

**2SC4269**

VHF Converter, Local Oscillator Applications

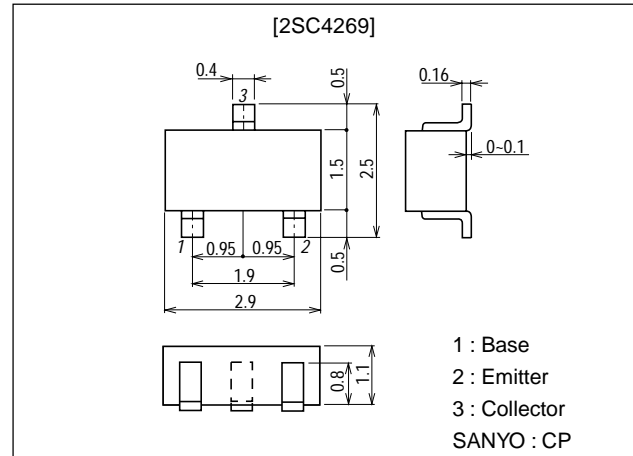
Features

- High power gain : PG=15dB typ (f=0.4GHz)
- High cutoff frequency : $f_T=1.2\text{GHz}$ typ

Package Dimensions

unit:mm

2018B



Specifications

Absolute Maximum Ratings at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		30	V
Collector-to-Emitter Voltage	V_{CEO}		15	V
Emitter-to-Base Voltage	V_{EBO}		3	V
Collector Current	I_C		50	mA
Base Current	I_B		20	mA
Collector Dissipation	P_C		250	mW
Junction Temperature	T_j		150	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to +150	$^\circ\text{C}$

Electrical Characteristics at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	$V_{CB}=20\text{V}, I_E=0$			0.1	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=2\text{V}, I_C=0$			1	μA
DC Current Gain	h_{FE}	$V_{CE}=10\text{V}, I_C=5\text{mA}$	40*		200*	
Gain-Bandwidth Product	f_T	$V_{CE}=10\text{V}, I_C=10\text{mA}$	0.6	1.2		GHz
Output Capacitance	C_{ob}	$V_{CB}=10\text{V}, f=1\text{MHz}$		0.75	1.1	pF
Reverse Transfer Capacitance	C_{re}	$V_{CB}=10\text{V}, f=1\text{MHz}$		0.5		pF
Power Gain	PG	$V_{CE}=10\text{V}, I_C=10\text{mA}, f=0.4\text{GHz}$		15		dB
Noise Figure	NF	$V_{CE}=10\text{V}, I_C=3\text{mA}, f=0.4\text{GHz}$		2.0		dB

* : The 2SC4269 is classified by 5mA h_{FE} as follows :

40	2	80	60	3	120	100	4	200
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(Note) Marking : JT
 h_{FE} rank : 2, 3, 4

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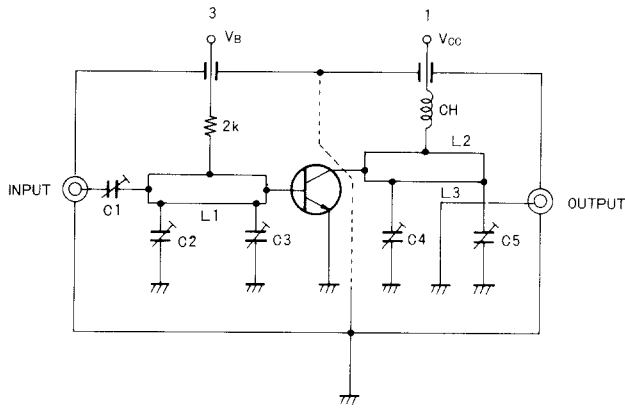
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SANYO Electric Co., Ltd. Semiconductor Business Headquarters

TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

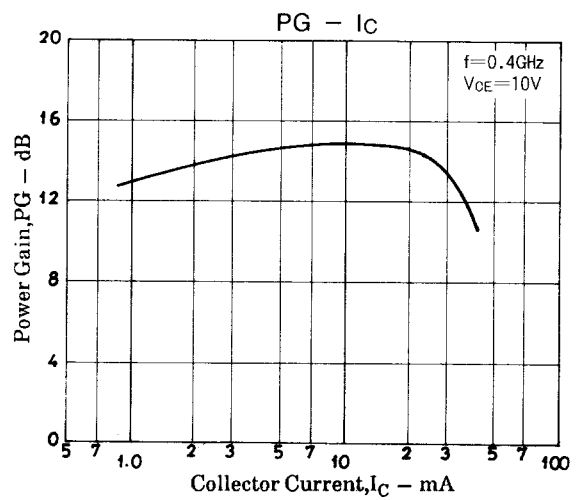
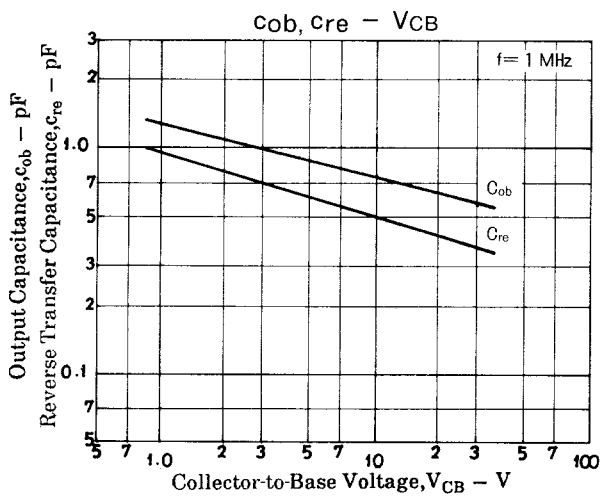
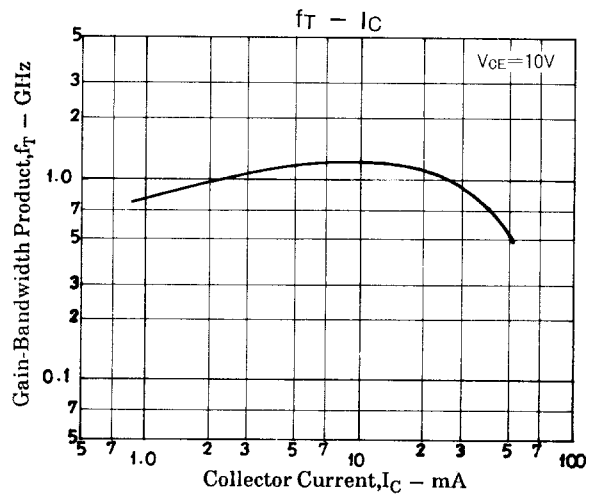
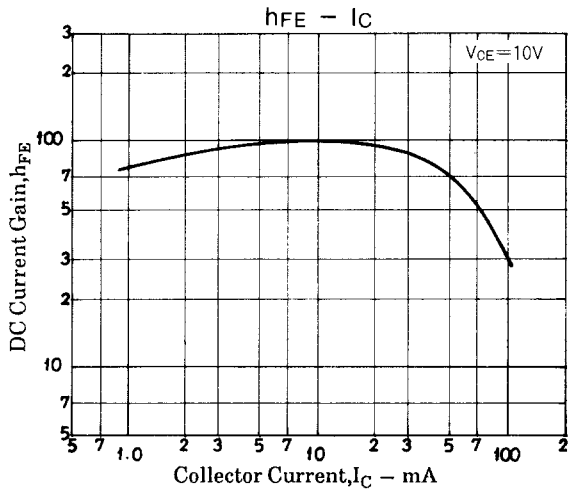
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PG, NF Test Circuit

