

isc Silicon NPN RF Transistor

BFR93A

DESCRIPTION

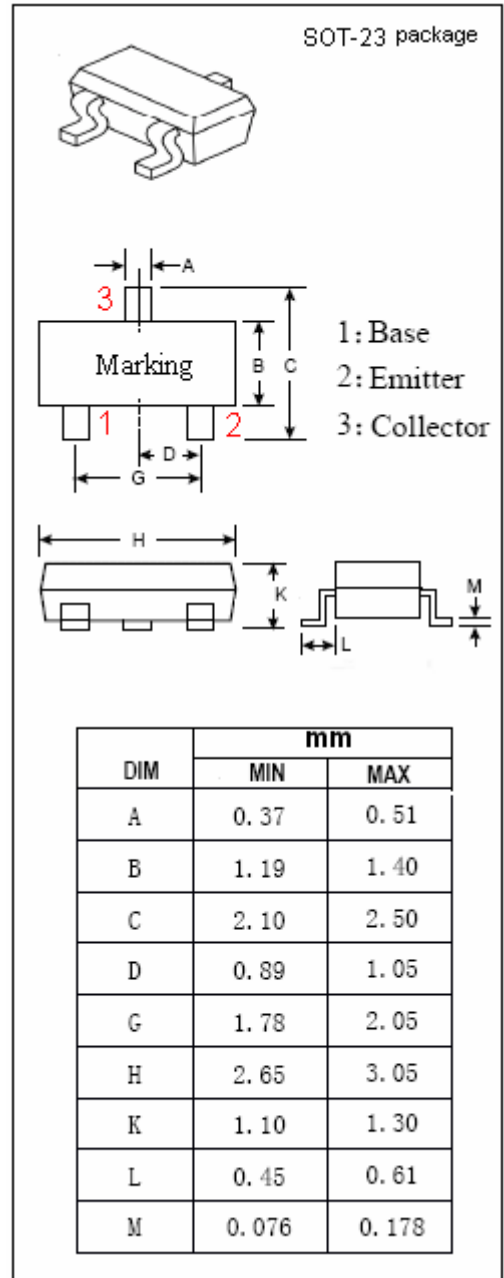
- High Power Gain
- High Current Gain Bandwidth Product
- Low Noise Figure

APPLICATIONS

- Designed for use in RF wideband amplifiers and oscillators.

ABSOLUTE MAXIMUM RATINGS($T_a=25^\circ\text{C}$)

SYMBOL	PARAMETER	VALUE	UNIT
V_{CBO}	Collector-Base Voltage	15	V
V_{CEO}	Collector-Emitter Voltage	12	V
V_{EBO}	Emitter-Base Voltage	2	V
I_C	Collector Current-Continuous	35	mA
P_C	Collector Power Dissipation @ $T_C=25^\circ\text{C}$	0.3	W
T_J	Junction Temperature	175	$^\circ\text{C}$
T_{stg}	Storage Temperature Range	-65~150	$^\circ\text{C}$



