

isc Silicon NPN RF Transistor

BFR93AW

DESCRIPTION

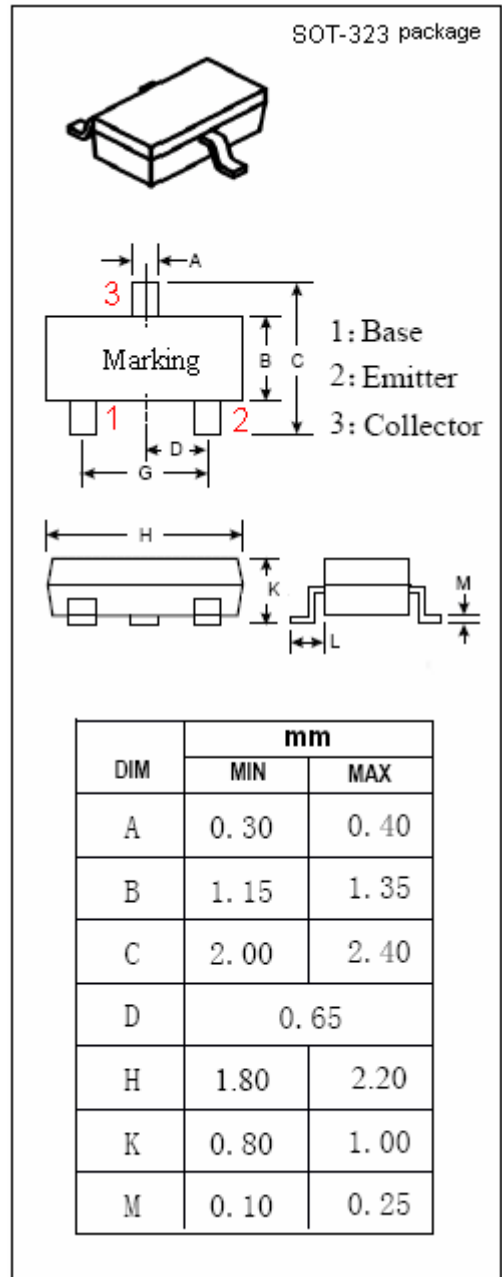
- High Power Gain
- High Current Gain Bandwidth Product
- Low Noise Figure

APPLICATIONS

- Designed for use in RF amplifiers ,mixers and oscillators with signal frequencies up to 1 GHz.

ABSOLUTE MAXIMUM RATINGS(T<sub>a</sub>=25°C)

SYMBOL	PARAMETER	VALUE	UNIT
V <sub>CBO</sub>	Collector-Base Voltage	15	V
V <sub>CEO</sub>	Collector-Emitter Voltage	12	V
V <sub>EBO</sub>	Emitter-Base Voltage	2	V
I <sub>C</sub>	Collector Current-Continuous	35	mA
P <sub>C</sub>	Collector Power Dissipation @T <sub>C</sub> =25°C	0.3	W
T <sub>J</sub>	Junction Temperature	175	°C
T <sub>stg</sub>	Storage Temperature Range	-65~150	°C



