
2SC5078

Silicon NPN Epitaxial

HITACHI

ADE-208-221
1st. Edition

Application

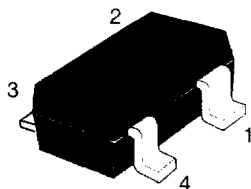
VHF / UHF wide band amplifier

Features

- High gain bandwidth product
 $f_T = 12 \text{ GHz Typ}$
- High gain, low noise figure
 $PG = 17 \text{ dB Typ, NF} = 1.6 \text{ dB Typ at } f = 900 \text{ MHz}$

Outline

MPAK-4



1. Collector
2. Emitter
3. Base
4. Emitter

2SC5078

Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	15	V
Collector to emitter voltage	V_{CEO}	8	V
Emitter to base voltage	V_{EBO}	1.5	V
Collector current	I_C	20	mA
Collector power dissipation	P_C	150	mW
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	-55 to +150	°C

Electrical Characteristics (Ta = 25°C)

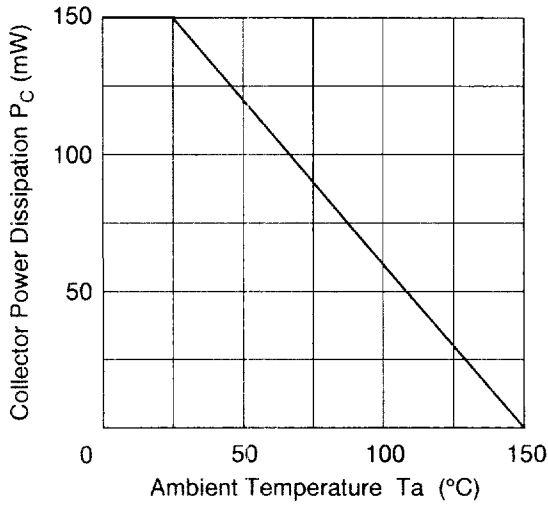
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector cutoff current	I_{CBO}	—	—	10	μ A	$V_{CB} = 15$ V, $I_E = 0$
	I_{CEO}	—	—	1	mA	$V_{CE} = 8$ V, $R_{BE} = \infty$
Emitter cutoff current	I_{EBO}	—	—	10	μ A	$V_{EB} = 1.5$ V, $I_C = 0$
DC current transfer ratio	h_{FE}	50	120	160		$V_{CE} = 5$ V, $I_C = 10$ mA
Collector output capacitance	C_{ob}	—	0.3	0.8	pF	$V_{CB} = 5$ V, $I_E = 0$, $f = 1$ MHz
Gain bandwidth product	f_T	9	12	—	GHz	$V_{CE} = 5$ V, $I_C = 5$ mA
Power gain	PG	14	17	20	dB	$V_{CE} = 5$ V, $I_C = 10$ mA, $f = 900$ MHz
Noise figure	NF	—	1.6	2.5	dB	$V_{CE} = 5$ V, $I_C = 5$ mA, $f = 900$ MHz

Note: Marking is "ZC-".

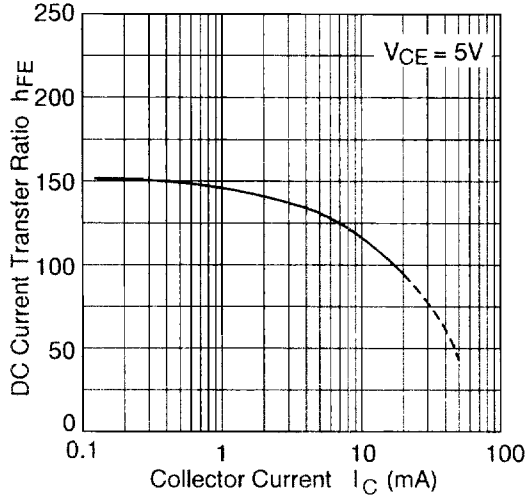
Attention: This device is very sensitive to electro static discharge.

