
2SC5141

Silicon NPN Epitaxial

HITACHI

ADE-208-228
1st. Edition

Application

VHF / UHF wide band amplifier

Features

- High gain bandwidth product
 $f_T = 5.8$ GHz typ
- High gain, low noise figure
PG = 13 dB typ, NF = 1.6 dB typ at $f = 900$ MHz

Outline

SMPAK



1. Emitter
2. Base
3. Collector

2SC5141

Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	20	V
Collector to emitter voltage	V_{CEO}	12	V
Emitter to base voltage	V_{EBO}	2	V
Collector current	I_C	50	mA
Collector power dissipation	P_C	80	mW
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	-55 to +150	°C

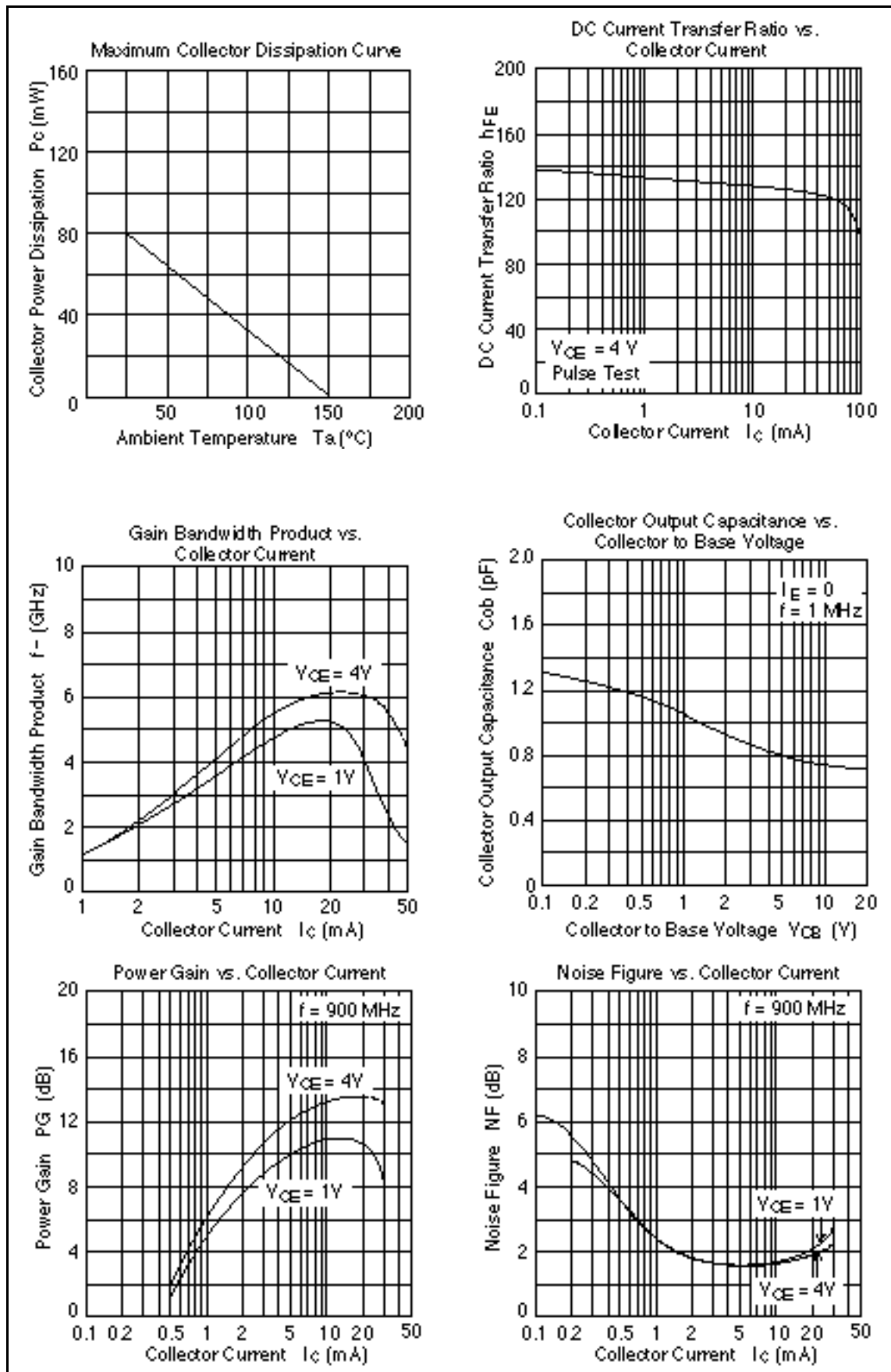
Note: Marking is "YN-".

