Ordering number:ENN6340

NPN Epitaxial Planar Silicon Transistor

2SC5537

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

Features

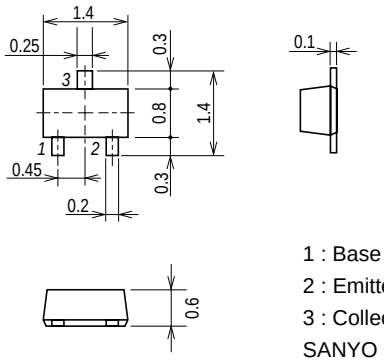
- Low voltage, low current operation : f_T=5GHz typ. (V_{CE}=1V, I_C=1mA) : $|S21e|^2$=7dB typ (f=1GHz).
  : NF=2.6dB typ (f=1GHz).
- Ultrasmall, slim flat-lead package. (1.4mm × 0.8mm × 0.6mm)

Package Dimensions

unit:mm

2159

[2SC5537]



1 : Base
2 : Emitter
3 : Collector
SANYO : SSFP

Specifications

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		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	Tj		150	˚C
Storage Temperature	Tstg		–55 to +150	˚C

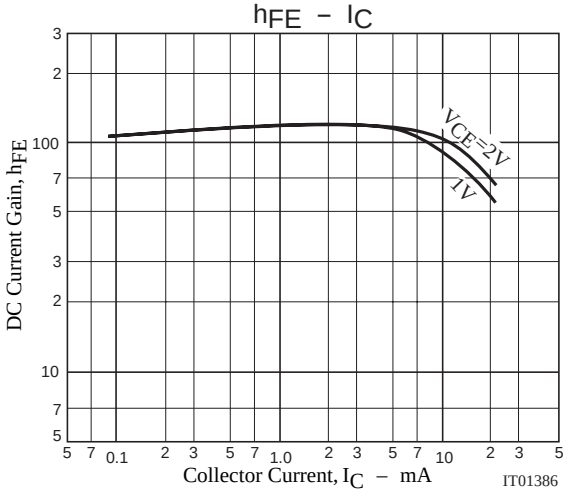
Electrical Characteristics at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}=5V, I_E=0			1.0	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=1V, I_C=0			10	μA
DC Current Gain	h_{FE}	V_{CE}=1V, I_C=1mA	90		200	
Gain-Bandwidth Product	f_T	V_{CE}=1V, I_C=1mA		5		GHz
Output Capacitance	Cob	V_{CB}=1V, f=1MHz		0.55	0.9	pF
Forward Transfer Gain	$\|S21e\|^2$ 1	V_{CE}=1V, I_C=1mA, f=1GHz	4.5	7		dB
	$\|S21e\|^2$ 2	V_{CE}=2V, I_C=3mA, f=1GHz		10.5		dB
Noise Figure	NF1	V_{CE}=1V, I_C=1mA, f=1GHz		2.6	4.5	dB
	NF2	V_{CE}=2V, I_C=3mA, f=1GHz		1.9		dB

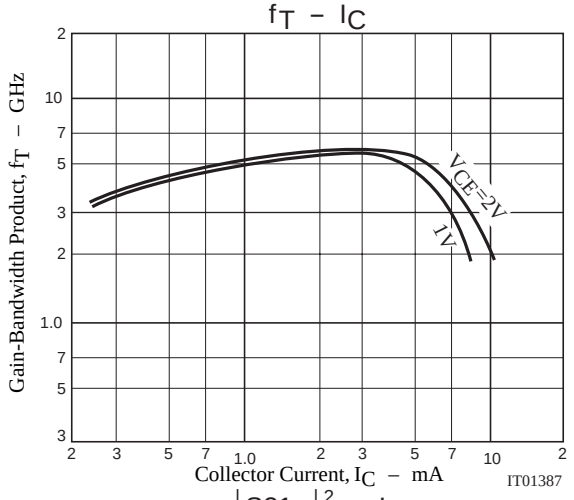
Marking : CN

SANYO Electric Co.,Ltd. Semiconductor Company
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

