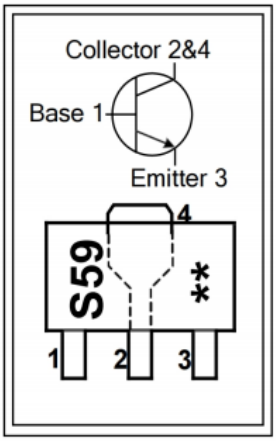
Microwave low noise amplifier NPNsilicon epitaxial transistor

Description:

- This chip is manufactured using silicon epitaxial technology, featuring high power gain amplification, wide bandwidth,low noise, low leakage current, small junction capacitance characteristics, a large dynamic range, and ideal current linearity.
- It is mainly appliedin ultra-high frequency microwave and high frequency broadband low-noise amplifiers, such as CATV video amplifiers, wireless transceiver modules, various long-distance remote controllers, security alarms, analog-digital cordless telephones, and other related products.Suitable for medium power and high frequency signal amplification.
- Collector-emitter breakdown voltage: BV_{CEO} = 15V, maximum collector current: I_{CM} = 200mA, power dissipation:P_C = 2W,characteristic frequency: f_T = 8.5GHz.
- Package type: SOT89 Body marking (Marking): S59



Limiting values（Tamb=25℃）:

Parameter	Symbol	Values	Unit
collector-base voltage	V_{CBO}	25	V
collector-emitter voltage	V_{CEO}	15	V
emitter-base voltage	V_{EBO}	2.5	V
collector current	I_{CM}	300	mA
power dissipation	P_T	2000	mW
maximum junction temperature	T_J	-40～150	℃
storage temperature	Tstg	-65～+150	℃

Electrical parameters and characteristics（Tamb=25℃）:

Parameter	Symbol	Test conditions	Min.	Typ.	Max.	Unit
collector-base breakdown voltage	BV_{CBO}	open emitter	25	35		V
collector-emitter breakdown voltage	BV_{CEO}	open base	15	19		V
emitter-base breakdown voltage	BV_{EBO}	open collector	2.5	3.5		V
collector current	I_C				200	mA
collector cut-off current	I_{CBO}	V_{CB}=6V,I_E=0	-	-	0.05	μA
DC current amplification factor	h_{FE}	V_{CE}=8V,I_C=80mA,	60	130	300	
characteristic frequency	f_T	V_{CE}=8V,I_C=80mA, f=900MHz	8	8.5	-	GHz
feedback capacitor	C_{re}	I_C=i_C=0,V_{CB}=8V,f=1MHz	-	1.2	-	pF
collector capacitance	C_C	I_E=ie=0,V_{CB}=8V,f=1MHz	-	1.8	-	pF
emitter capacitance	C_e	I_C=i_C=0,$_{VEB}$=0.5V,f=1MHz	-	3	-	pF
insertion power gain	$\lvert S_{21} \rvert^2$	I_C=80$_{mA}$,V_{CE}=8V,f=433MH$_z$	17	18	-	
		I_C=80mA,V_{CE}=8V,f=900MHz	11	12	-	dB
		I_C=80mA,V_{CE}=8V,f=1800MHz	5	5.5	-	
maximum unilateral power gain	G_{UM}	I_C=80mA,V_{CE}=8V,f=433MHz	18	19.5	-	
		I_C=80mA,V_{CE}=8,f=900MHz	11.5	12.5	-	dB
		I_C=80mA,V_{CE}=8V,f=1.8GHz	6.5	7	-	

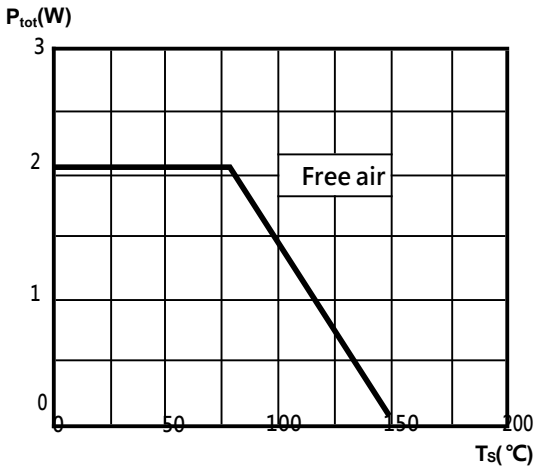
Among them： $G_{UM} = 10\log \frac{|S_{21}|^2}{(1-S_{11})^2(1-S_{22})^2} dB$