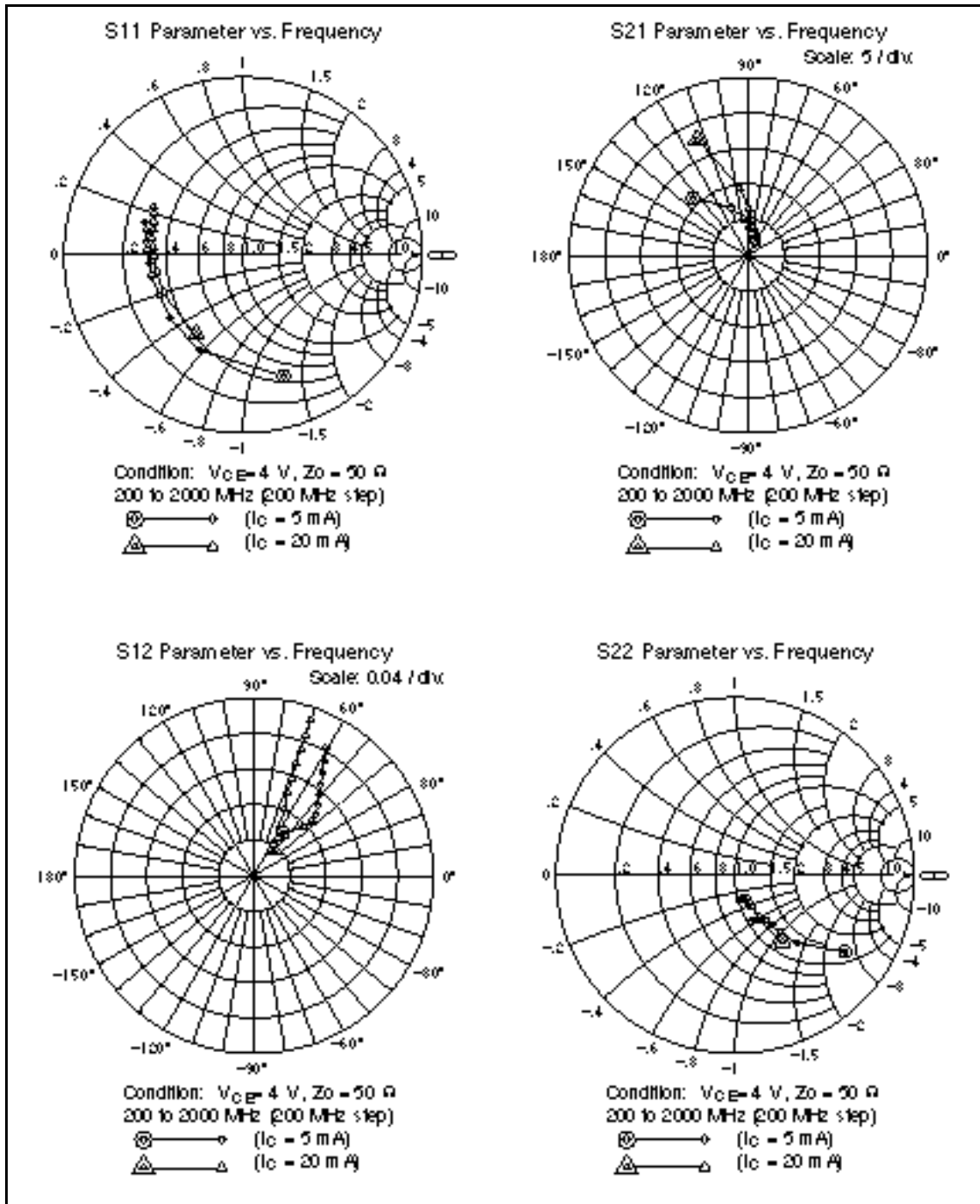
Attention: This device is very sensitive to electro static discharge.

It is recommended to adopt appropriate cautions when handling this transistor.

