NPN Epitaxial Planar Silicon Transistor

2SC4401



VHF/UHF Mixer, Local Oscillator, Low-Voltage Amplifier Applications

Applications

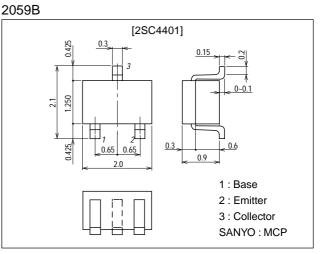
· VHF/UHF MIX/OSC, low-voltage high-frequency amplifiers.

Features

- · Low-voltage operation
 - : $f_T=3.0GHz$ typ (V_{CE}=3V)
 - : MAG=11dB typ (V_{CE} =3V, I_C =3mA)
 - : NF=3.0dB typ (V_{CE}=3V, I_C=3mA)
- Very small-sized package permitting 2SC4401applied sets to be made smaller and slimmer.

Package Dimensions

unit:mm



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	VEBO		3	V
Collector Current	ι _C		30	mA
Collector Dissipation	PC		150	mW
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		-55 to +150	°C

Electrical Characteristics at Ta = 25°C

Symbol	Conditions	Ratings			Unit
		min	typ	max	
ICBO	V _{CB} =15V, I _E =0			1.0	μΑ
IEBO	V _{EB} =2V, I _C =0			1.0	μΑ
hFE	V _{CE} =3V, I _C =3mA	40*		200*	
fT	V _{CE} =3V, I _C =3mA		3.0		GHz
Cob	V _{CB} =3V, f=1MHz		0.7	1.3	pF
C _{re}	V _{CB} =3V, f=1MHz		0.65		pF
	ICBO IEBO hFE fT Cob	ICBO VCB=15V, IE=0 IEBO VEB=2V, IC=0 hFE VCE=3V, IC=3mA fT VCE=3V, IC=3mA Cob VCB=3V, f=1MHz	ICBO VCB=15V, IE=0 min ICBO VCB=2V, IC=0 ICE hFE VCE=3V, IC=3mA 40* fT VCE=3V, IC=3mA 40* Cob VCB=3V, f=1MHz ICE	Symbol Conditions min typ ICBO VCB=15V, IE=0 <td>Symbol Conditions min typ max ICBO VCB=15V, IE=0 1.0 1.0 IEBO VEB=2V, IC=0 1.0 1.0 hFE VCE=3V, IC=3mA 40* 200* fT VCE=3V, IC=3mA 3.0 0.7 Cob VCB=3V, f=1MHz 0.7 1.3</td>	Symbol Conditions min typ max ICBO VCB=15V, IE=0 1.0 1.0 IEBO VEB=2V, IC=0 1.0 1.0 hFE VCE=3V, IC=3mA 40* 200* fT VCE=3V, IC=3mA 3.0 0.7 Cob VCB=3V, f=1MHz 0.7 1.3

60

3 120

100

200

 \ast : The 2SC4401 is classified by 3mA h_{FE} as follows : $\fbox{40}$ 2 80

(Note) Marking : OT

h_{FE} rank : 2, 3, 4

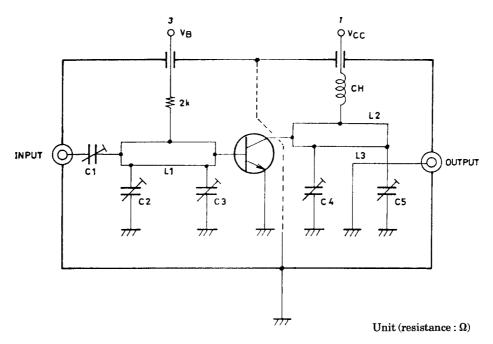
• For CP package version, use the 2SC4364.