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

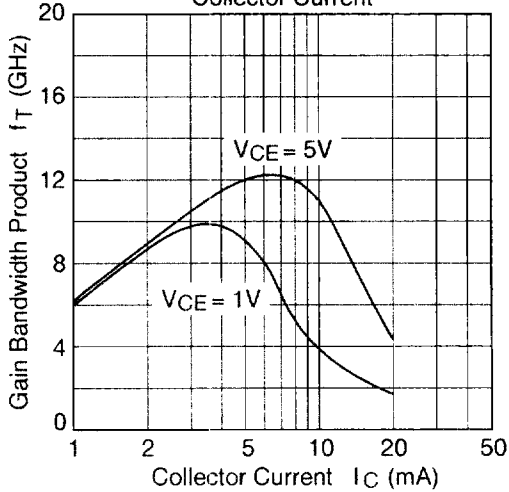
Maximum Collector Dissipation Curve



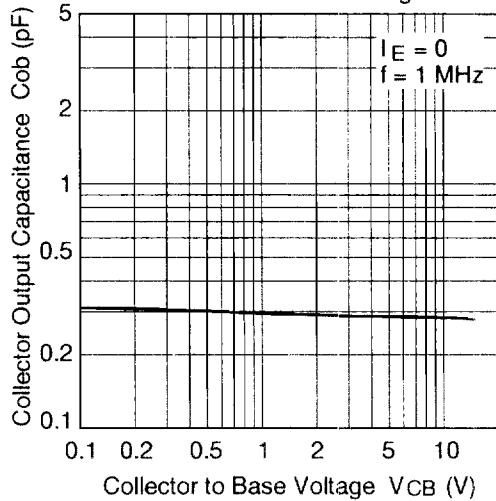
DC Current Transfer Ratio vs. Collector Current

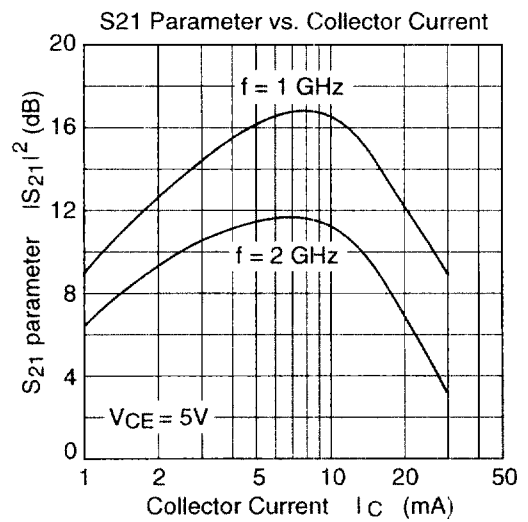
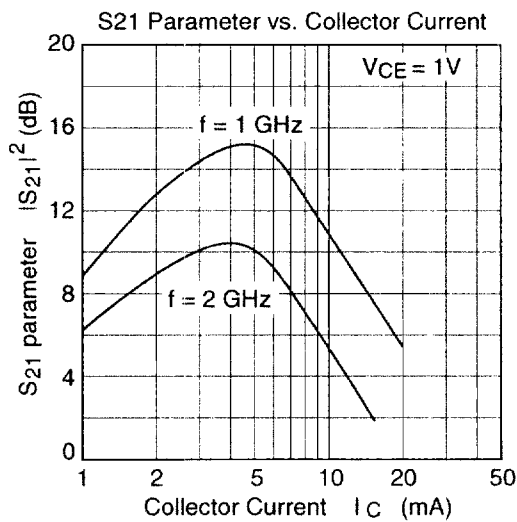
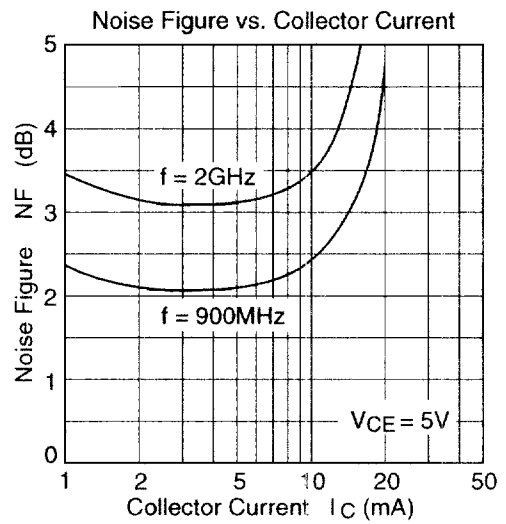
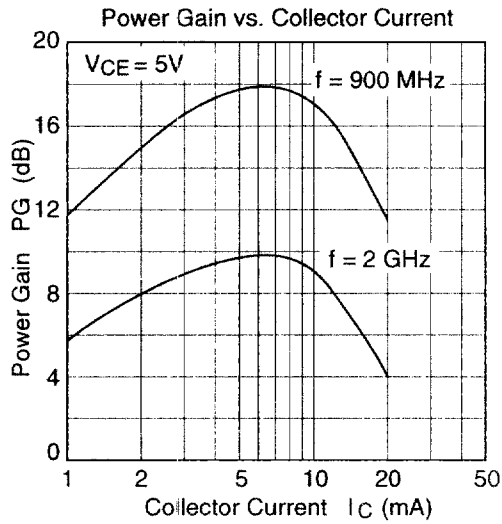


