
2SC4926

Silicon NPN Epitaxial

HITACHI

Application

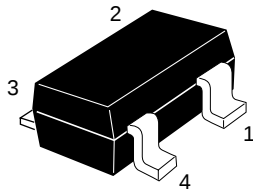
VHF / UHF wide band amplifier

Features

- High gain bandwidth product
 $f_T = 11 \text{ GHz Typ}$
- High gain, low noise figure
 $PG = 16.5 \text{ dB Typ}$, $NF = 1.1 \text{ dB Typ}$ at $f = 900 \text{ MHz}$

Outline

MPAK-4



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

Absolute Maximum Ratings (Ta = 25°C)

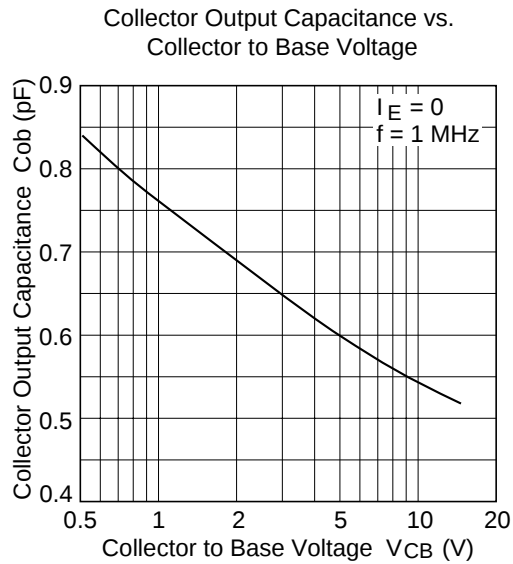
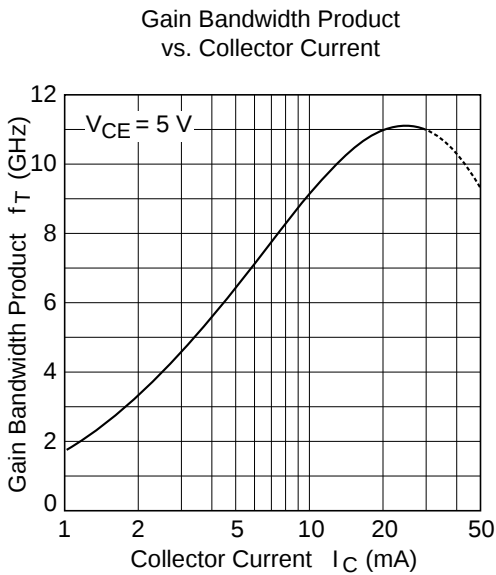
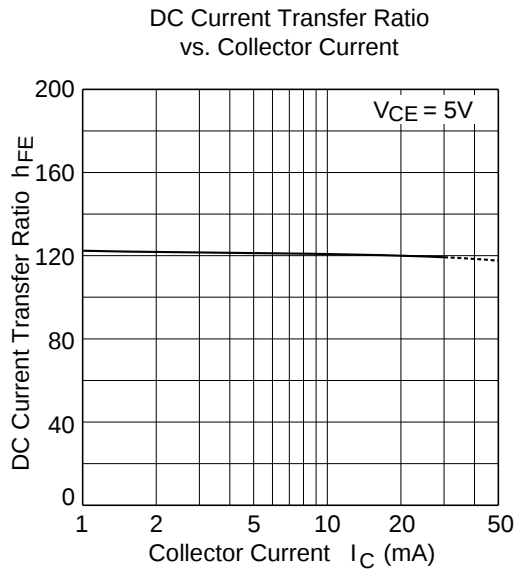
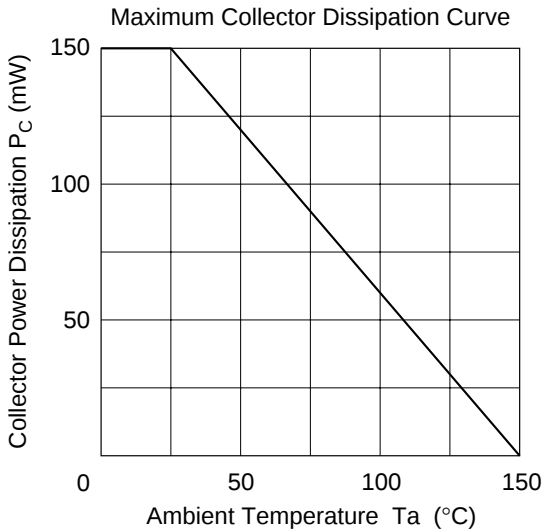
Item	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	15	V
Collector to emitter voltage	V_{CEO}	8	V
Emitter to base voltage	V_{EBO}	1.5	V
Collector current	I_C	50	mA
Collector power dissipation	P_C	150	mW
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	-55 to +150	°C

