

isc Silicon NPN RF Transistor

BFR520

DESCRIPTION

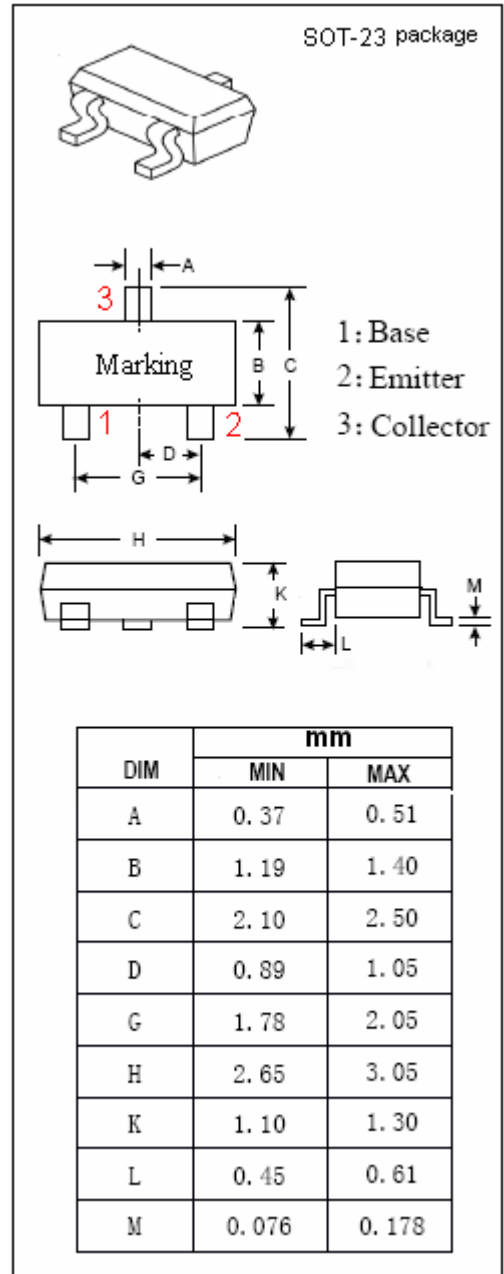
- High Power Gain
- High Current Gain Bandwidth Product
- Low Noise Figure

APPLICATIONS

- Designed for RF frontend in wideband applications in the GHz range, such as analog and digital cellular telephones, cordless.

ABSOLUTE MAXIMUM RATINGS(T_a=25°C)

SYMBOL	PARAMETER	VALUE	UNIT
V _{CBO}	Collector-Base Voltage	20	V
V _{CES}	Collector-Emitter Voltage	15	V
V _{EBO}	Emitter-Base Voltage	2.5	V
I _C	Collector Current-Continuous	70	mA
P _C	Collector Power Dissipation @T _C =25°C	0.3	W
T _J	Junction Temperature	175	°C
T _{stg}	Storage Temperature Range	-65~150	°C



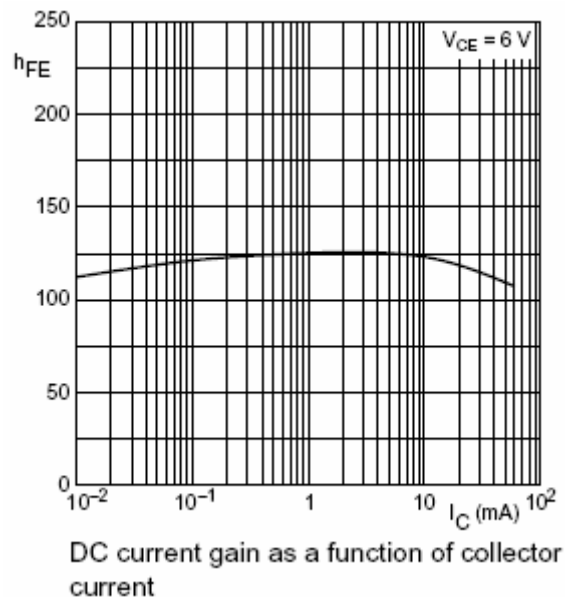
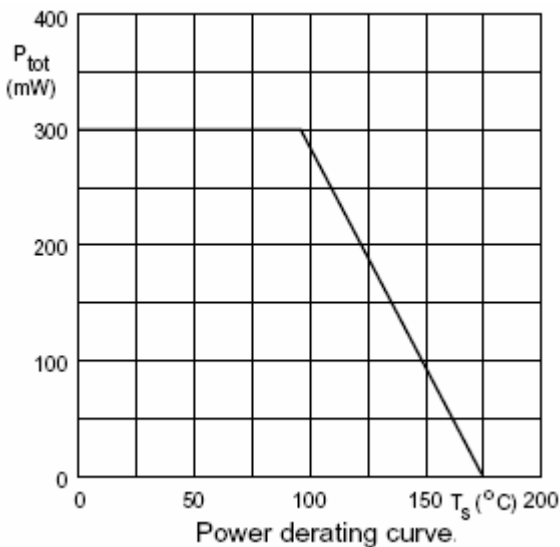
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ELECTRICAL CHARACTERISTICS