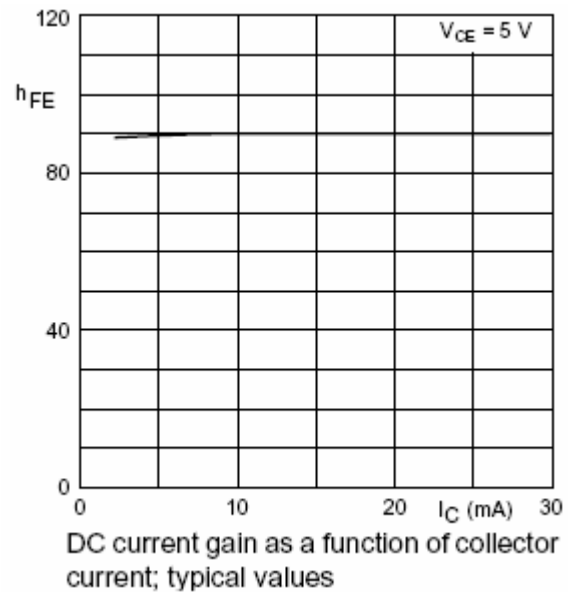
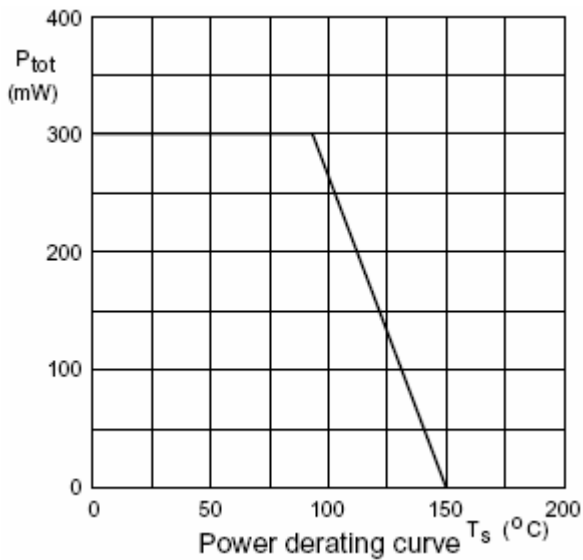
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ELECTRICAL CHARACTERISTICS

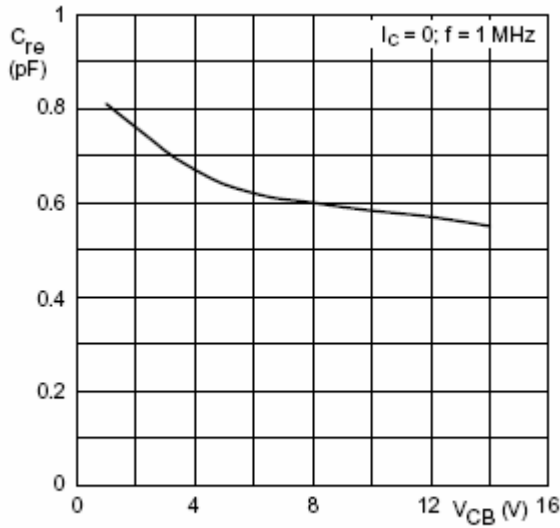
T<sub>C</sub>=25°C unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
I <sub>CBO</sub>	Collector Cutoff Current	V <sub>CB</sub> = 5V; I <sub>E</sub> = 0			0.05	μ A
h <sub>FE</sub>	DC Current Gain	I <sub>C</sub> = 30mA ; V <sub>CE</sub> = 5V	40			
f <sub>T</sub>	Current-Gain—Bandwidth Product	I <sub>C</sub> = 30mA ; V <sub>CE</sub> = 5V; f= 500MHz	4	5		GHz
C <sub>OB</sub>	Output Capacitance	I <sub>E</sub> = 0 ; V <sub>CB</sub> = 5V; f= 1MHz		0.7		pF
C <sub>re</sub>	Feedback Frequency	I <sub>E</sub> = 0 ; V <sub>CB</sub> = 5V; f= 1MHz		0.6		pF
NF	Noise Figure	I <sub>C</sub> = 5mA ; V <sub>CE</sub> = 8V; f= 1GHz		1.5		dB
NF	Noise Figure	I <sub>C</sub> = 5mA ; V <sub>CE</sub> = 8V; f= 2GHz		2.1		dB