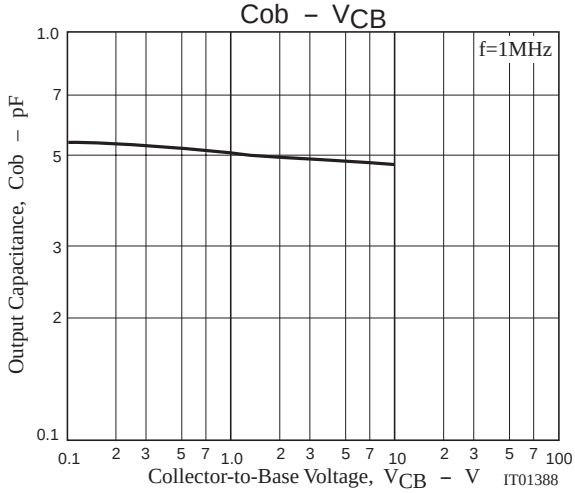
h_{FE} – I_C



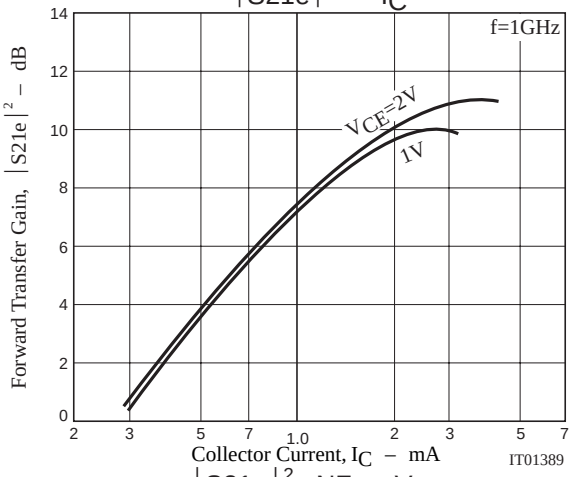
f_T – I_C



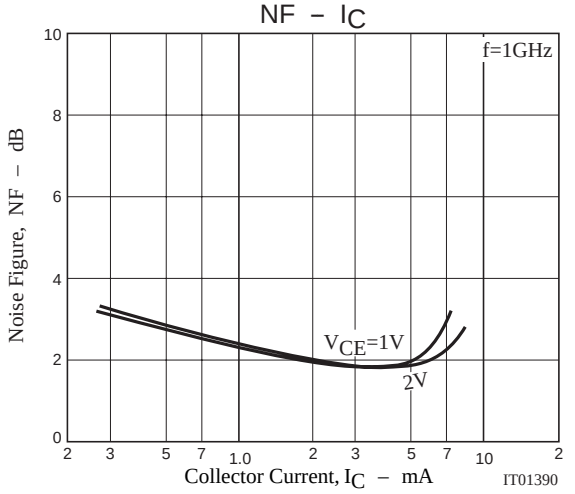
Cob – V_{CB}



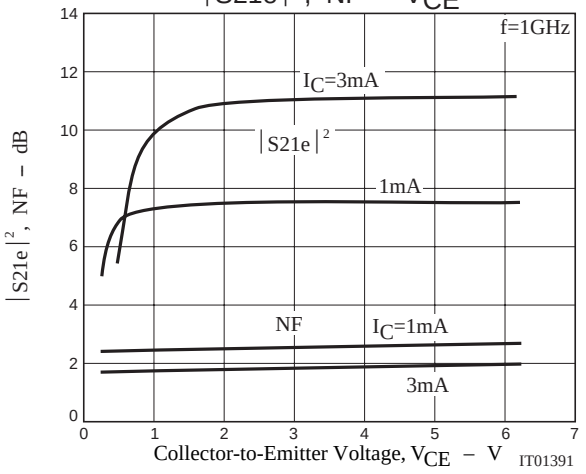
$|S21e|^2$ – I_C



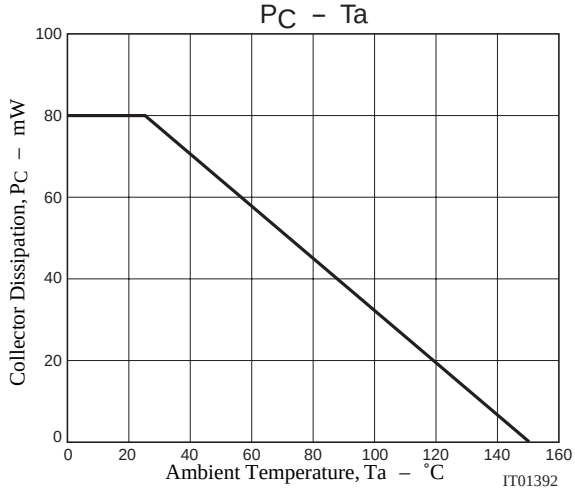
NF – I_C



$|S21e|^2$, NF – V_{CE}



P_C – Ta



S Parameters (Common emitter)

V_{CE}=1V, I_C=1mA, Z_O=50Ω

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=50Ω

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