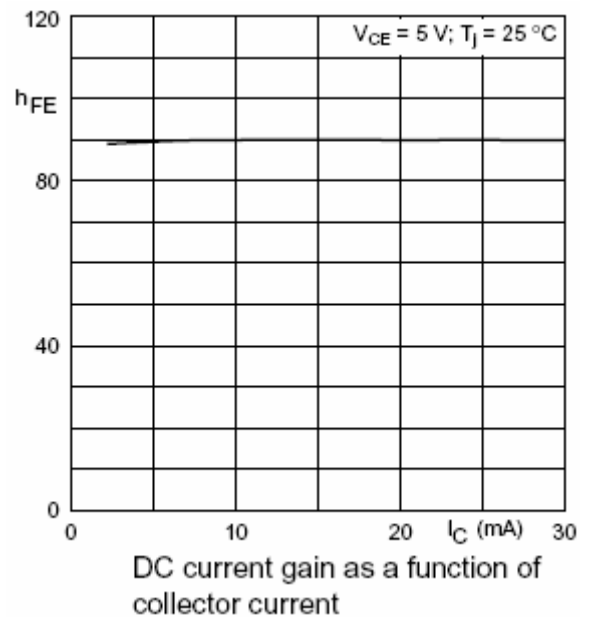
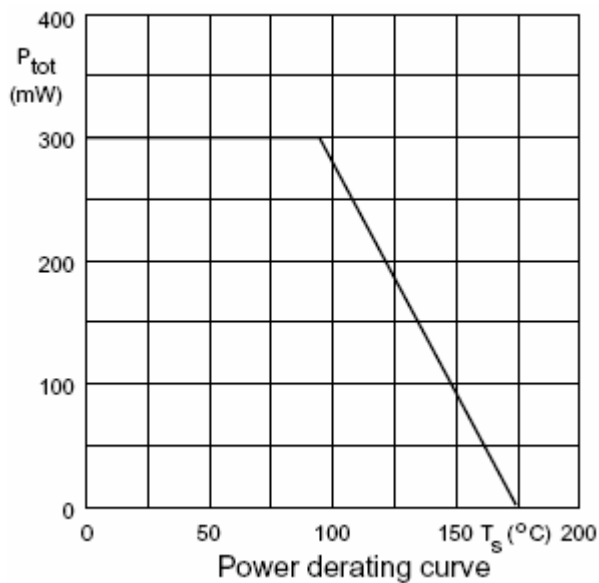
isc Silicon NPN RF Transistor

BFR93A

ELECTRICAL CHARACTERISTICS

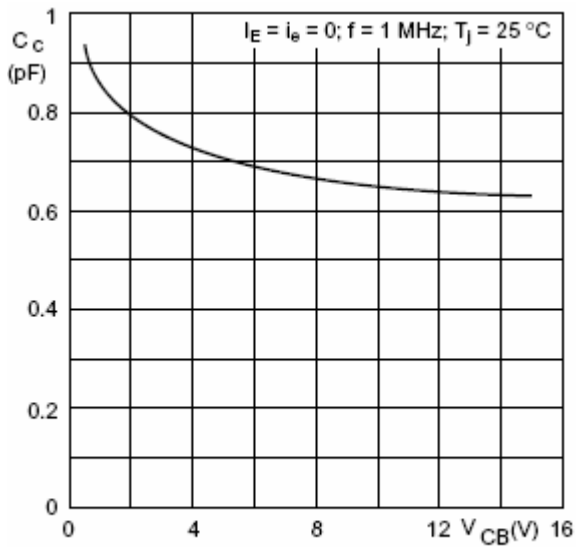
T_C=25°C unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
I _{CBO}	Collector Cutoff Current	V _{CB} = 5V; I _E = 0			0.05	μ A
h _{FE}	DC Current Gain	I _C = 30mA ; V _{CE} = 5V	40			
f _T	Current-Gain—Bandwidth Product	I _C = 30mA ; V _{CE} = 5V; f= 500MHz	4.5	6		GHz
C _{OB}	Output Capacitance	I _E = 0 ; V _{CB} = 5V; f= 1MHz		0.7		pF
C _{re}	Feedback Frequency	I _E = 0 ; V _{CB} = 5V; f= 1MHz		0.6		pF
NF	Noise Figure	I _C = 5mA ; V _{CE} = 8V; f= 1GHz		1.9		dB
NF	Noise Figure	I _C = 5mA ; V _{CE} = 8V; f= 2GHz		3		dB

