

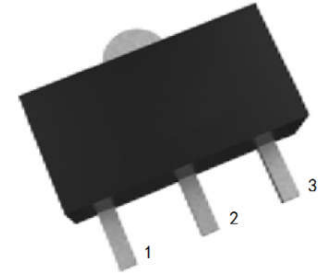
## NPN SILICON RF TRANSISTOR

### Feature

High gain:  $|S_{21e}|_2$  TYP. Value is 10dB @  $V_{CE}=10V$ ,  $I_C=20mA$ ,  $f=1GHz$   
 Low noise: NF TYP. Value is 1.7dB @  $V_{CE}=10V$ ,  $I_C=7mA$ ,  $f=1GHz$   
 fr (TYP.): TYP. Value is 6.5GHz @  $V_{CE}=10V$ ,  $I_C=20mA$ ,  $f=1GHz$

### PIN DEFINITION:

1: (Base) 2: (Collector) 3: (Emitter)



SOT-89

### Absolute Maximum Ratings $T_A=25^{\circ}C$ Unless Otherwise noted

PARAMETER	SYMBLE	MAXIMUM VALUE	UNIT
Collector-base breakdown voltage	$V_{CBO}$	20	V
Collector-emitter breakdown voltage	$V_{CEO}$	12	V
Emitter-base breakdown voltage	$V_{EBO}$	3	V
Collector current	$I_C$	100	mA
*Collector Power Dissipation	*PD	1.2	W
Junction Temperature	$T_j$	150	$^{\circ}C$
Storage Temperature	$T_{stg}$	-65 ~ +150	$^{\circ}C$

\*With heat dissipation panel

### hFE Classification

Classification	A	B	C	D	E
Marking	RH	RF	RE		
hFE	60~100	90~140	130~180	170~250	250~300

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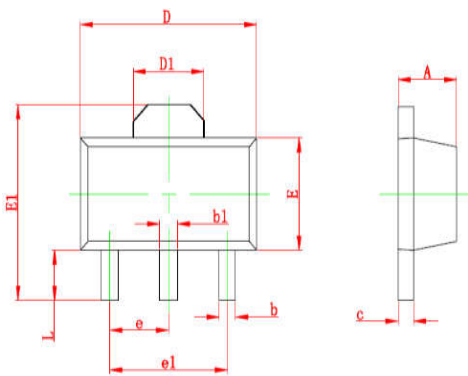


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**ELECTRICAL CHARACTERISTICS (T<sub>a</sub>=25°C unless otherwise specified)**

PARAMETER	SYMBLE	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Collector-base breakdown voltage	V <sub>CB0</sub>	20			v	I <sub>C</sub> =1.0μA
Collector- Emitter breakdown voltage	V <sub>CEO</sub>	12			V	I <sub>C</sub> =100μA
Collector cut-off current	I <sub>CB0</sub>			0.1	μA	V <sub>CB</sub> =10V
Emitter cut-off current	I <sub>EBO</sub>			0.1	μA	V <sub>EB</sub> =1V
DC current gain	h <sub>FE</sub>	60	150	300		V <sub>CE</sub> =10V,I <sub>C</sub> =20mA
Transit frequency	f <sub>T</sub>		6.5		GHz	V <sub>CE</sub> =10V,I <sub>C</sub> =20mA
Output feedback capacitance	C <sub>re</sub>		0.65		pF	V <sub>CB</sub> =10V,I <sub>E</sub> =0mA,f=1MHz
Power gain	S <sub>21e</sub>   <sub>2</sub>	9	10		dB	V <sub>CE</sub> =10V,I <sub>C</sub> =20mA,f=1GHz
Noise factor	NF		2.6	3.2	dB	V <sub>CE</sub> =10V,I <sub>C</sub> =40mA,f=1GHz
			1.7	2.3		V <sub>CE</sub> =10V,I <sub>c</sub> =7mA,f=1GHz

**Package & Dimension :**



SOT-89

SYMBOL	MIN (mm)	MAX (mm)
A	1.4	1.6
b	0.32	0.52
b1	0.4	0.58
c	0.35	0.44
D	4.4	4.6
D1	1.55	
E	2.3	2.6
E1	3.94	4.25
e	1.5	
e1	3	
L	0.9	1.2