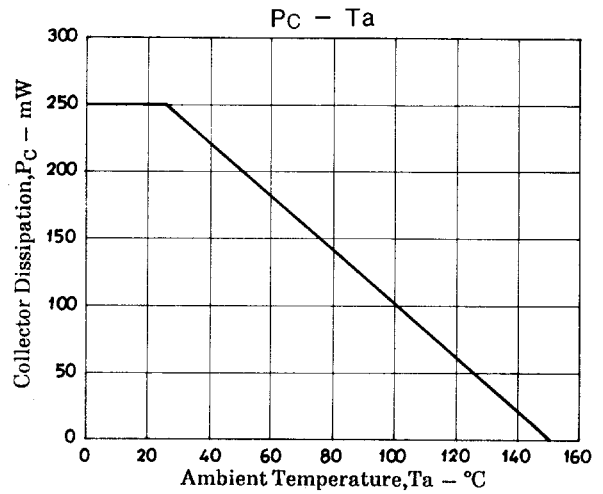
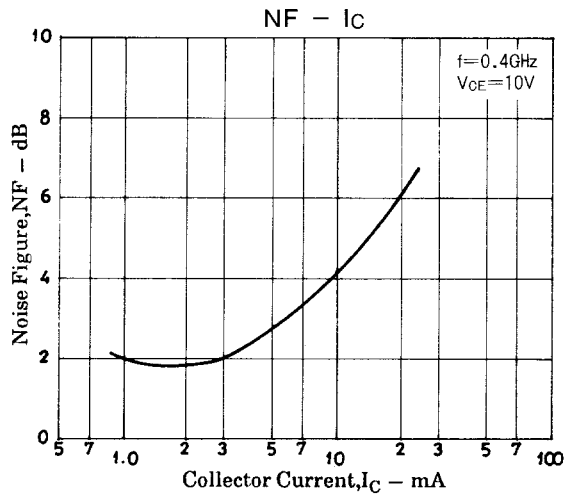


f=400MHz	
C1	~20pF
C2	~10pF
C3	~10pF
C4	~20pF
C5	~30pF
L1	2φ, l=40mm 2/3t
L2	2φ, l=40mm 2/3t
L3	1φ, l=40mm 1/2t

Unit (resistance : Ω)



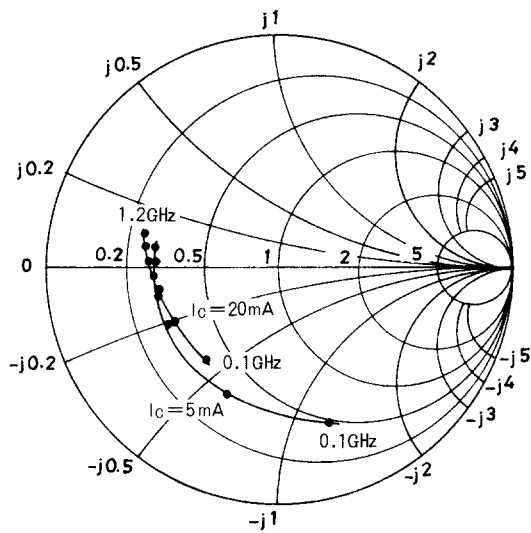
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S parameter