Electrical Characteristics (Ta = 25°C)

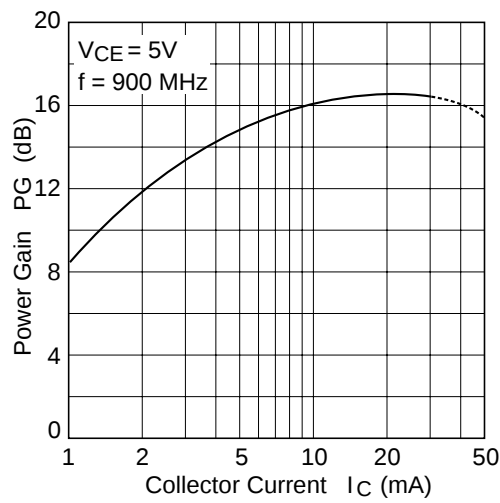
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	15	—	—	V	$I_C = 10\text{ }\mu\text{A}$, $I_E = 0$
Collector cutoff current	I_{CBO}	—	—	10	μA	$V_{CB} = 12\text{ V}$, $I_E = 0$
	I_{CEO}	—	—	1	mA	$V_{CE} = 8\text{ V}$, $R_{BE} = \infty$
Emitter cutoff current	I_{EBO}	—	—	10	μA	$V_{EB} = 1.5\text{ V}$, $I_C = 0$
DC current transfer ratio	h_{FE}	50	120	250		$V_{CE} = 5\text{ V}$, $I_C = 20\text{ mA}$
Collector output capacitance	C_{ob}	—	0.6	1.1	pF	$V_{CB} = 5\text{ V}$, $I_E = 0$, $f = 1\text{ MHz}$
Gain bandwidth product	f_T	8.0	11.0	—	GHz	$V_{CE} = 5\text{ V}$, $I_C = 20\text{ mA}$
S_{21} Parameter	$ S_{21} $	—	16	—	dB	$V_{CE} = 5\text{ V}$, $I_C = 20\text{ mA}$, $f = 1000\text{ MHz}$
Power gain	PG	13.5	16.5	—	dB	$V_{CE} = 5\text{ V}$, $I_C = 20\text{ mA}$, $f = 900\text{ MHz}$
Noise figure	NF	—	1.1	2.0	dB	$V_{CE} = 5\text{ V}$, $I_C = 5\text{ mA}$, $f = 900\text{ MHz}$

Note: Marking is “YD—”.

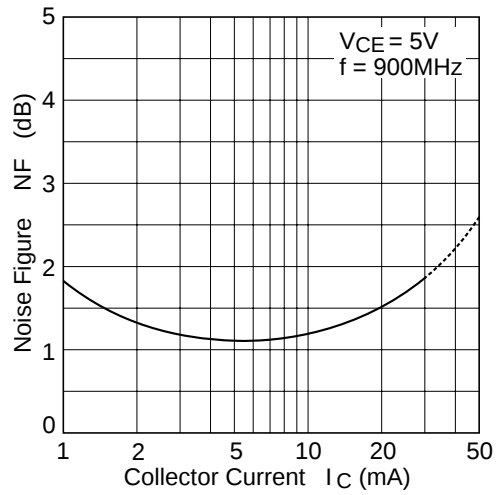
Attention: This is electrostatic sensitive device.