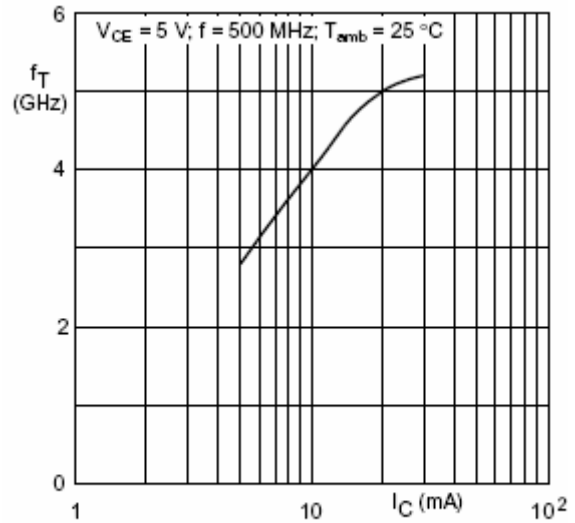


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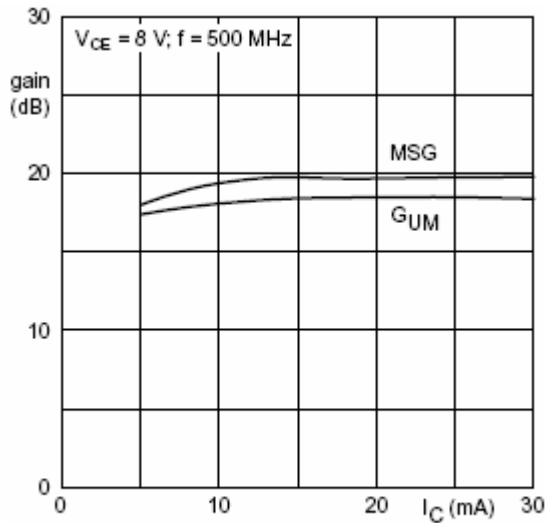
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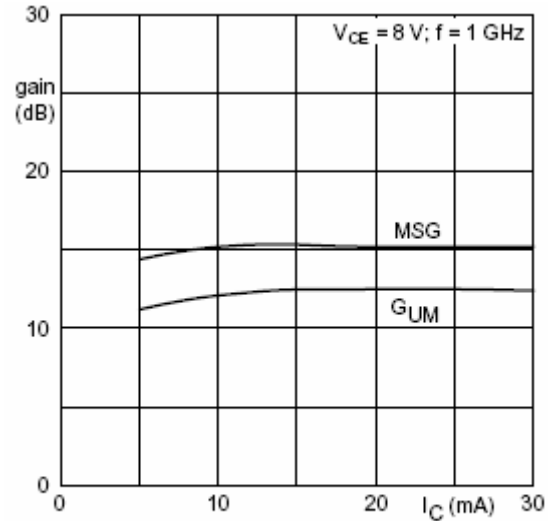
Feedback capacitance as a function of collector-base voltage; typical values



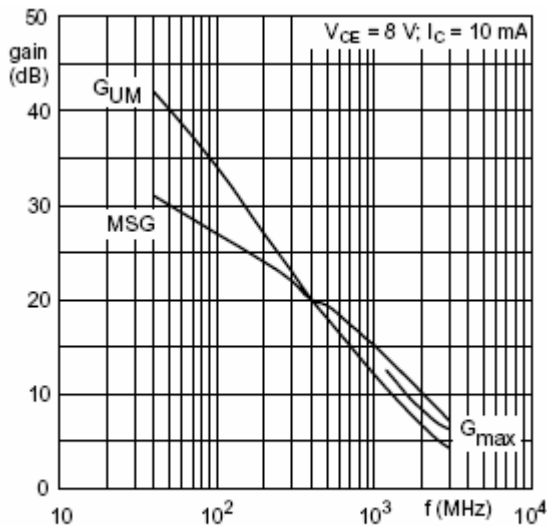
Transition frequency as a function of collector current; typical values



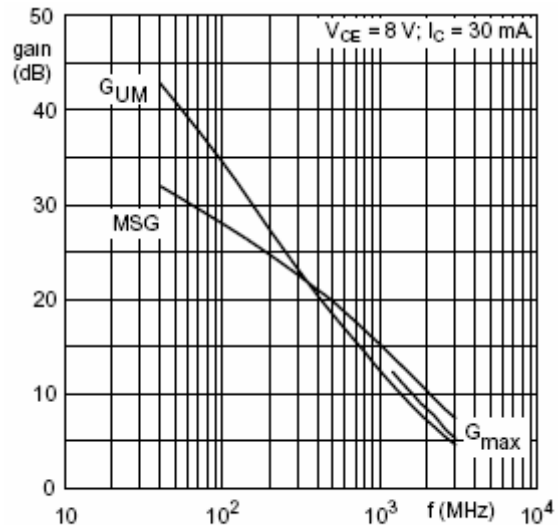
Gain as a function of collector current; typical values