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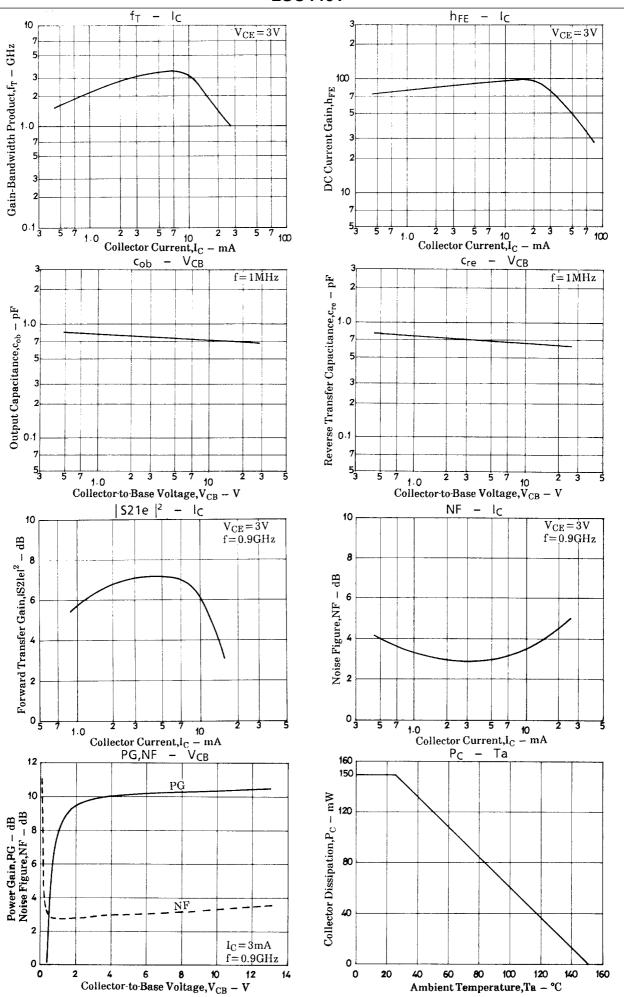
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	Onit
Forward Transfer Gain	S21e ²	V _{CE} =3V, I _C =3mA, f=0.9GHz		7		dB
Maximum Available Power Gain	MAG	V _{CE} =3V, I _C =3mA, f=0.9GHz		11		dB
Noise Figure	NF	V _{CE} =3V, I _C =3mA, f=0.9GHz See specified Test Circuit.		3.0	5.0	dB

NF Test Circuit

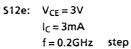


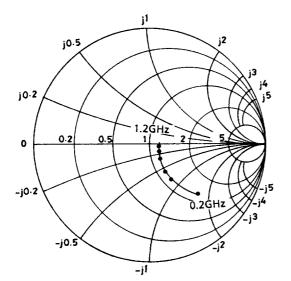
	900MHz		
C1	~5pF		
C2	~10pF		
C3	~10pF		
C4	~10pF		
C5	~10pF		
L1	W ≈ 1.5mm, I ≈ 25mm		
	Strip line		
L2	W ≈ 4mm, I ≈ 25mm		
	Strip line		
L3	0.5¢, I ≈ 40mm		
СН	2t+bead core		

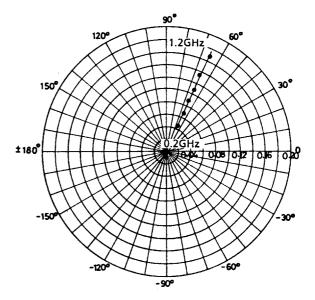


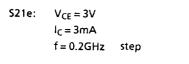


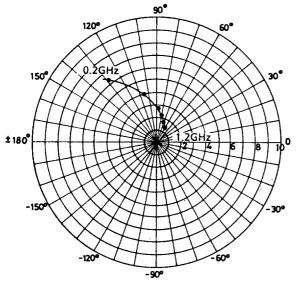
f=0.2GHz step



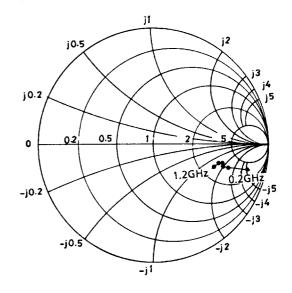








S22e: $V_{CE} = 3V$ $I_C = 3mA$ f = 0.2GHz step



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