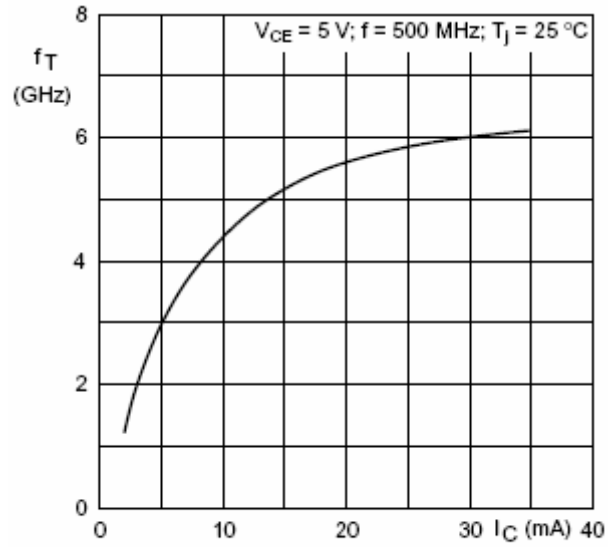


isc Silicon NPN RF Transistor

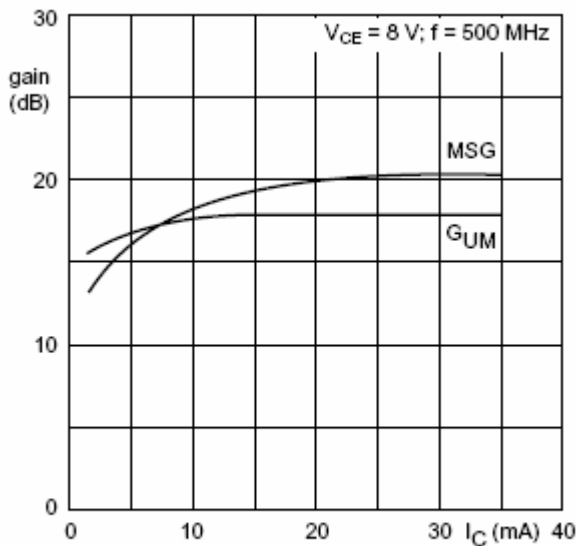
BFR93A



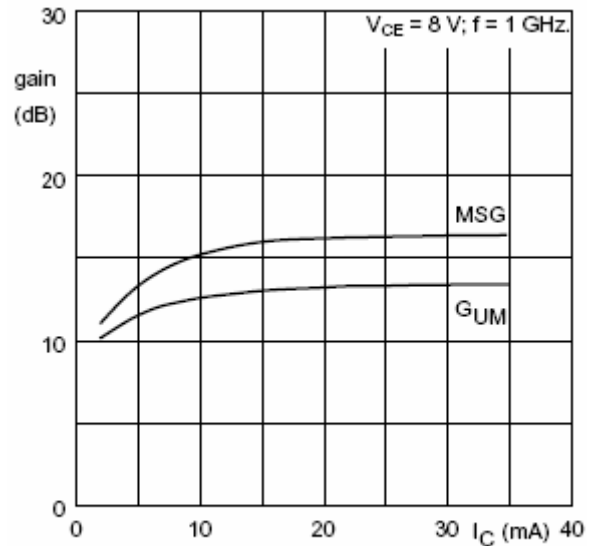
Collector capacitance as a function of collector-base voltage; typical values