Gain as a function of collector current; typical values



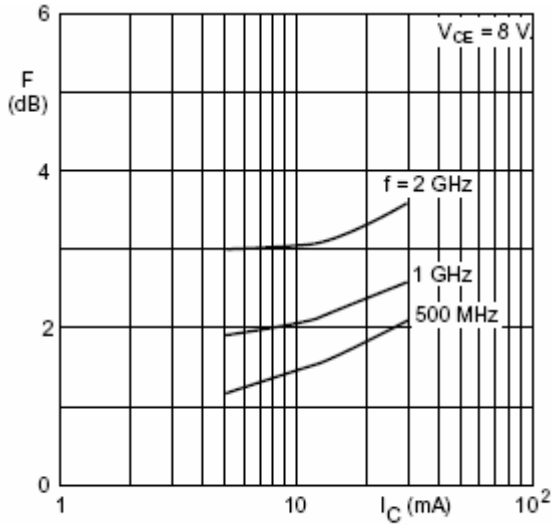
Gain as a function of frequency; typical values



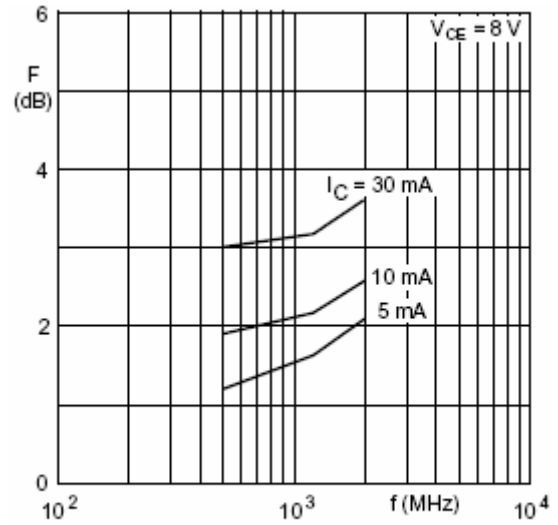
Gain as a function of frequency; typical values

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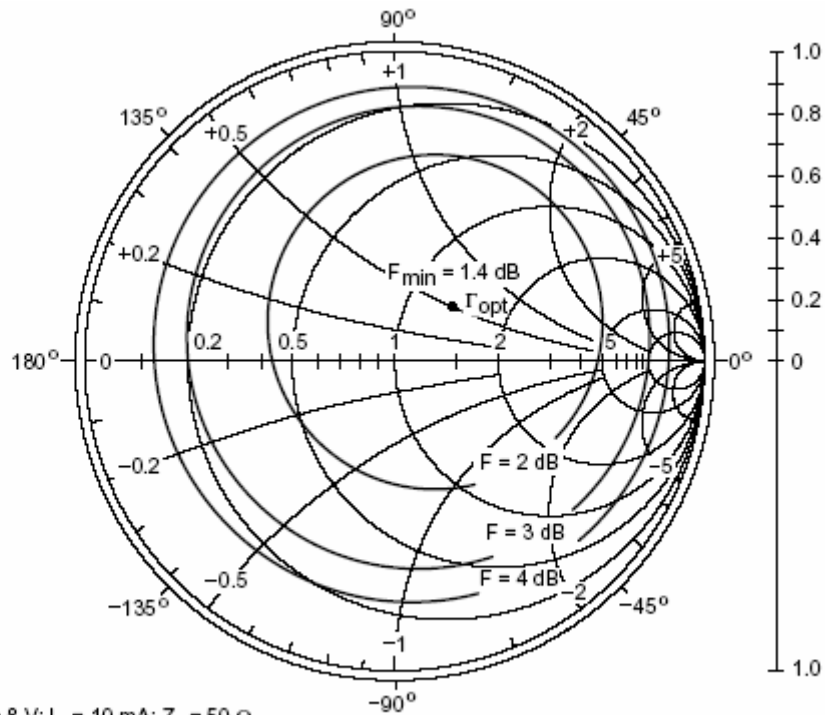
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Minimum noise figure as a function of collector current; typical values



