

Ordering number:ENN6340

NPN Epitaxial Planar Silicon Transistor



2SC5537

Low-Voltage, Low-Current High-frequency Amplifier Applications

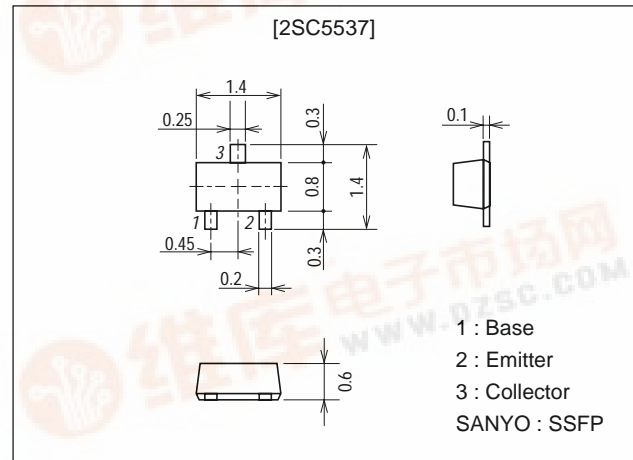
Features

- Low voltage, low current operation : $f_T=5\text{GHz}$ typ.
($V_{CE}=1\text{V}$, $I_C=1\text{mA}$) : $|S_{21e}|^2=7\text{dB}$ typ ($f=1\text{GHz}$).
: $NF=2.6\text{dB}$ typ ($f=1\text{GHz}$).
- Ultrasmall, slim flat-lead package.
($1.4\text{mm} \times 0.8\text{mm} \times 0.6\text{mm}$)

Package Dimensions

unit:mm

2159



Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CB0}		12	V
Collector-to-Emitter Voltage	V_{CEO}		6	V
Emitter-to-Base Voltage	V_{EBO}		1.5	V
Collector Current	I_C		15	mA
Collector Dissipation	P_C		80	mW
Junction Temperature	T_J		150	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to +150	$^\circ\text{C}$