Typical characteristic：

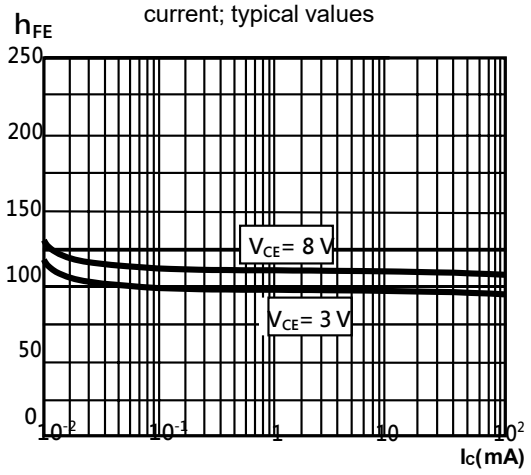
Typical characteristics

(TA=25℃,unless otherwise specified)

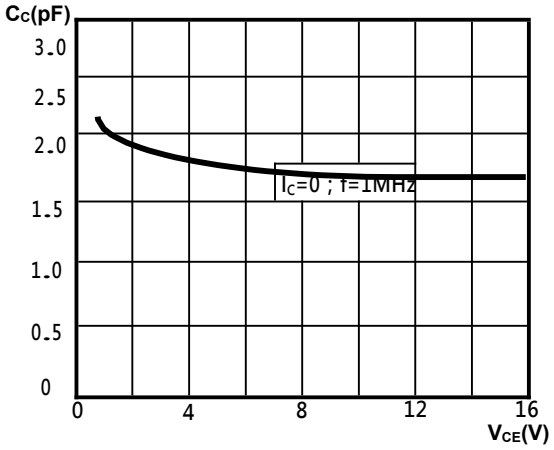
Power derating curve



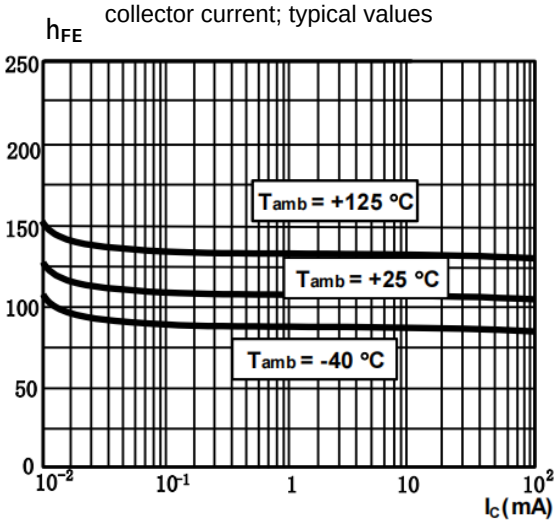
DC current gain as a function of collector current; typical values



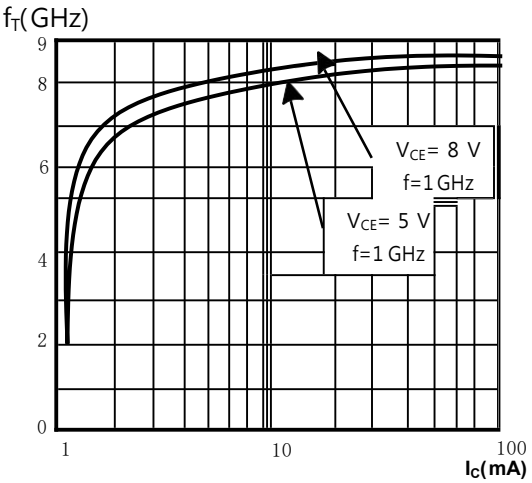
Collector capacitance as a function of collector-base voltage; typical values



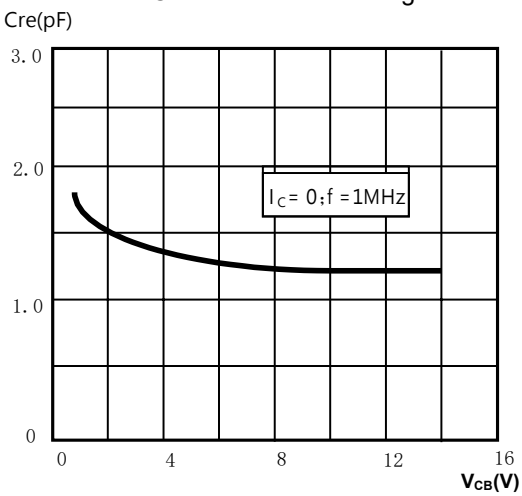
DC current gain as a function of collector current; typical values