Transition frequency as a function of collector current; typical values



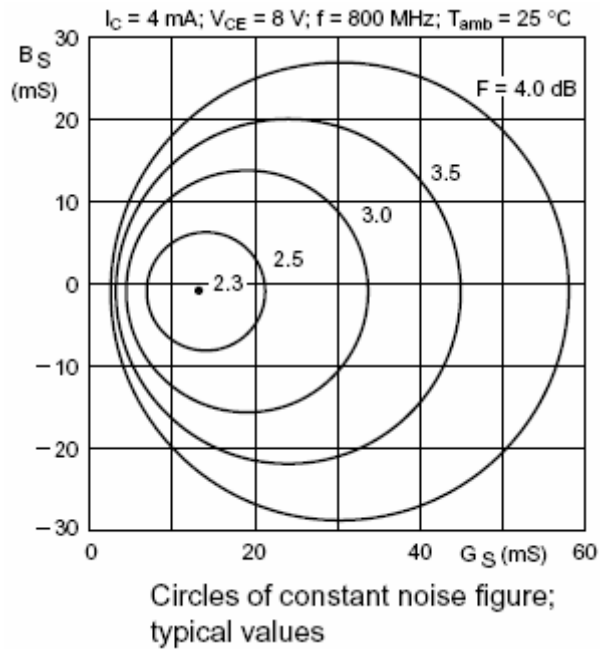
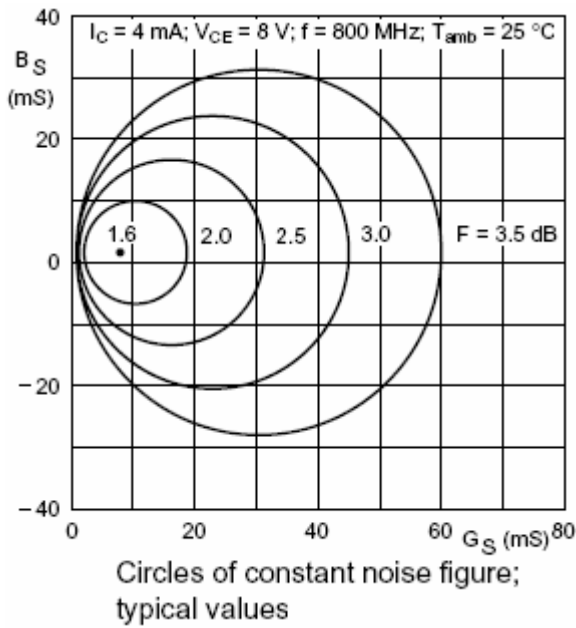
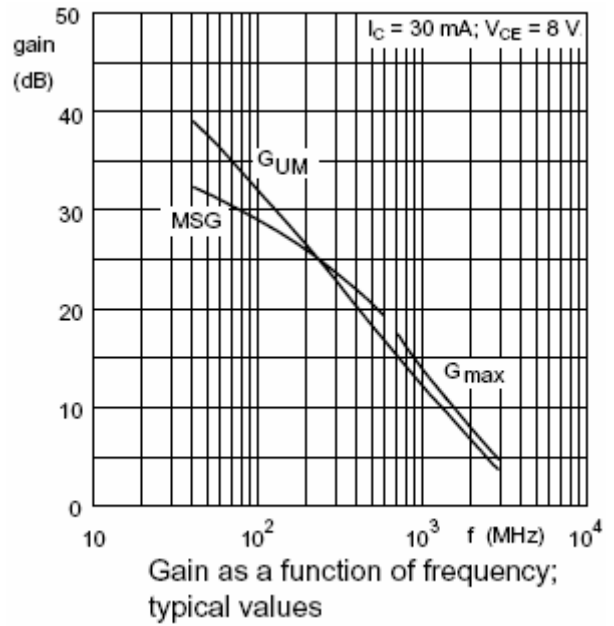
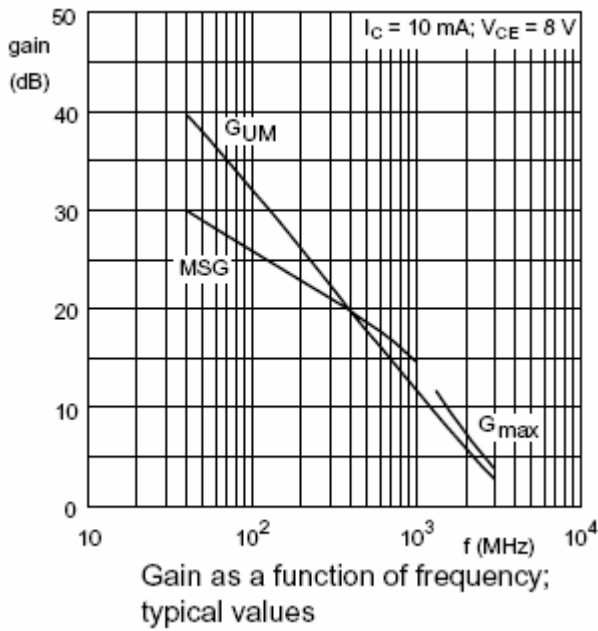
Gain as a function of collector current; typical values