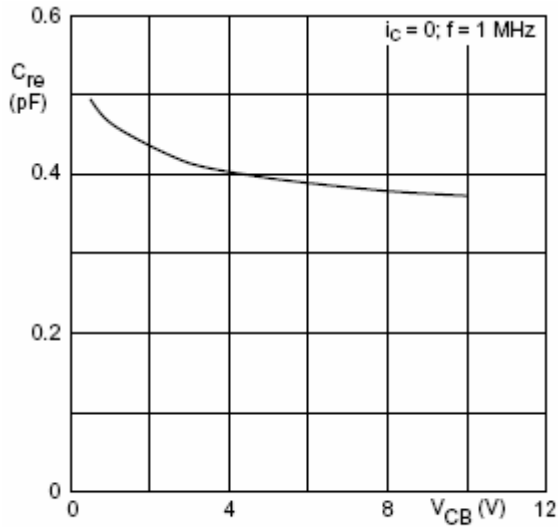
T_C=25°C unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
I _{CB0}	Collector Cutoff Current	V _{CB} = 6V; I _E = 0			0.05	μ A
h _{FE}	DC Current Gain	I _C = 20mA ; V _{CE} = 6V	60		250	
f _T	Current-Gain—Bandwidth Product	I _C = 20mA ; V _{CE} = 6V; f= 1GHz		9		GHz
C _{OB}	Output Capacitance	I _E = 0 ; V _{CB} = 6V; f= 1MHz		0.5		pF
PG	Power Gain	I _C = 20mA ; V _{CE} = 6V; f= 900MHz		15		dB
PG	Power Gain	I _C = 20mA ; V _{CE} = 6V; f= 2GHz		9		dB
S _{21e} ²	Insertion Power Gain	I _C = 20mA ; V _{CE} = 6V; f= 900MHz	13	14		dB
NF	Noise Figure	I _C = 5mA ; V _{CE} = 6V; f= 900MHz		1.1	1.6	dB
NF	Noise Figure	I _C = 20mA ; V _{CE} = 6V; f= 900MHz		1.6	2.1	dB