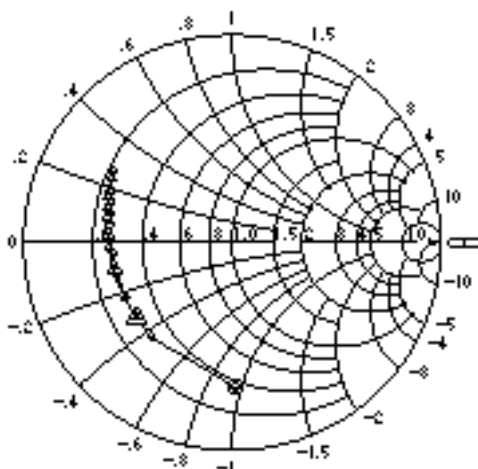
Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	20	—	—	V	$I_C = 10 \mu A, I_E = 0$
Collector cutoff current	I_{CBO}	—	—	1	μA	$V_{CB} = 15 V, I_E = 0$
	I_{CEO}	—	—	1	mA	$V_{CE} = 12 V, R_{BE} =$
Emitter cutoff current	I_{EBO}	—	—	10	μA	$V_{EB} = 2 V, I_C = 0$
DC current transfer ratio	h_{FE}	50	120	250		$V_{CE} = 4 V, I_C = 20 mA$
Collector output capacitance	C_{ob}	—	0.8	1.4	pF	$V_{CB} = 5 V, I_E = 0,$ $f = 1 MHz$
Gain bandwidth product	f_T	4.0	5.8	—	GHz	$V_{CE} = 4 V, I_C = 20 mA$
Power gain	PG	9.5	13.0	—	dB	$V_{CE} = 4 V, I_C = 20 mA,$ $f = 900 MHz$
Noise figure	NF	—	1.6	3.0	dB	$V_{CE} = 4 V, I_C = 5 mA,$ $f = 900 MHz$



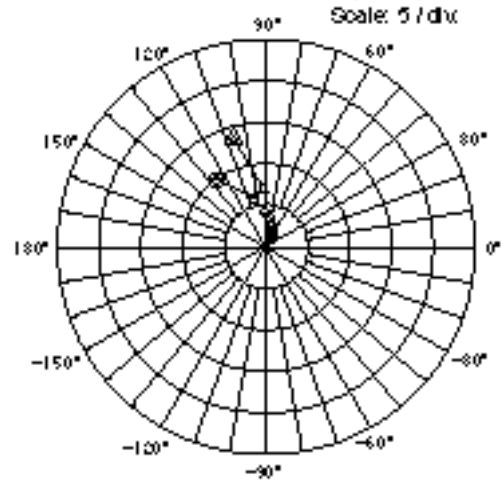


S11 Parameter vs. Frequency



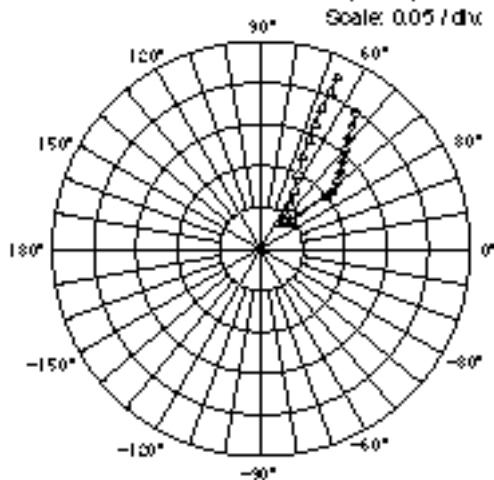
Condition: $V_{CE} = 1\text{ V}$, $Z_0 = 50\ \Omega$
 200 to 2000 MHz (200 MHz step)
 ○ — ○ ($I_C = 5\text{ mA}$)
 △ — △ ($I_C = 20\text{ mA}$)

S21 Parameter vs. Frequency



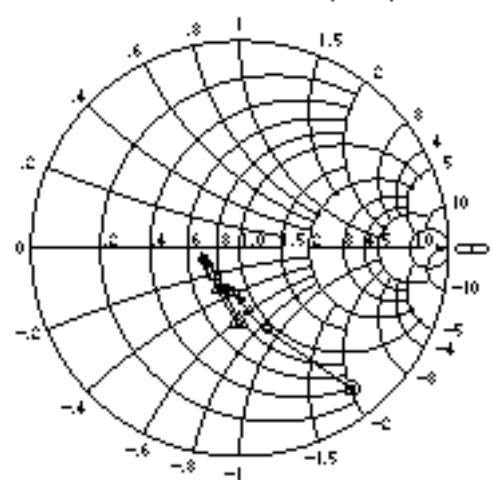
Condition: $V_{CE} = 1\text{ V}$, $Z_0 = 50\ \Omega$
 200 to 2000 MHz (200 MHz step)
 ○ — ○ ($I_C = 5\text{ mA}$)
 △ — △ ($I_C = 20\text{ mA}$)

S12 Parameter vs. Frequency



Condition: $V_{CE} = 1\text{ V}$, $Z_0 = 50\ \Omega$
 200 to 2000 MHz (200 MHz step)
 ○ — ○ ($I_C = 5\text{ mA}$)
 △ — △ ($I_C = 20\text{ mA}$)

S22 Parameter vs. Frequency



Condition: $V_{CE} = 1\text{ V}$, $Z_0 = 50\ \Omega$
 200 to 2000 MHz (200 MHz step)
 ○ — ○ ($I_C = 5\text{ mA}$)
 △ — △ ($I_C = 20\text{ mA}$)

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