NPN Epitaxial Planar Silicon Transistor

2SC5488



VHF to UHF Low-Noise Wide-Band Amplifier Applications

Features

- · Low noise : NF=1.0dB typ (f=1GHz).
- · High gain : $|S21e|^2=12dB$ typ (f=1GHz).
- \cdot High cutoff frequency : $f_T{=}7GHz$ typ.
- · Ultrasmall, slim flat-lead package.
- (1.4mm×0.8mm×0.6mm)

Package Dimensions





Specifications

Absolute Maximum Ratings at $Ta = 25^{\circ}C$

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V _{CBO}		20	V
Collector-to-Emitter Voltage	VCEO		10	V
Emitter-to-Base Voltage	VEBO		2	V
Collector Current	۱ _C		70	mA
Collector Dissipation	PC		100	mW
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		-55 to +150	°C

Electrical Characteristics at $Ta = 25^{\circ}C$

Parameter	Cumbal	Conditions		Ratings		
Parameter	Symbol			typ	max	Unit
Collector Cutoff Current	ICBO	V _{CB} =10V, I _E =0			1.0	μA
Emitter Cutoff Current	IEBO	V _{EB} =1V, I _C =0			10	μA
DC Current Gain	h _{FE}	V _{CE} =5V, I _C =20mA	90		200	
Gain-Bandwidth Product	fT	V _{CE} =5V, I _C =20mA	5	7		GHz
Output Capacitance	Cob	V _{CB} =10V, f=1MHz		0.7	1.2	pF
Reverse Transfer Capacitance	Cre	V _{CB} =10V, f=1MHz		0.45		pF
Forward Transfer Cain	S21e ² 1	V _{CE} =5V, I _C =20mA, f=1GHz	9	12		dB
Forward Transfer Gain	S21e ² 2	V _{CE} =2V, I _C =3mA, f=1GHz		8.5		dB
Noise Figure	NF	V _{CE} =5V, I _C =7mA, f=1GHz		1.0	1.8	dB

Marking : LN

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S Parameters (Common emitter)

 V_{CE} =5V, I_C =7mA, Z_O =50 Ω

Freq (MHz)	S ₁₁	∠s ₁₁	S ₂₁	∠s ₂₁	S ₁₂	∠s ₁₂	S ₂₂	∠ S ₂₂
100	0.786	-40.7	17.507	151.3	0.028	70.1	0.898	-20.4
200	0.677	-72.4	13.998	131.4	0.046	58.0	0.739	-33.4
400	0.546	-112.7	9.061	108.6	0.064	49.6	0.525	-43.7
600	0.492	-135.2	6.442	96.1	0.076	49.3	0.423	-46.7
800	0.473	-150.0	5.005	87.3	0.087	50.8	0.374	-44.4
1000	0.465	-160.0	4.073	80.4	0.099	52.6	0.346	-49.7
1200	0.457	-169.5	3.449	74.0	0.111	54.0	0.332	-51.6
1400	0.451	-176.2	2.989	68.6	0.124	55.2	0.321	-54.1
1600	0.449	177.8	2.658	63.8	0.138	56.6	0.319	-56.2
1800	0.454	172.5	2.378	58.4	0.151	56.7	0.313	-60.0
2000	0.460	167.1	2.154	54.0	0.166	56.7	0.311	-63.2

$V_{CE}{=}5V\!,\,I_{C}{=}20mA,\,Z_{O}{=}50\Omega$

Freq (MHz)	S ₁₁	∠s ₁₁	S ₂₁	∠s ₂₁	S ₁₂	∠s ₁₂	S ₂₂	∠ S ₂₂
100	0.601	-65.8	28.967	137.1	0.023	64.1	0.757	-32.9
200	0.497	-103.7	19.309	116.6	0.035	57.0	0.534	-50.3
400	0.435	-139.6	10.891	98.6	0.050	58.7	0.345	-50.3
600	0.419	-156.6	7.461	89.3	0.065	61.3	0.280	-50.7
800	0.414	-166.6	5.695	82.5	0.081	63.1	0.251	-51.3
1000	0.413	-174.0	4.613	77.0	0.098	63.8	0.235	-52.9
1200	0.413	178.6	3.870	71.8	0.144	63.9	0.226	-55.1
1400	0.411	173.8	3.345	66.9	0.131	63.6	0.221	-57.7
1600	0.413	169.6	2.960	62.7	0.148	63.2	0.220	-60.2
1800	0.416	165.1	2.655	58.0	0.165	61.8	0.219	-64.8
2000	0.422	160.3	2.406	54.0	0.182	60.6	0.218	-68.3

$V_{CE}{=}2V\!,\,I_{C}{=}3mA,\,Z_{O}{=}50\Omega$

Freq (MHz)	S ₁₁	∠ s ₁₁	S ₂₁	∠ S ₂₁	S ₁₂	∠ S ₁₂	S ₂₂	∠ \$ ₂₂
100	0.888	-30.2	9.280	158.6	0.038	73.6	0.949	-15.1
200	0.815	-56.4	8.218	141.3	0.067	60.5	0.849	-26.9
400	0.690	-96.0	6.074	116.7	0.098	45.1	0.657	-41.1
600	0.616	-120.7	4.517	101.4	0.122	38.4	0.539	-47.6
800	0.584	-138.0	3.610	90.4	0.120	35.8	0.475	-51.2
1000	0.566	-150.7	2.995	81.9	0.125	35.7	0.434	-54.5
1200	0.555	-161.2	2.540	74.2	0.131	36.5	0.410	-57.5
1400	0.546	-169.3	2.213	67.5	0.137	38.4	0.393	-60.7
1600	0.541	-176.4	1.982	62.0	0.143	40.7	0.391	-64.0
1800	0.545	177.1	1.774	55.9	0.152	42.5	0.382	-67.8
2000	0.547	170.9	1.614	50.9	0.163	44.7	0.381	-72.1

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