Gain Bandwidth Product vs. Collector Current

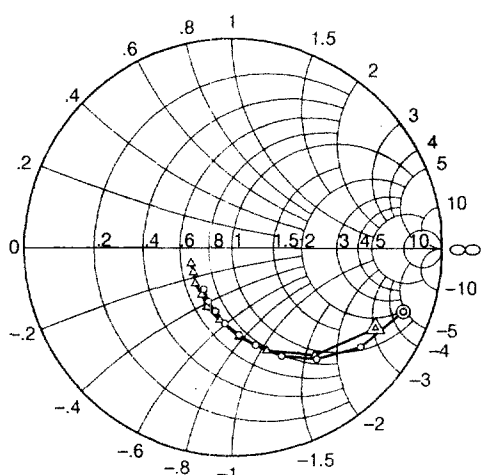


Collector Output Capacitance vs. Collector to Base Voltage



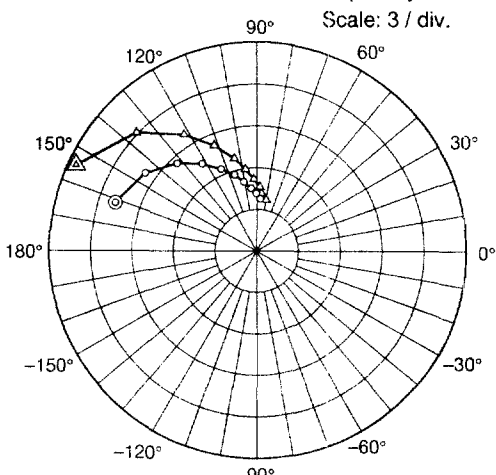


S11 Parameter vs. Frequency



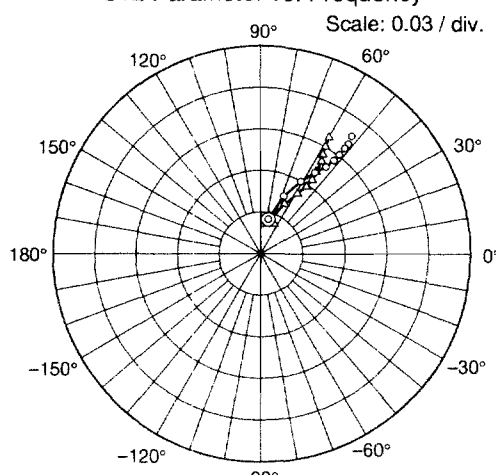
Condition: $V_{CE} = 5\text{ V}$, $Z_o = 50\ \Omega$
 200 to 2000 MHz (200 MHz step)
 ○ (Ic = 5 mA)
 △ (Ic = 10 mA)

S21 Parameter vs. Frequency



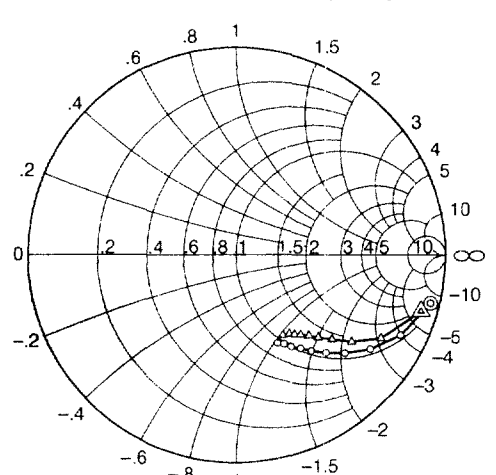
Condition: $V_{CE} = 5\text{ V}$, $Z_o = 50\ \Omega$
 200 to 2000 MHz (200 MHz step)
 ○ (Ic = 5 mA)
 △ (Ic = 10 mA)

S12 Parameter vs. Frequency



Condition: $V_{CE} = 5\text{ V}$, $Z_o = 50\ \Omega$
 200 to 2000 MHz (200 MHz step)
 ○ (Ic = 5 mA)
 △ (Ic = 10 mA)

S22 Parameter vs. Frequency



Condition: $V_{CE} = 5\text{ V}$, $Z_o = 50\ \Omega$
 200 to 2000 MHz (200 MHz step)
 ○ (Ic = 5 mA)
 △ (Ic = 10 mA)