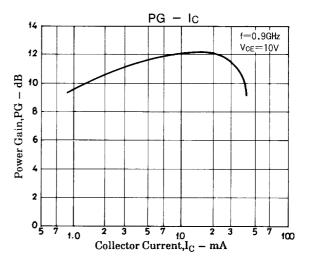


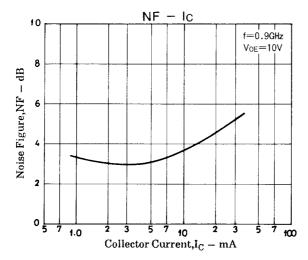
	900MHz				
C1	~5pF				
C2	~10pF				
C3	~10pF				
C4	~10pF				
C5	~10pF				
L1	W ≈ 1.5mm, I ≈ 25mm Strip line				
L2	W ≈ 4mm, I ≈ 25mm Strip line				
L3	0.5φ, I ≈ 40mm				
CH	2t+bead core				

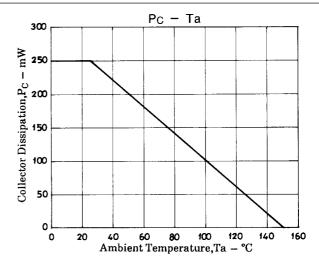






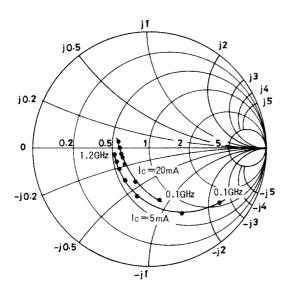




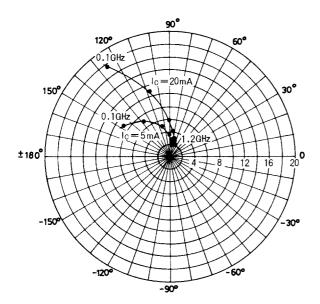


S parameter

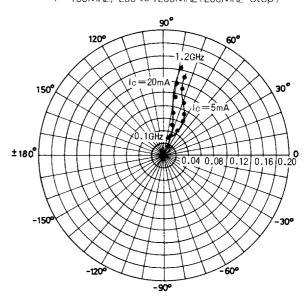
S11e: $V_{CE}=10V$ f=100MHz, 200 to 1200MHz(200MHz step)



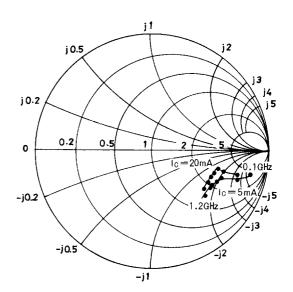
S21e: V_{CE}=10V f=100MHz, 200 to 1200MHz(200MHz step)



S12e: V_{CE}=10V f=100MHz, 200 to 1200MHz(200MHz step)



S22e: V_{CE}=10V f=100MHz, 200 to 1200MHz (200MHz step)



2SC4270

S parameter (Common emitter)

 $V_{CE}=10V$, $I_{C}=5mA$, $Z_{O}=50\Omega$

Freq (MHz)	S ₁₁	∠S ₁₁	S ₂₁	∠S ₂₁	S ₁₂	∠S ₁₂	S ₂₂	∠ S ₂₂
100	0.771	-35.1	8.763	147.2	0.027	69.3	0.890	-14.2
200	0.613	-64.7	7.004	127.6	0.043	59.8	0.780	-19.7
400	0.429	-110.7	4.882	103.1	0.061	58.1	0.660	-22.8
600	0.361	-133.5	3.471	90.5	0.075	63.1	0.625	-25.1
800	0.355	-148.4	2.693	81.6	0.091	68.1	0.612	-28.6
900	0.331	-153.7	2.450	78.9	0.100	70.5	0.609	-29.9
1000	0.328	-158.9	2.236	75.5	0.110	72.5	0.607	-31.6
1200	0.326	-167.9	1.932	69.9	0.130	74.7	0.608	-35.7

 $V_{CE}=10V, I_{C}=20mA, Z_{O}=50\Omega$

Freq (MHz)	S ₁₁	∠S ₁₁	S ₂₁	∠S ₂₁	S ₁₂	∠S ₁₂	S ₂₂	∠S ₂₂
100	0.447	-78.1	17.728	125.0	0.020	66.0	0.752	-18.5
200	0.338	-113.2	10.936	107.5	0.031	66.5	0.639	-18.5
400	0.290	-146.6	5.773	91.4	0.052	72.1	0.580	-18.5
600	0.281	-159.3	3.956	83.0	0.074	75.7	0.571	-21.1
800	0.285	-168.8	2.982	76.2	0.095	77.6	0.566	-25.2
900	0.289	-171.3	2.703	74.0	0.106	78.6	0.563	-26.7
1000	0.291	-174.4	2.454	71.3	0.118	79.4	0.565	-28.6
1200	0.297	178.1	2.116	66.5	0.140	79.0	0.569	-33.1

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