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

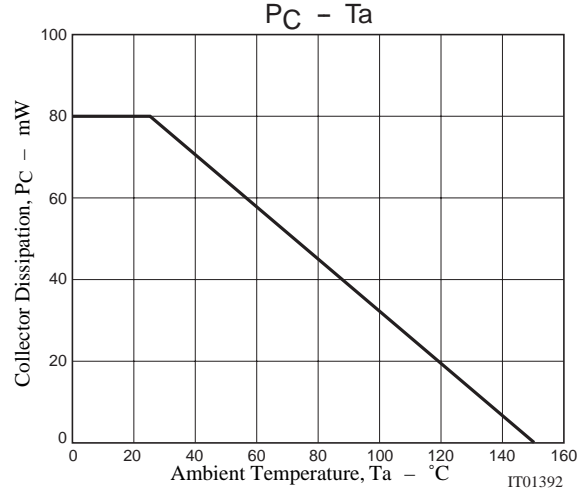
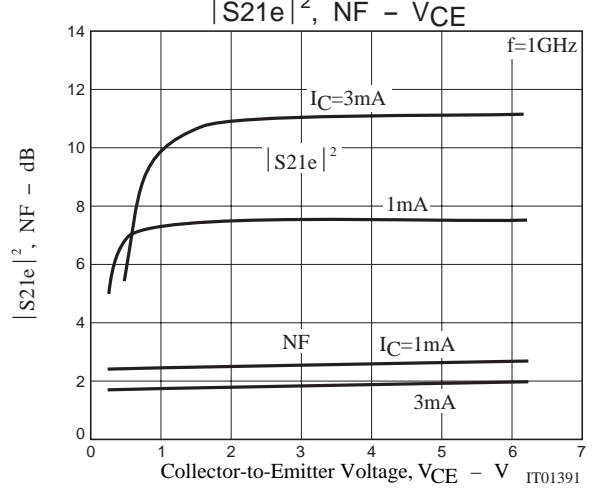
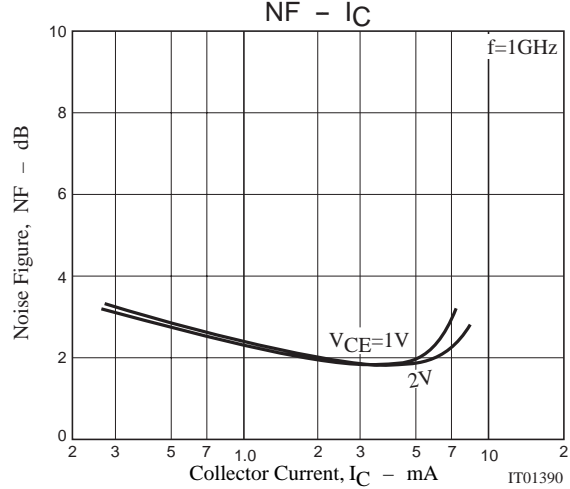
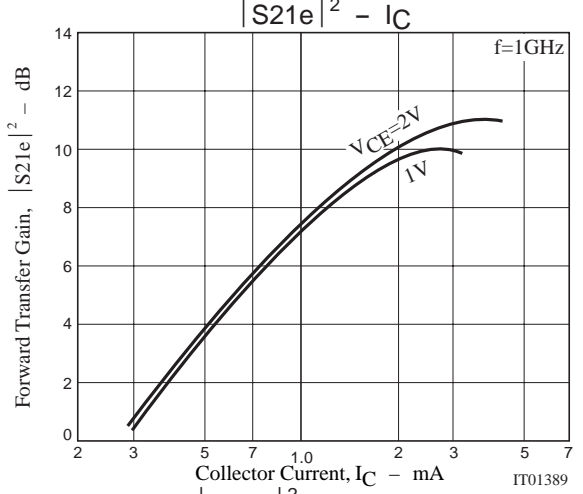
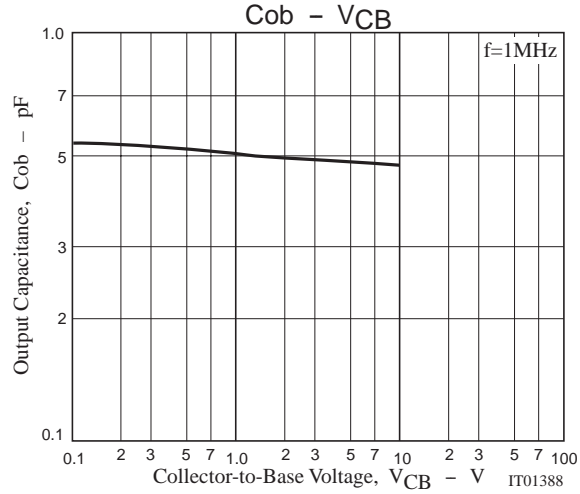
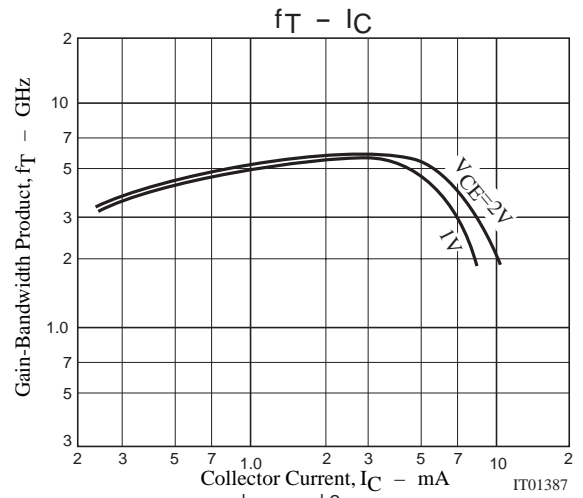
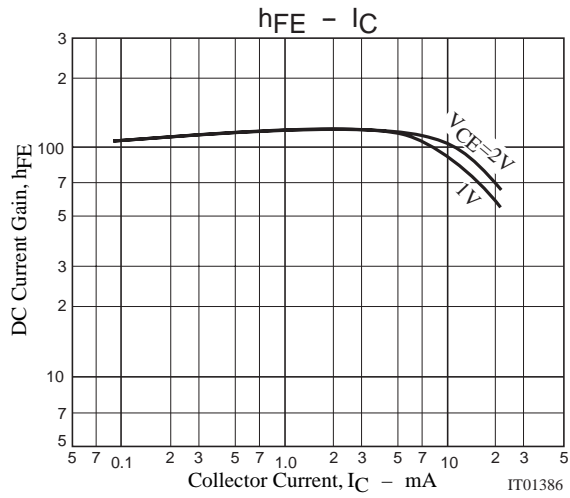
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CB0}	$V_{CB}=5\text{V}$, $I_E=0$			1.0	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=1\text{V}$, $I_C=0$			10	μA
DC Current Gain	h_{FE}	$V_{CE}=1\text{V}$, $I_C=1\text{mA}$	90		200	
Gain-Bandwidth Product	f_T	$V_{CE}=1\text{V}$, $I_C=1\text{mA}$		5		GHz
Output Capacitance	C_{ob}	$V_{CB}=1\text{V}$, $f=1\text{MHz}$		0.55	0.9	pF
Forward Transfer Gain	$ S_{21e} ^2$ 1	$V_{CE}=1\text{V}$, $I_C=1\text{mA}$, $f=1\text{GHz}$	4.5	7		dB
	$ S_{21e} ^2$ 2	$V_{CE}=2\text{V}$, $I_C=3\text{mA}$, $f=1\text{GHz}$		10.5		dB
Noise Figure	NF1	$V_{CE}=1\text{V}$, $I_C=1\text{mA}$, $f=1\text{GHz}$		2.6	4.5	dB
	NF2	$V_{CE}=2\text{V}$, $I_C=3\text{mA}$, $f=1\text{GHz}$		1.9		dB