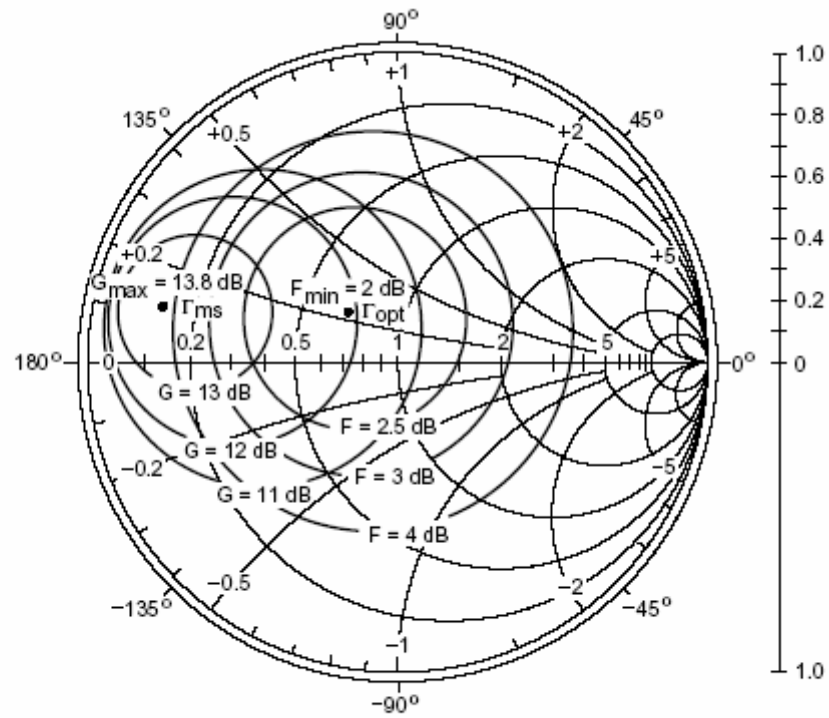
Minimum noise figure as a function of collector current; typical values



Common emitter noise figure circles; typical values.

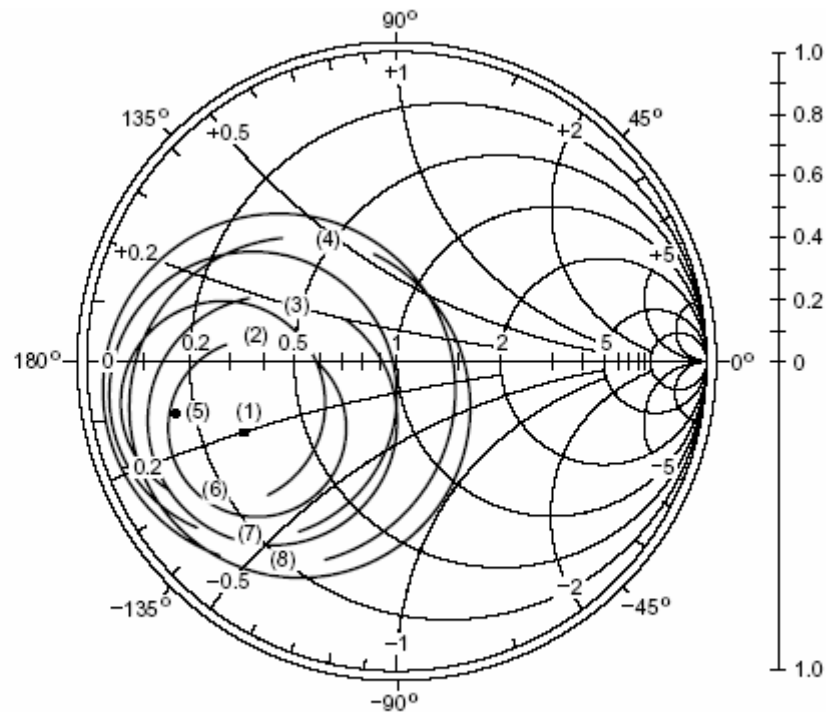
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$f = 1 \text{ GHz}$ ,  $V_{CE} = 8 \text{ V}$ ,  $I_C = 10 \text{ mA}$ ,  $Z_0 = 50 \Omega$

