Microwave low noise amplifier npn silicon epitaxial transistor

Bfp196 NPN transistor

Description

- This chip is manufactured using silicon epitaxial technology, featuring high power gain, wide bandwidth, and characteristics of low noise, low leakage current, and small junction capacitance. It offers a large dynamic range and ideal current linearity;
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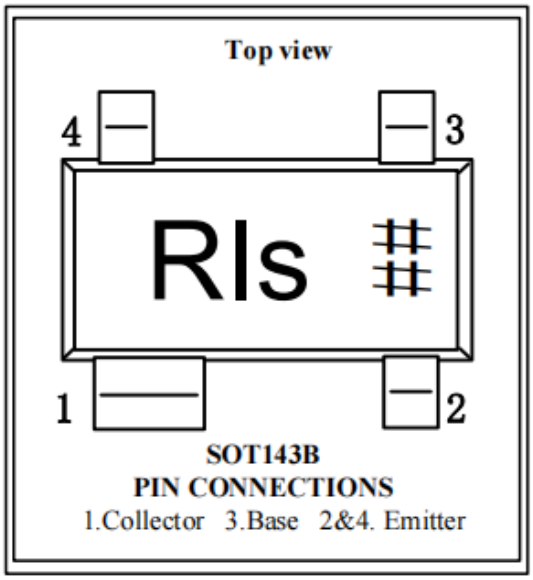
- It is primarily used in ultra-high frequency microwave, VHF, UHF, and CATV high-frequency broadband low-noise amplifiers, such as satellite TV tuners, digital TV set-top boxes, CATV amplifiers, analog-digital cordless phones, radar motion detectors, wireless security alarms, RF modules, and fiber optic modules;

Feathers

- Collector-emitter breakdown voltage: BVCEO=12V
- maximum collector current: ICM=150mA
- power dissipation: PC=700mW
- characteristic frequency: fT=9.0GHz
- Package type: SOT143B, Body marking: RIs-##.



Maximum Ratings（Tamb=25℃）

Parameter	Symbol	Value	Unit
collector-base voltage	V_{CBO}	20	V
collector-emitter voltage	V_{CEO}	12	V
emitter-base voltage	V_{EBO}	2.0	V
collector current	I_{CM}	150	mA
power dissipation	P_T	700	mW
chip junction temperature	T_J	150	℃
storage temperature	T_{stg}	-65～+150	℃

Electrical Characteristics（T_{amb}=25℃）

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
collector-base breakdown voltage	BV_{CBO}		20			V
collector-emitter breakdown high voltage	BV_{CEO}		12			V
collector-emitter breakdown voltage	BV_{CEO}		2.5			V
collector cut-off current	I_{CBO}	V_{CB}=10V,I_E=0			0.1	μA
DC current amplification factor	h_{FE}	V_{CE}=8V,I_C=50MA V_{CE}=6V,I_C=30MA	75	100 110	140	
characteristic frequency	f_T	V_{CE}=8V,I_C=70MA,f=500MHz	8.5	9.0		GHz
collector-emitter capacitance	Cce	I_C=i_C=0,V_{CE}=10V,f=1MHz		0.35		pF
collector-base capacitance	Ccb	I_E=i_e=0,V_{CB}=10V,f=1MHz,		0.8	1.3	pF
emitter-base capacitance	Ceb	I_C=i_C=0,V_{EB}=0.5V,f=1MHz		3.9		pF
insertion power gain	$\|S_{21}\|^2$	I_C=50mA,V_{CE}=8V,f=900MHz	13	14		dB
		I_C=50mA,V_{CE}=8V,f=1.8GHz	6.5	7.5		dB
noise figure	NF	V_{CE}=8V,I_C=20mA,f=900MHz		1.3		dB
		V_{CE}=8V,I_C=20mA,f=1.8GHz		2.2		dB
maximum unilateral power gain	G_{UM}	I_C=50mA,V_{CE}=8V,f=900MHz	16	17		dB
		I_C=50mA,V_{CE}=8V,f=1.8GHz		10		dB
output power at 1dB gain compression	PL1	I_C=50mA,V_{CE}=8V, R_L=50Ω,f=900MHz		20		dBm
third-order intercept point	ITO	I_C=50mA,V_{CE}=8V, R_L=50Ω,f_p=900MHz, f_q=902MHz		33		dBm