Marking : CN

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S Parameters (Common emitter)

$V_{CE}=1V, I_C=1mA, Z_O=50\Omega$

Freq (MHz)	$ S_{11} $	$\angle S_{11}$	$ S_{21} $	$\angle S_{21}$	$ S_{12} $	$\angle S_{12}$	$ S_{22} $	$\angle S_{22}$
200	0.954	-15.8	3.282	164.4	0.045	78.4	0.981	-9.4
400	0.915	-29.6	3.242	150.4	0.086	69.7	0.942	-17.4
600	0.858	-42.9	2.869	138.0	0.116	60.4	0.886	-24.8
800	0.790	-55.2	2.655	126.4	0.139	54.0	0.830	-30.7
1000	0.711	-66.7	2.487	116.4	0.161	49.7	0.778	-35.4
1200	0.655	-75.3	2.292	107.1	0.175	45.7	0.739	-39.1
1400	0.610	-83.4	2.115	99.2	0.185	42.7	0.707	-42.7
1600	0.569	-90.5	1.974	92.2	0.194	40.3	0.681	-45.6
1800	0.554	-95.2	1.841	85.4	0.196	39.1	0.664	-48.3
2000	0.515	-101.8	1.714	79.9	0.198	38.3	0.645	-50.6

$V_{CE}=2V, I_C=3mA, Z_O=50\Omega$

Freq (MHz)	$ S_{11} $	$\angle S_{11}$	$ S_{21} $	$\angle S_{21}$	$ S_{12} $	$\angle S_{12}$	$ S_{22} $	$\angle S_{22}$
200	0.858	-29.0	8.051	154.9	0.040	73.1	0.932	-15.0
400	0.752	-51.3	6.938	134.7	0.067	61.9	0.829	-24.9
600	0.637	-70.7	5.659	121.1	0.085	55.4	0.722	-31.2
800	0.546	-85.5	4.769	109.8	0.097	52.7	0.648	-34.6
1000	0.484	-96.4	4.133	100.4	0.108	51.4	0.601	-36.9
1200	0.433	-106.1	3.589	92.9	0.116	51.3	0.568	-38.6
1400	0.394	-114.4	3.158	86.8	0.125	52.1	0.545	-40.2
1600	0.364	-121.7	2.839	81.4	0.134	53.3	0.532	-41.7
1800	0.338	-128.8	2.573	76.7	0.143	54.5	0.521	-43.1
2000	0.315	-135.2	2.355	72.3	0.152	55.3	0.516	-44.7

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