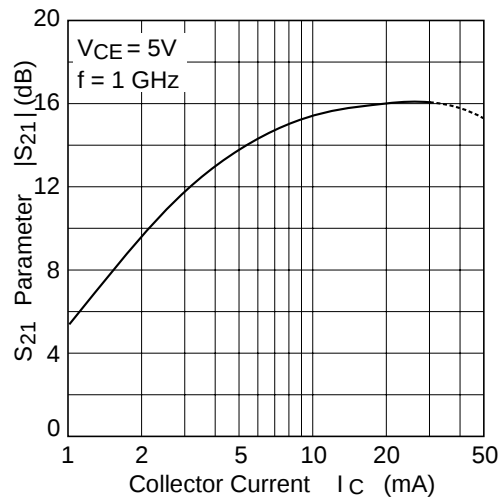
Power Gain vs. Collector Current



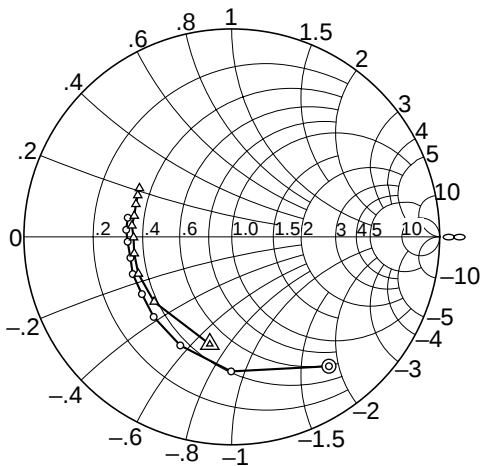
Noise Figure vs. Collector Current



S21 Parameter vs. Collector Current

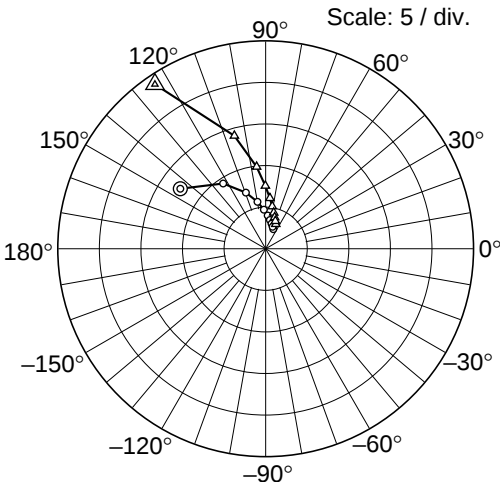


S11 Parameter vs. Frequency



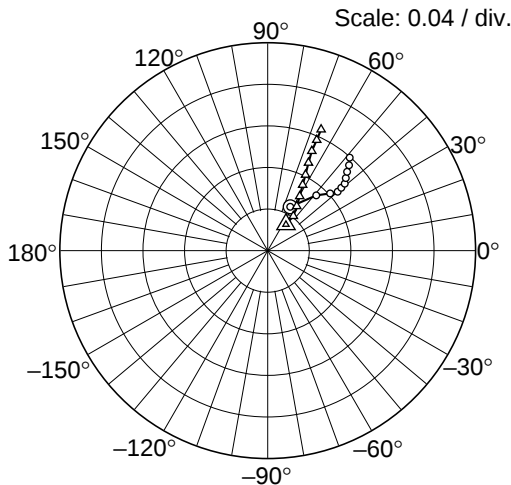
Condition: $V_{CE} = 5\text{ V}$, $Z_o = 50\ \Omega$
200 to 2000 MHz (200 MHz step)
○ — ○ ($I_C = 5\text{ mA}$)
△ — △ ($I_C = 20\text{ mA}$)

S21 Parameter vs. Frequency



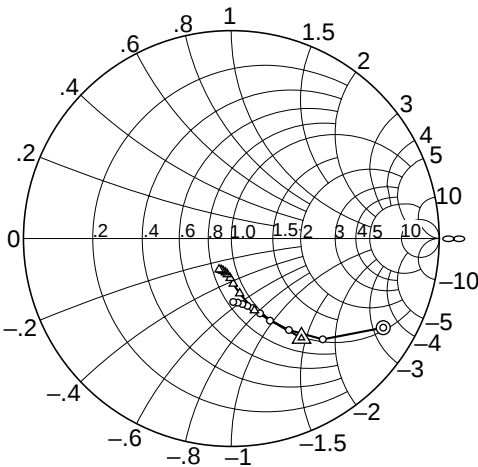
Condition: $V_{CE} = 5\text{ V}$, $Z_o = 50\ \Omega$
200 to 2000 MHz (200 MHz step)
○ — ○ ($I_C = 5\text{ mA}$)
△ — △ ($I_C = 20\text{ mA}$)