Gain as a function of collector current; typical values

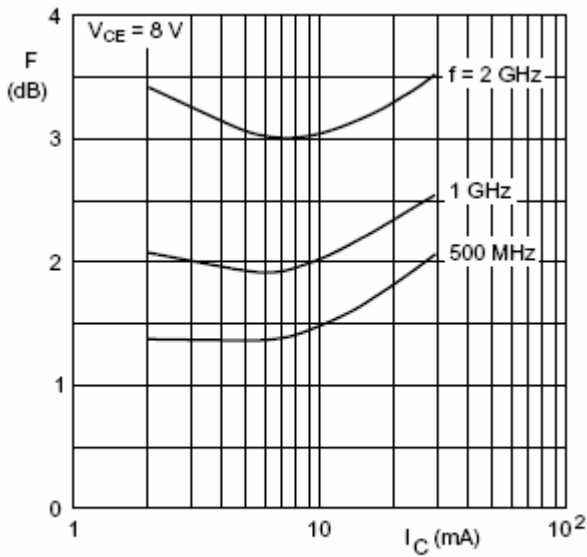
isc Silicon NPN RF Transistor

BFR93A

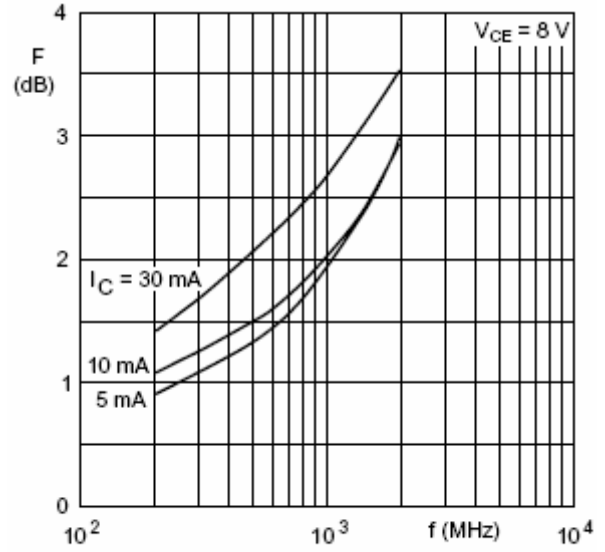


isc Silicon NPN RF Transistor

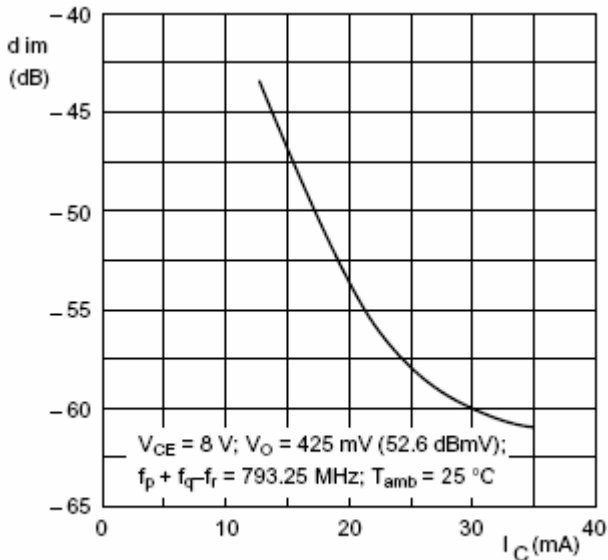
BFR93A



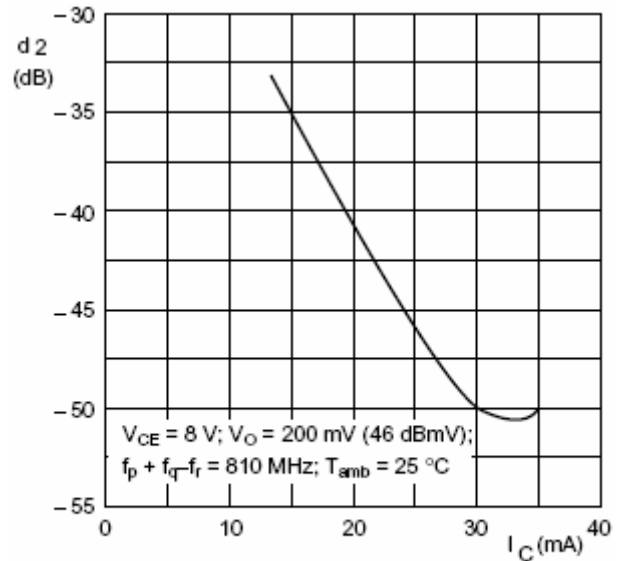
Minimum noise figure as a function of collector current; typical values