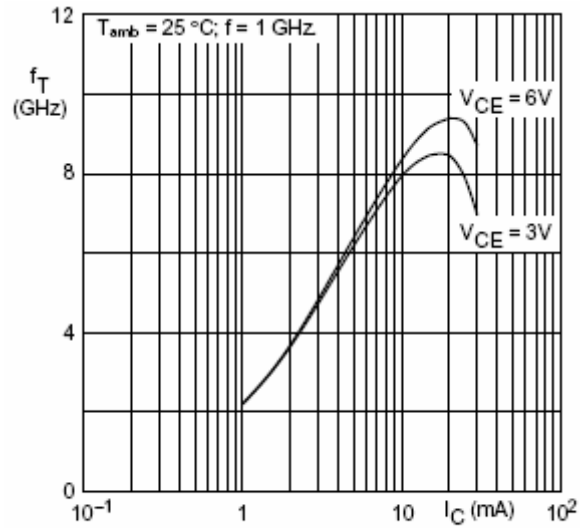


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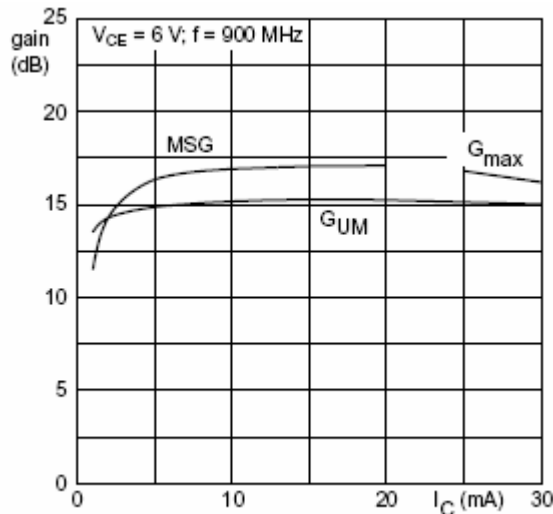
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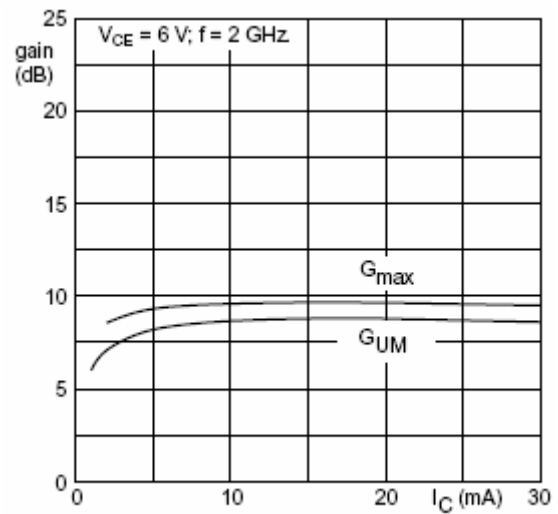
Feedback capacitance as a function of collector-base voltage



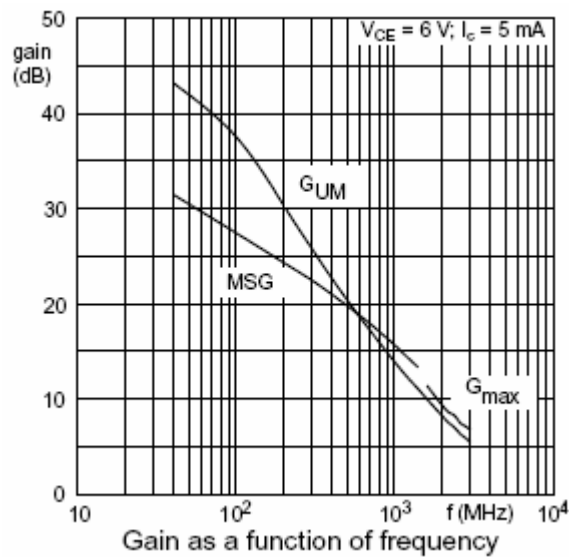
Transition frequency as a function of collector current