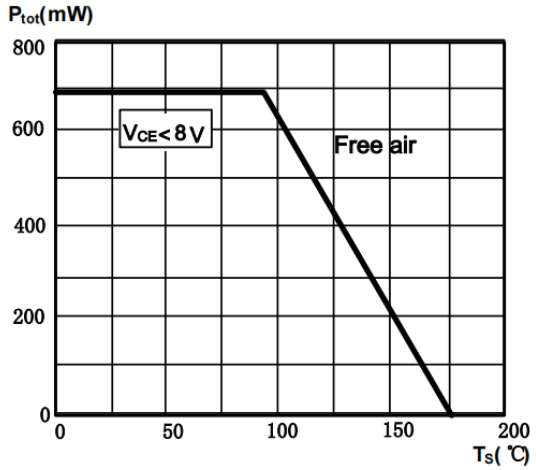
Note：

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

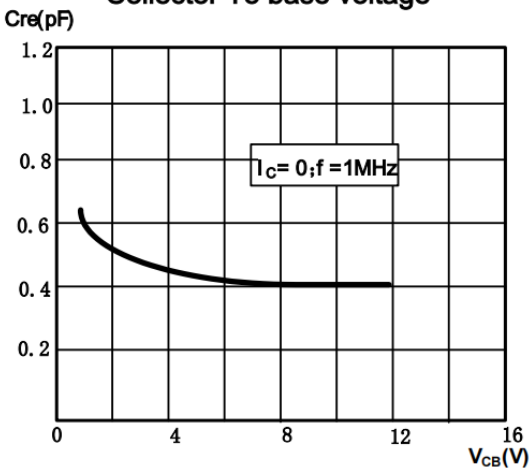
Typical characteristic curves

Typical Characteristics (T_A=25°C,unless otherwise specified)

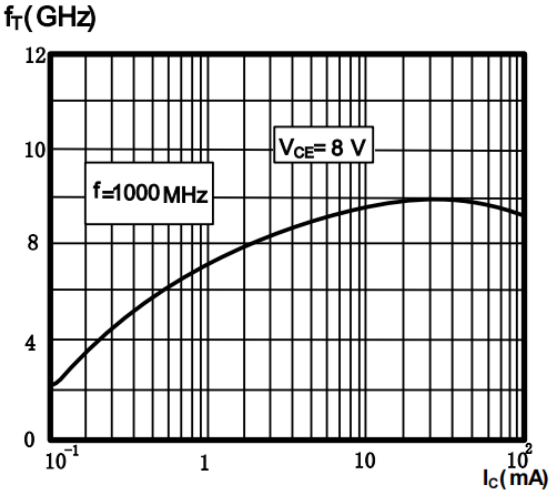
Total Power Dissipation vs. Ambient Temperatture



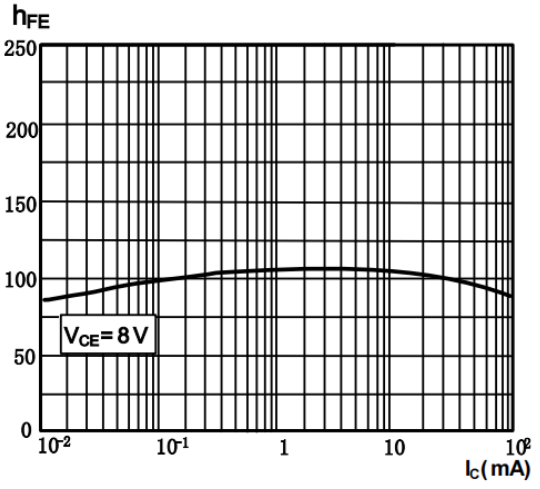
Reverse Transfer Capacitance vs. Collector To base voltage