Minimum noise figure as a function of frequency; typical values



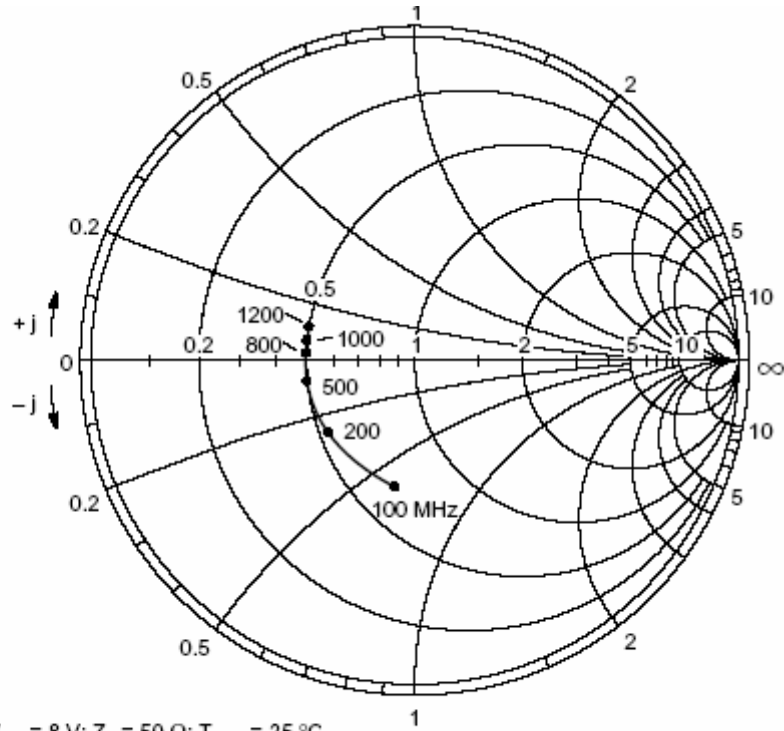
Intermodulation distortion; typical values