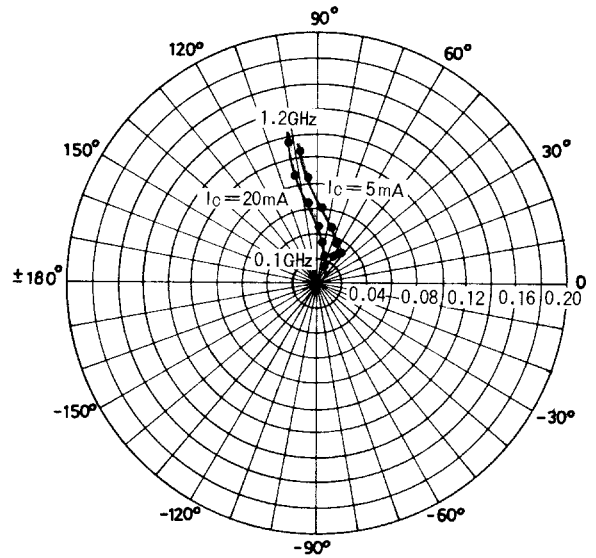
S11e : $V_{CE}=10\text{V}$

$f=100\text{MHz}, 200\text{ to }1200\text{MHz}(200\text{MHz step})$



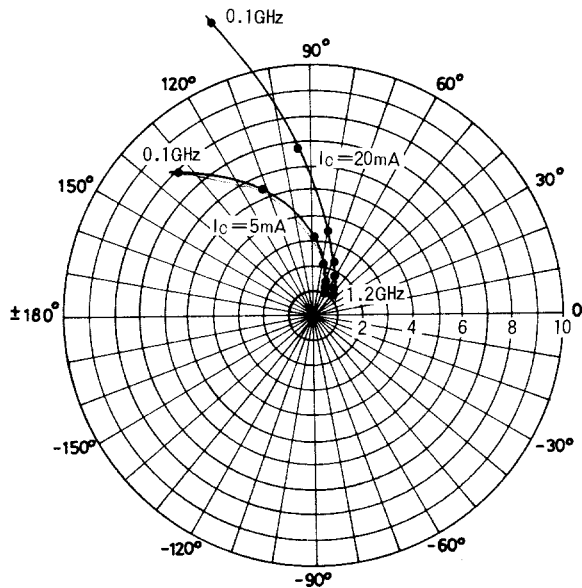
S12e : $V_{CE}=10\text{V}$

$f=100\text{MHz}, 200\text{ to }1200\text{MHz}(200\text{MHz step})$



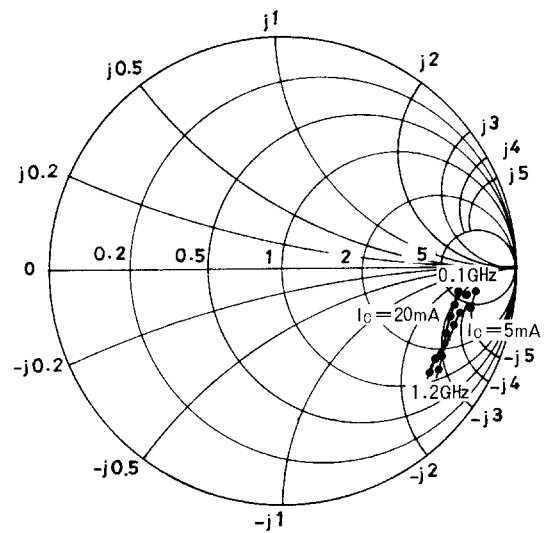
S21e : $V_{CE}=10\text{V}$

$f=100\text{MHz}, 200\text{ to }1200\text{MHz}(200\text{MHz step})$



S22e : $V_{CE}=10\text{V}$

$f=100\text{MHz}, 200\text{ to }1200\text{MHz}(200\text{MHz step})$



S parameter (Common emitter)

$V_{CE}=10V, I_C=5mA, Z_0=50\Omega$

Freq (MHz)	$ S_{11} $	$\angle S_{11}$	$ S_{21} $	$\angle S_{21}$	$ S_{12} $	$\angle S_{12}$	$ S_{22} $	$\angle S_{22}$
100	0.703	-69.5	7.836	133.2	0.022	56.2	0.873	-10.4
200	0.529	-111.8	5.462	111.6	0.029	49.5	0.809	-12.1
400	0.543	-152.3	3.089	89.2	0.036	59.4	0.771	-15.2
600	0.538	-166.4	2.123	78.2	0.046	74.4	0.767	-19.6
800	0.541	-175.3	1.626	69.3	0.061	86.1	0.766	-25.0
1000	0.550	177.0	1.332	63.2	0.082	93.7	0.768	-29.7
1200	0.561	171.4	1.144	57.1	0.107	96.9	0.773	-35.4

$V_{CE}=10V, I_C=20mA, Z_0=50\Omega$

Freq (MHz)	$ S_{11} $	$\angle S_{11}$	$ S_{21} $	$\angle S_{21}$	$ S_{12} $	$\angle S_{12}$	$ S_{22} $	$\angle S_{22}$
100	0.521	-127.8	12.130	109.6	0.014	56.2	0.783	-9.5
200	0.517	-153.4	6.656	94.7	0.020	64.9	0.753	-9.2
400	0.532	-169.8	3.328	79.1	0.032	77.9	0.745	-12.4
600	0.544	-177.2	2.236	69.2	0.047	86.8	0.751	-17.4
800	0.565	176.9	1.655	60.5	0.065	94.8	0.761	-23.1
1000	0.583	172.2	1.334	54.4	0.087	99.7	0.769	-28.1
1200	0.597	167.0	1.129	48.4	0.114	101.2	0.776	-34.0

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