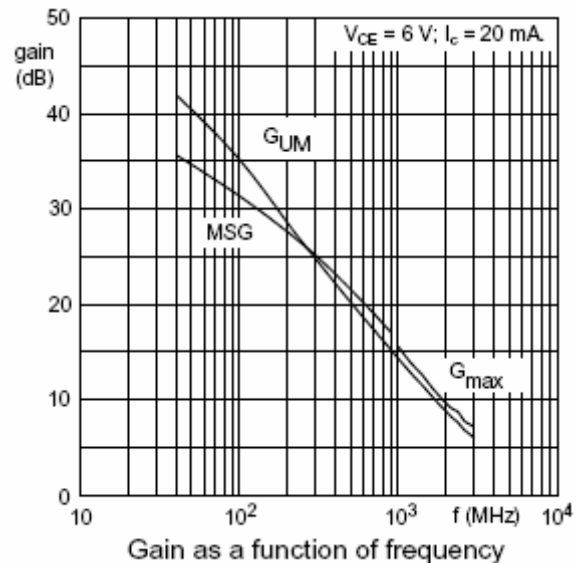
Gain as a function of collector current



Gain as a function of collector current



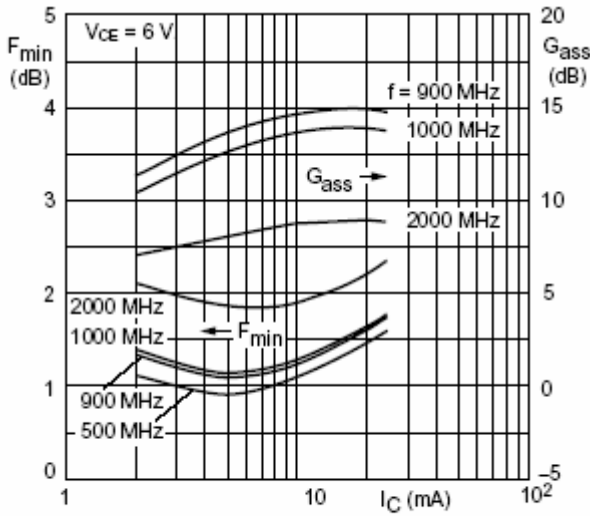
Gain as a function of frequency



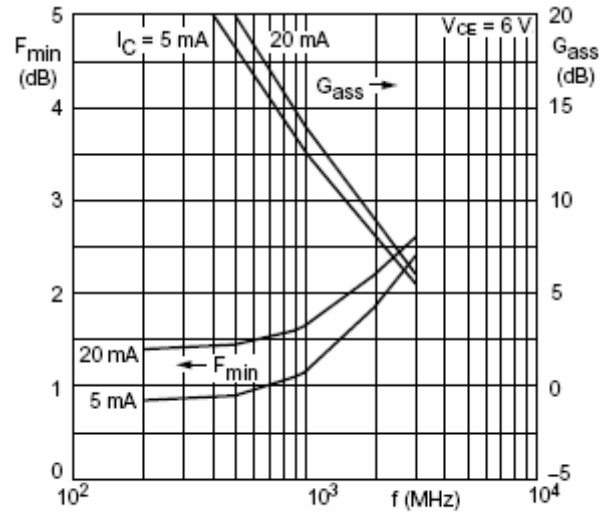
Gain as a function of frequency

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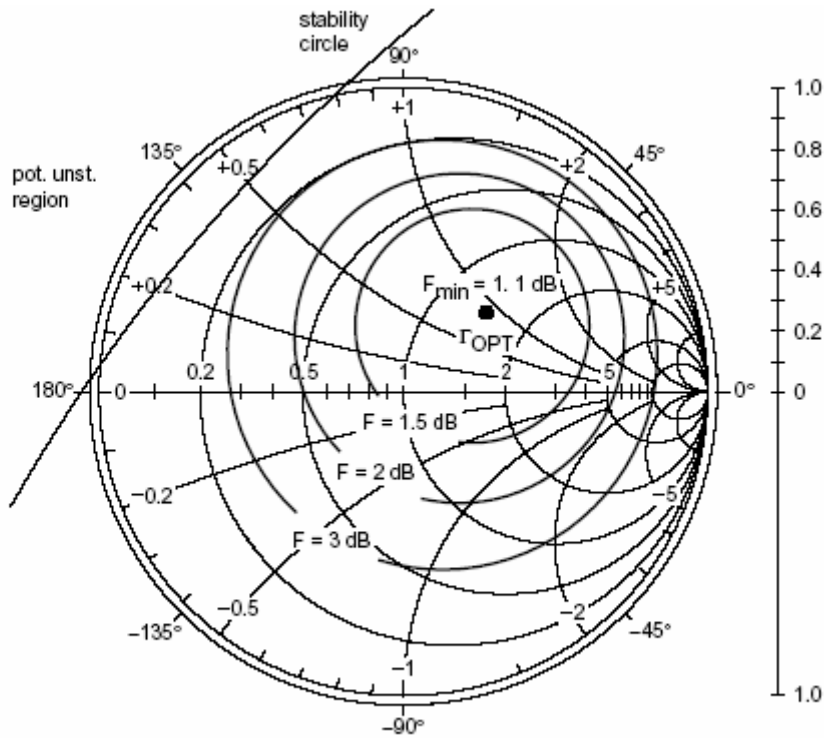
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Minimum noise figure and associated available gain as functions of collector current