Second order intermodulation distortion; typical values

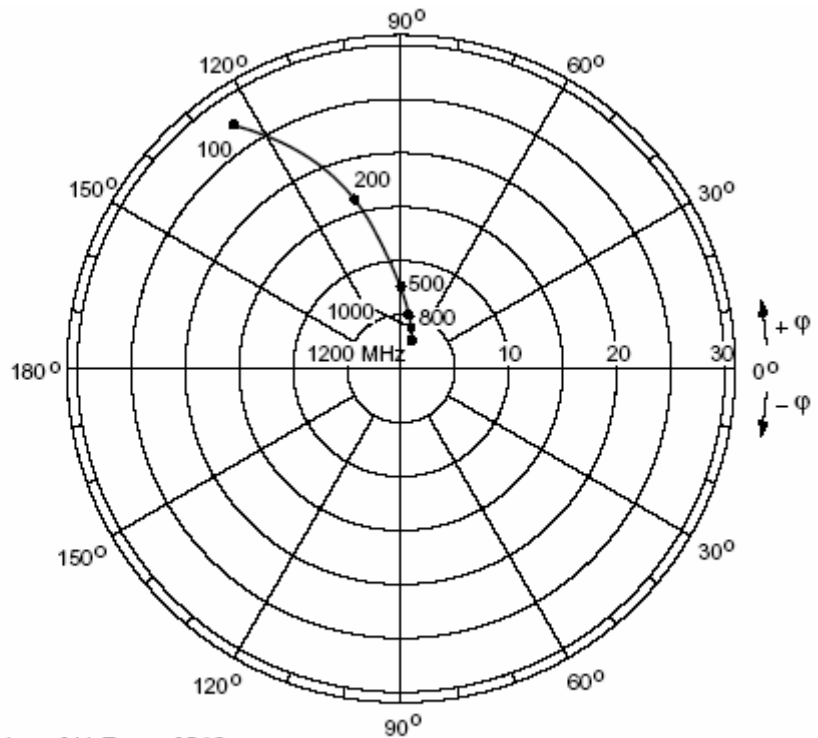
isc Silicon NPN RF Transistor

BFR93A



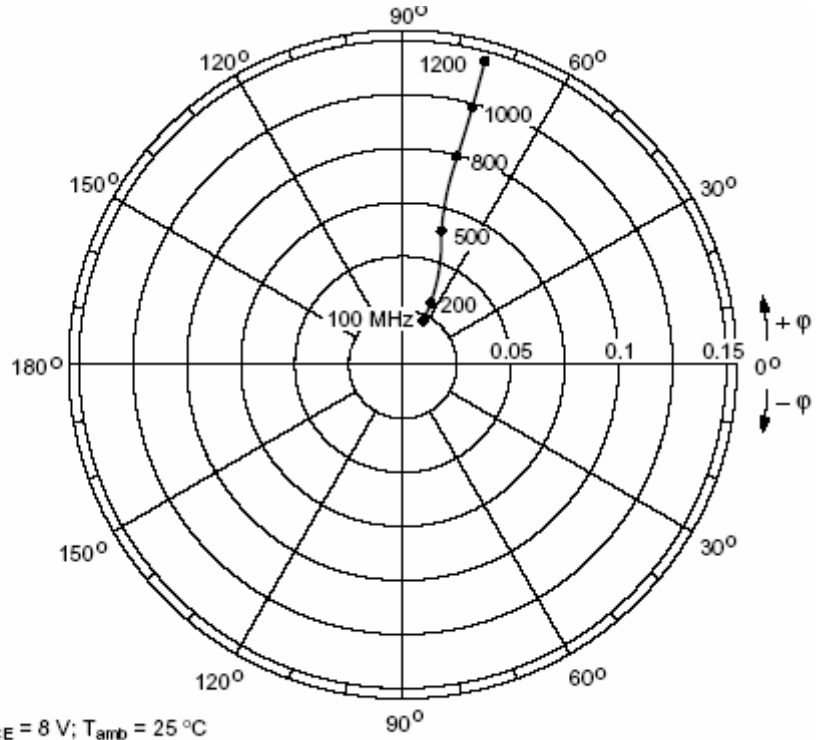
$I_C = 30 \text{ mA}; V_{CE} = 8 \text{ V}; Z_0 = 50 \Omega; T_{amb} = 25 \text{ }^\circ\text{C}$

Common emitter input reflection coefficient (S_{11})

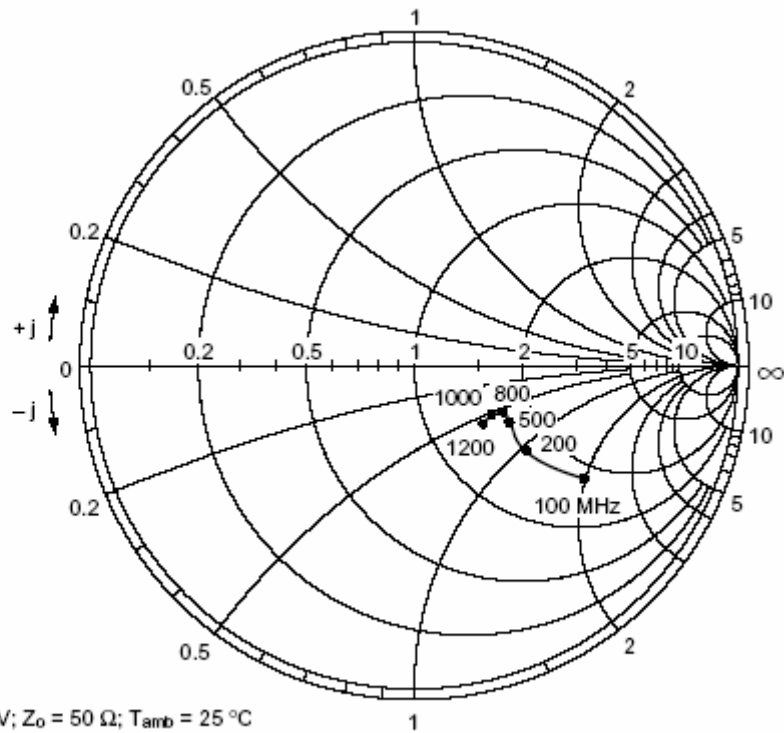


$I_C = 30 \text{ mA}; V_{CE} = 8 \text{ V}; T_{amb} = 25 \text{ }^\circ\text{C}$

Common emitter forward transmission coefficient (S_{21})



Common emitter reverse transmission coefficient (S_{12})



Common emitter output reflection coefficient (S_{22})