S12 Parameter vs. Frequency



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

S22 Parameter vs. Frequency



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

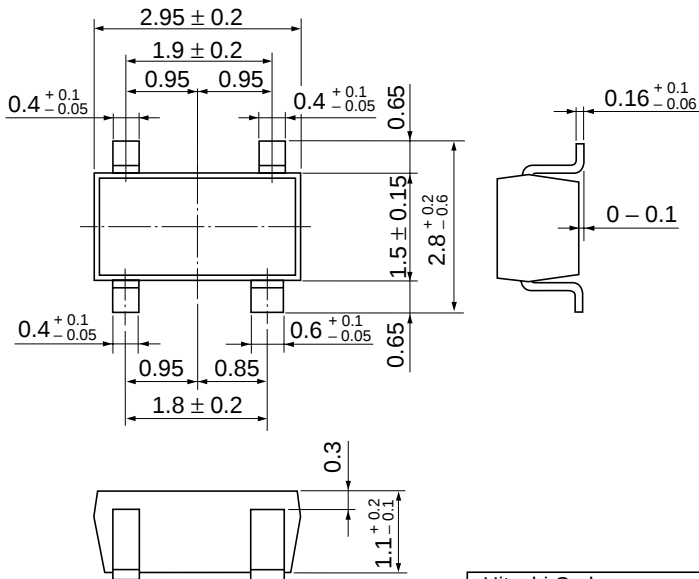
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S Parameter (V_{CE} = 5 V, I_C = 5 mA, Z_O = 50 Ω, Emitter common)

Freq. (MHz)	S11		S21		S12		S22	
	MAG.	ANG.	MAG.	ANG.	MAG.	ANG.	MAG.	ANG.
200	0.777	−53.1	12.52	144.9	0.0475	62.8	0.849	−30.4
400	0.647	−90.3	9.36	123.1	0.0708	48.7	0.655	−47.8
600	0.579	−115.4	7.16	109.4	0.0817	42.5	0.522	−57.8
800	0.538	−134.3	5.73	99.9	0.0880	40.1	0.438	−64.8
1000	0.513	−147.5	4.70	92.6	0.0933	40.5	0.386	−69.0
1200	0.508	−159.4	4.00	86.5	0.0980	41.0	0.350	−72.9
1400	0.500	−168.3	3.49	81.6	0.102	42.9	0.333	−76.6
1600	0.501	−177.3	3.09	76.8	0.108	44.8	0.319	−80.4
1800	0.508	176.2	2.78	72.5	0.113	46.4	0.310	−84.3
2000	0.510	169.6	2.53	68.7	0.119	48.6	0.305	−88.3

S Parameter (V_{CE} = 5 V, I_C = 20 mA, Z_O = 50 Ω, Emitter common)

Freq. (MHz)	S11		S21		S12		S22	
	MAG.	ANG.	MAG.	ANG.	MAG.	ANG.	MAG.	ANG.
200	0.527	−101.6	23.79	124.0	0.0307	55.1	0.587	−54.9
400	0.488	−140.1	14.12	105.5	0.0413	53.4	0.363	−72.2
600	0.482	−158.4	9.89	96.3	0.0510	56.8	0.267	−81.4
800	0.478	−170.3	7.56	90.3	0.0606	59.5	0.218	−87.6
1000	0.474	−179.6	6.10	85.2	0.0716	62.0	0.191	−91.7
1200	0.484	173.6	5.14	81.2	0.0817	63.5	0.174	−96.5
1400	0.481	167.9	4.44	77.4	0.0931	65.1	0.166	−100.0
1600	0.486	161.2	3.92	74.0	0.105	66.1	0.161	−104.4
1800	0.496	156.2	3.52	70.7	0.117	66.1	0.159	−107.9
2000	0.502	152.3	3.20	67.7	0.127	66.2	0.161	−111.9



Hitachi Code	MPAK-4
JEDEC	—
EIAJ	Conforms
Weight (reference value)	0.013 g

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