Minimum noise figure and associated available gain as functions of frequency

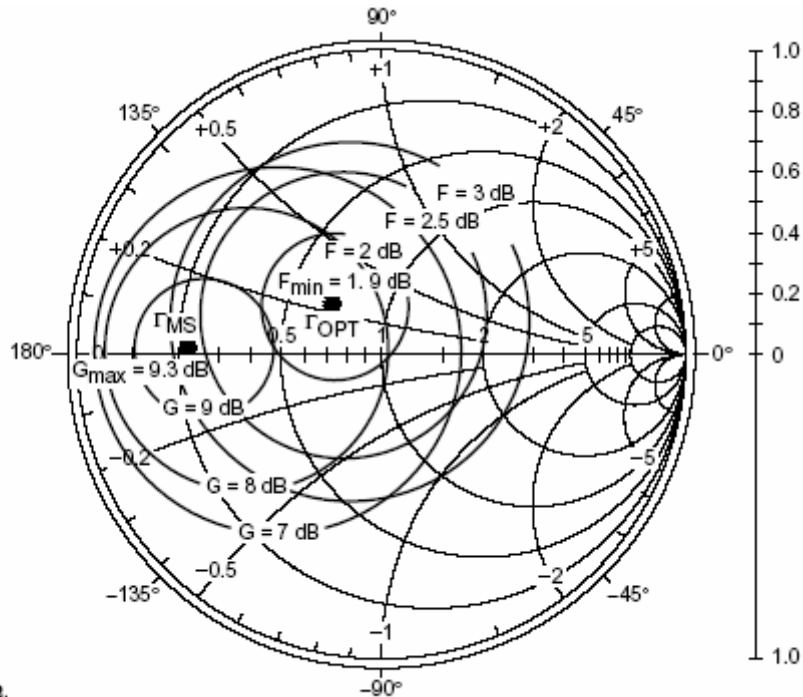


$Z_0 = 50 \Omega$.
 $V_{CE} = 6 V$; $I_C = 5 mA$; $f = 900 MHz$.

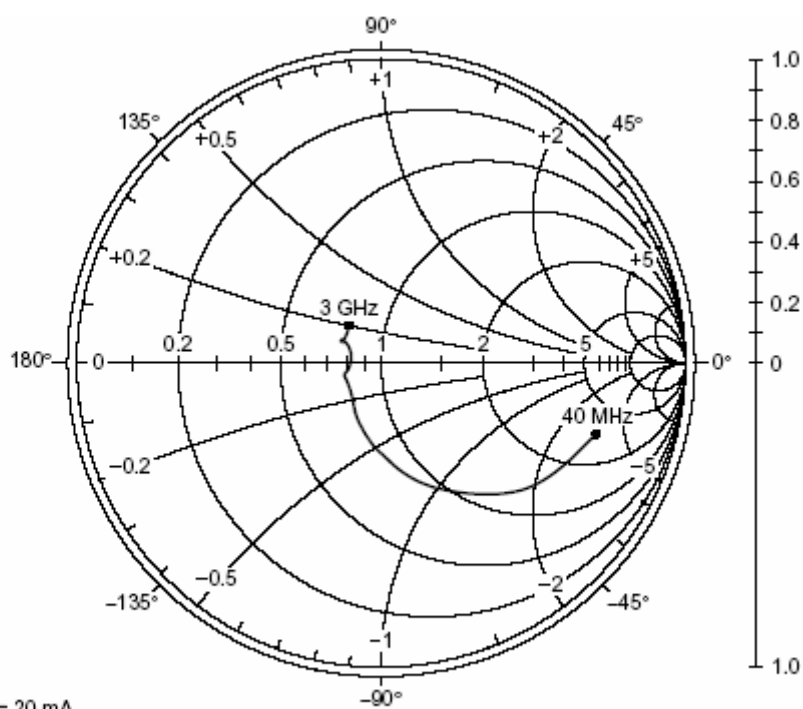
Noise circle figure.

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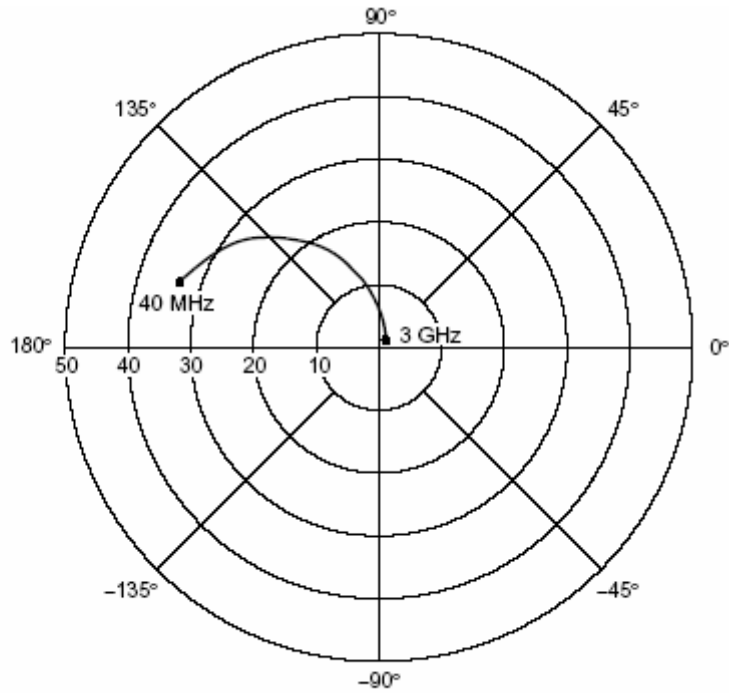
$Z_o = 50 \Omega$.
 $V_{CE} = 6 V$; $I_C = 5 mA$; $f = 2000 MHz$ Noise circle figure.