Common emitter noise figure circles; typical values

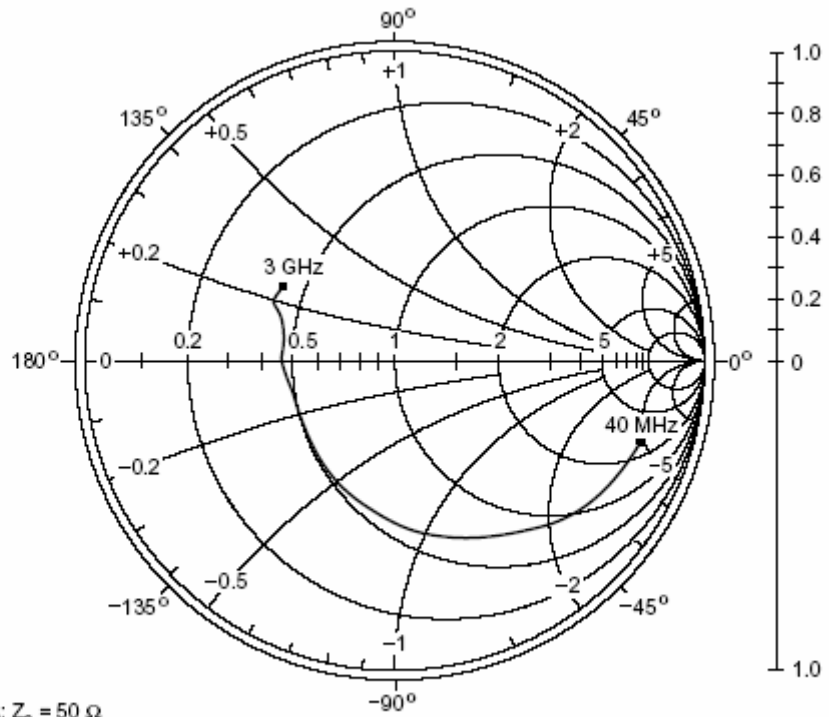


$f = 2 \text{ GHz}$ ,  $V_{CE} = 8 \text{ V}$ ,  $I_C = 10 \text{ mA}$ ,  $Z_0 = 50 \Omega$

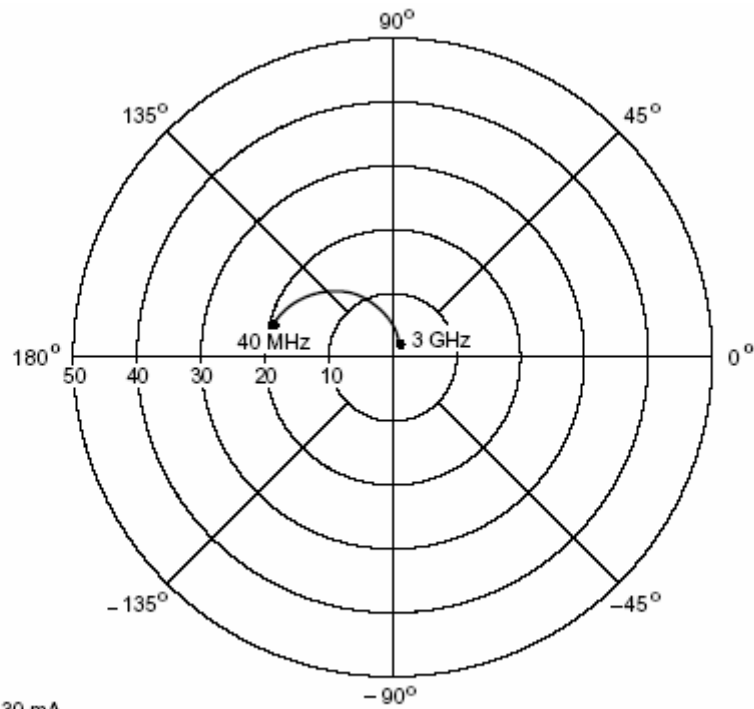
Common emitter noise figure circles; typical values.