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Fig01: TA & PC

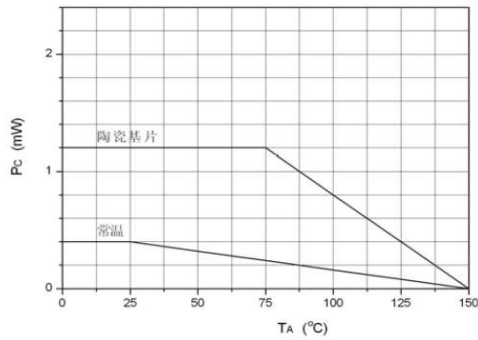


Fig02:  $V_{cb}$  &  $C_{re}$

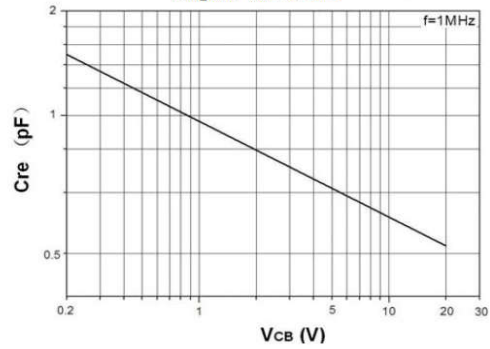


Fig03:  $h_{FE}$  &  $I_c$

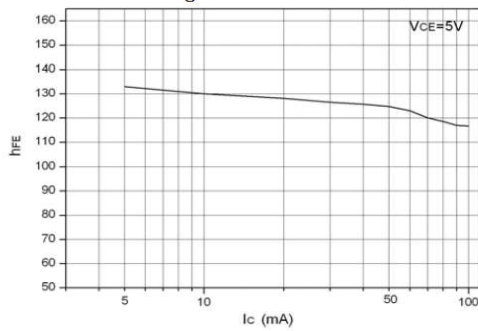


Fig04:  $f_T$  &  $I_c$

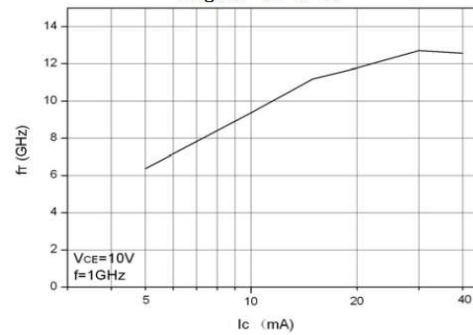


Fig05:  $|S_{21e}|^2$  & f

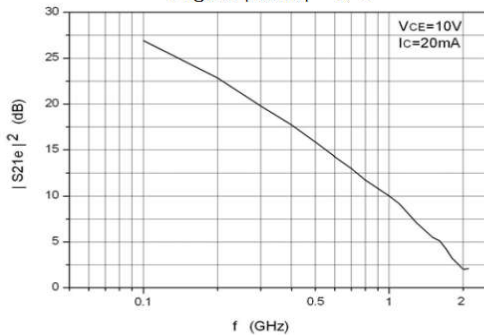


Fig06:  $|S_{21e}|^2$  &  $I_c$

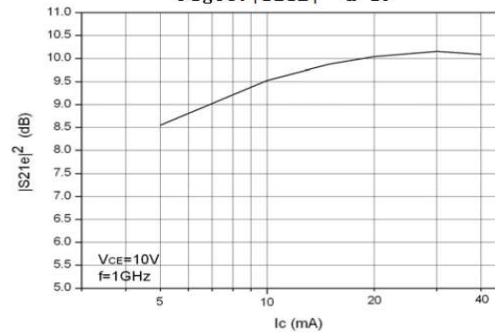


Fig07: NF &  $I_c$

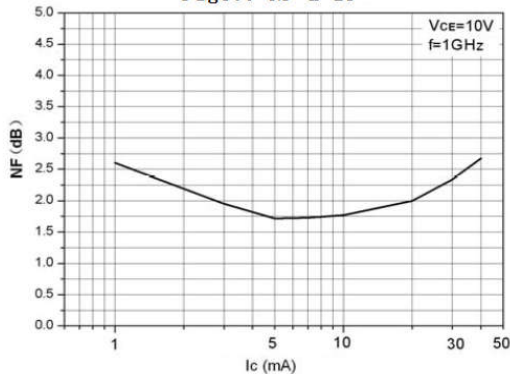
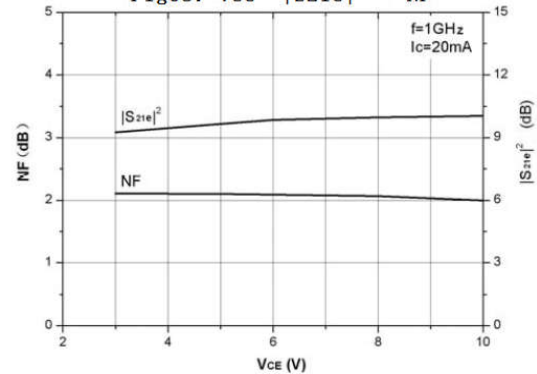


Fig08:  $v_{ce}$   $|S_{21e}|^2$  NF



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