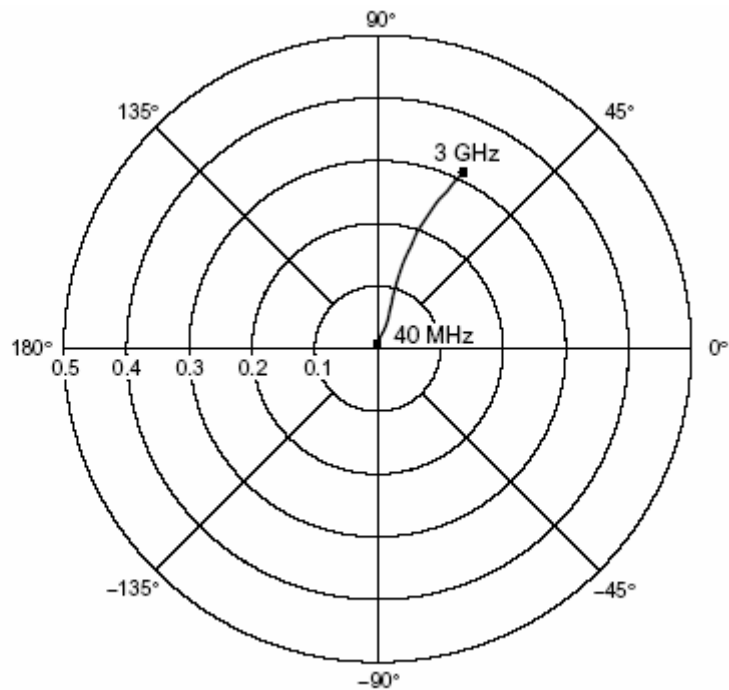
$V_{CE} = 6 V$; $I_C = 20 mA$
 $Z_o = 50 \Omega$. Common emitter input reflection coefficient (S_{11})

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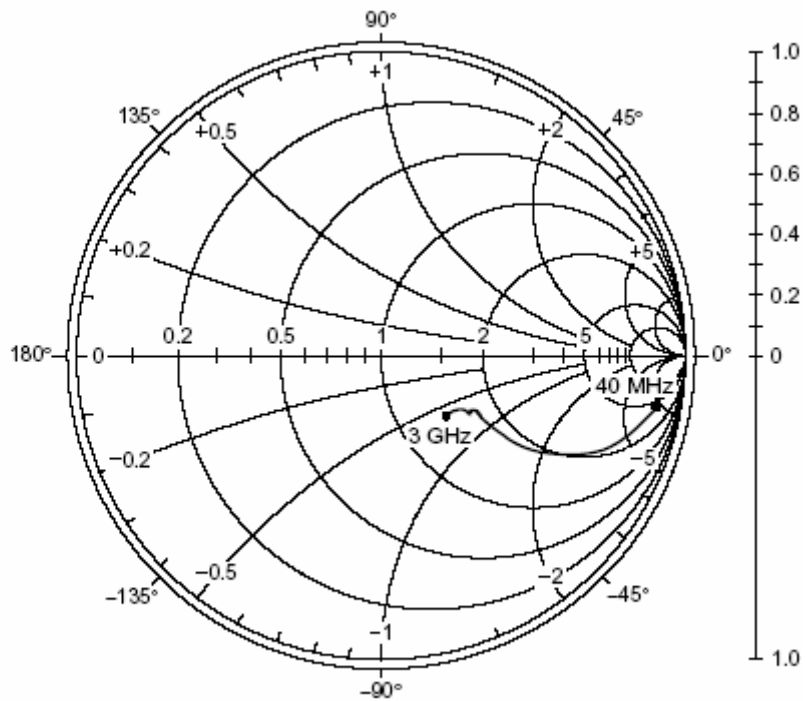
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V_{CE} = 6 V; I_C = 20 mA Common emitter forward transmission coefficient (S₂₁)



V_{CE} = 6 V; I_C = 20 mA Common emitter reverse transmission coefficient (S₁₂)



$V_{CE} = 6\text{ V}$; $I_C = 20\text{ mA}$ Common emitter output reflection coefficient (S_{22})
 $Z_o = 50\ \Omega$.