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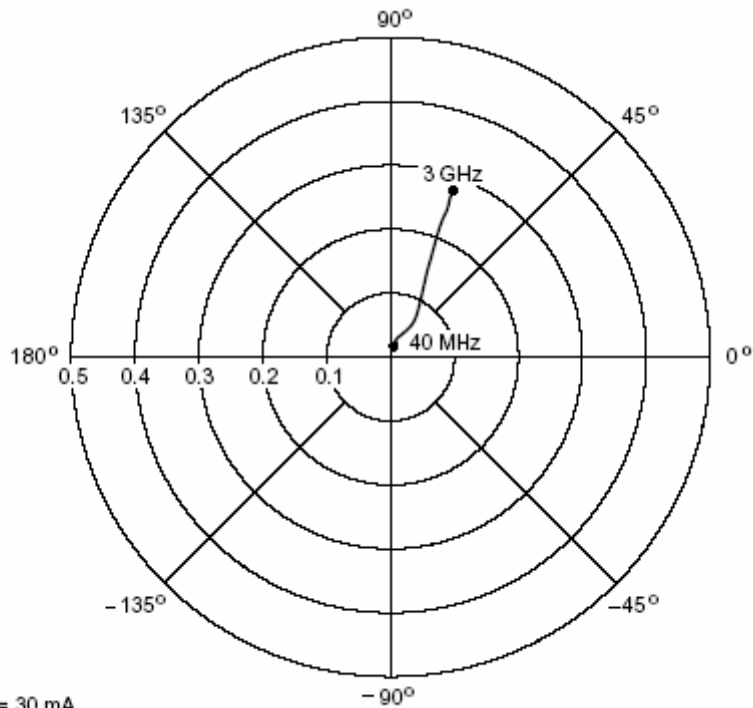
Common emitter input reflection coefficient ( $s_{11}$ ); typical values



Common emitter forward transmission coefficient ( $s_{21}$ ); typical values

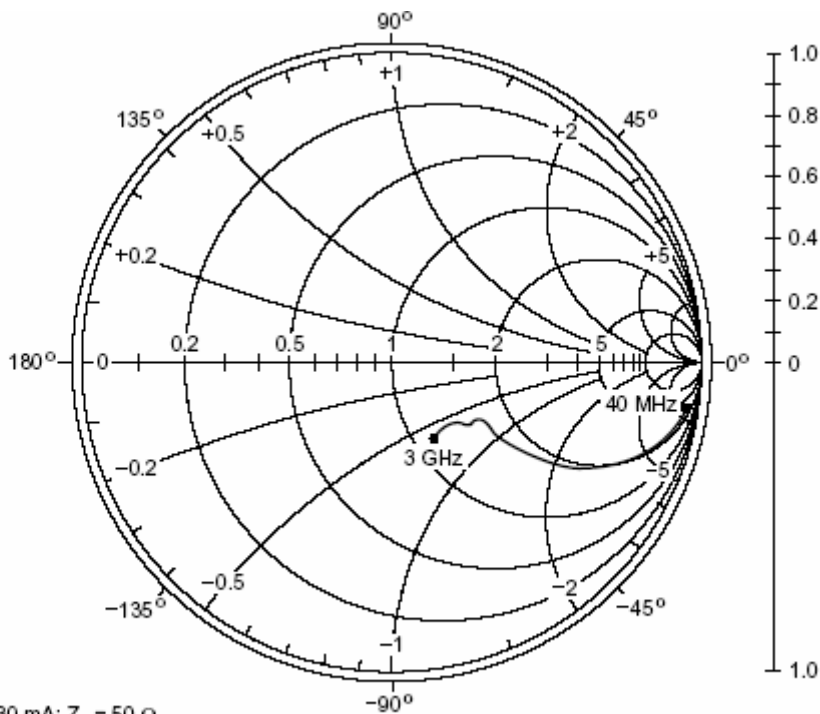
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$V_{CE} = 8\text{ V}; I_C = 30\text{ mA}$

Common emitter reverse transmission coefficient ( $s_{12}$ ); typical values



$V_{CE} = 8\text{ V}; I_C = 30\text{ mA}; Z_o = 50\ \Omega$

Common emitter output reflection coefficient ( $s_{22}$ ); typical values.