Frequency collector vs.Current

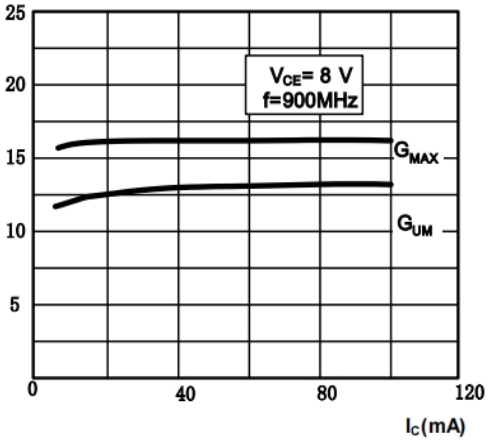


Reverse transfer capacitance vs.
Collector to base voltage



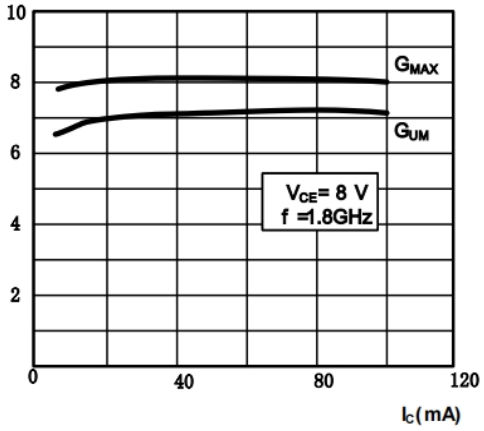
gain(dB)

Gain vs. Function of
collector current

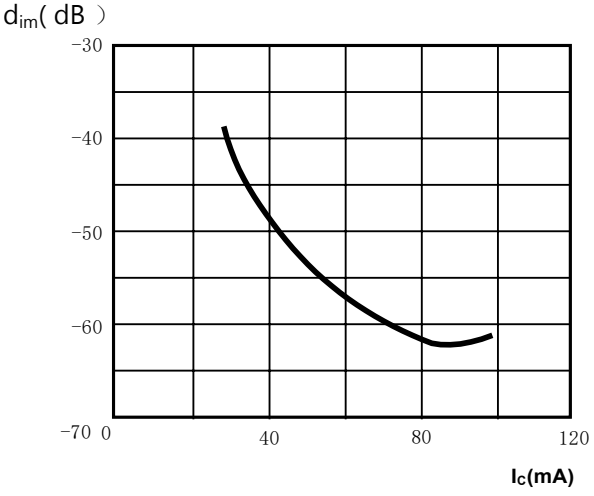


gain(dB)

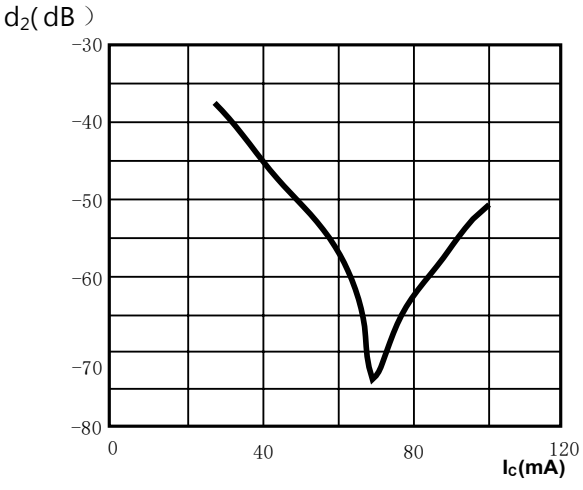
Gain vs. Function of collector current



Intermodulation distortion
vs.Function of collector current

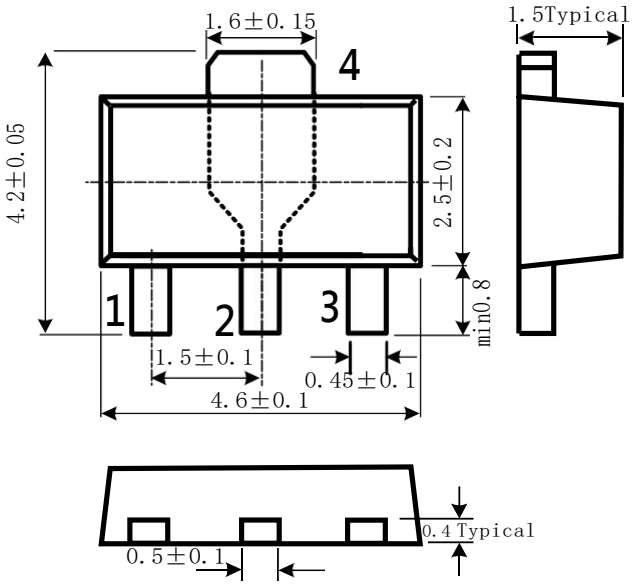


Second order intermodulation distortion
vs.Function of collector current



Package dimensions diagram :

SOT-89 package dimensions
(Units:mm)



Pin connections
1.Base 2&4.collector 3.emitter