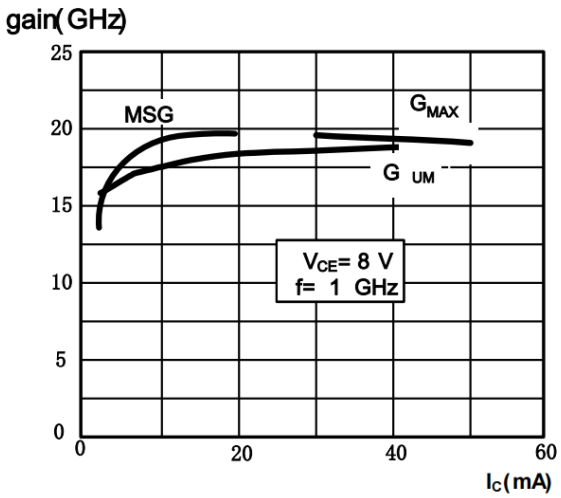
Frequency vs. Collector Current



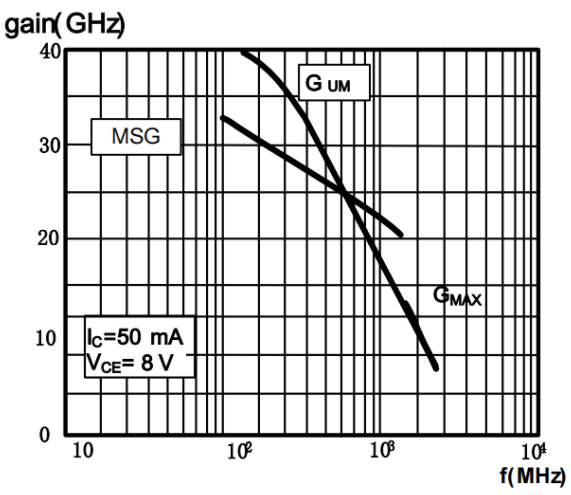
DC current vs. Collector Current



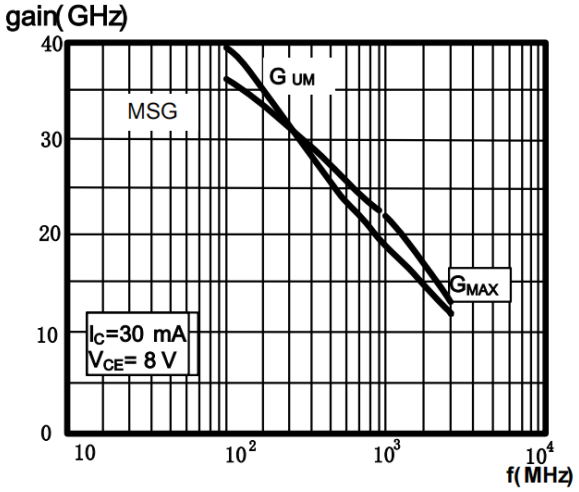
Gain vs. Function of Collector Current



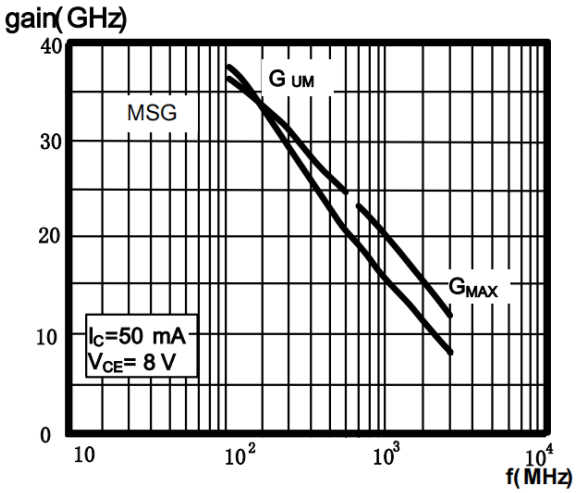
Gain vs. Function of Frequency



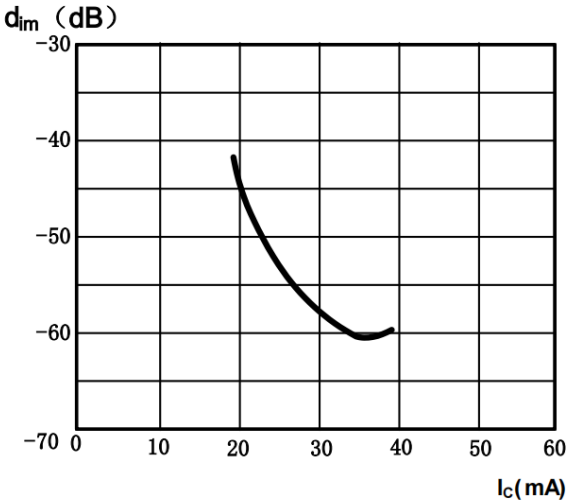
Gain vs. Function of Frequency



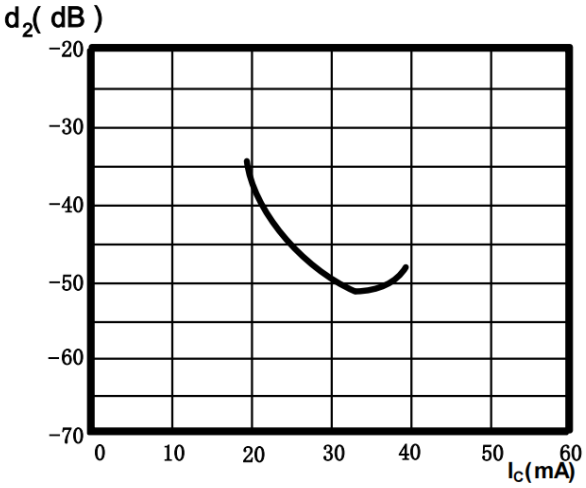
Gain vs. Function of Frequency



Intermodulation Distortion vs. Function of Collector Current



Second Order Intermodulation Distortion vs. Function of Collector Current



Package Dimensions