2SC4226

NPN Silicon RF Transistor

NPN Epitaxial Silicon RF Transistor for High-Frequency Low-Noise Amplification 3-pin super Minimold

R09DS0022EJ0200
Rev.2.00
Jun 29, 2011

DESCRIPTION

The 2SC4226 is a low supply voltage transistor designed for VHF, UHF low noise amplifier.

It is suitable for a high density surface mount assembly since the transistor has been applied 3-pin super minimold package.

FEATURES

- Low noise : NF = 1.2 dB TYP. @ V_{CE} = 3 V, I_C = 7 mA, f = 1 GHz
- High gain : $|S_{21e}|^2$ = 9 dB TYP. @ V_{CE} = 3 V, I_C = 7 mA, f = 1 GHz
- 3-pin super minimold package

<R> ORDERING INFORMATION

Part Number	Order Number	Package	Quantity	Supplying Form
2SC4226	2SC4226-A	3-pin super Minimold (Pb-Free)	50 pcs (Non reel)	• 8 mm wide embossed taping
2SC4226-T1	2SC4226-T1-A		3 kpcs/reel	• Pin 3 (Collector) face the perforation side of the tape

Remark To order evaluation samples, please contact your nearby sales office.
The unit sample quantity is 50 pcs.

ABSOLUTE MAXIMUM RATINGS (T_A = +25°C)

Parameter	Symbol	Ratings	Unit
Collector to Base Voltage	V_{CBO}	20	V
Collector to Emitter Voltage	V_{CEO}	12	V
Emitter to Base Voltage	V_{EBO}	3	V
Collector Current	I_C	100	mA
Total Power Dissipation	P_{tot} Note	150	mW
Junction Temperature	T_j	150	°C
Storage Temperature	T_{stg}	–65 to +150	°C

Note Free air

CAUTION

Observe precautions when handling because these devices are sensitive to electrostatic discharge.

The mark <R> shows major revised points.
The revised points can be easily searched by copying an "<R>" in the PDF file and specifying it in the "Find what:" field.

ELECTRICAL CHARACTERISTICS (T_A = +25°C)

Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX.	Unit
DC Characteristics						
Collector Cut-off Current	I_{CBO}	V_{CB} = 10 V, I_E = 0	–	–	1.0	μA
Emitter Cut-off Current	I_{EBO}	V_{EB} = 1 V, I_C = 0	–	–	1.0	μA
DC Current Gain	h_{FE} Note 1	V_{CE} = 3 V, I_C = 7 mA	40	110	250	–
RF Characteristics						
Gain Bandwidth Product	f_T	V_{CE} = 3 V, I_C = 7 mA	3.0	4.5	–	GHz
Insertion Power Gain	$\lvert S_{21e} \rvert^2$	V_{CE} = 3 V, I_C = 7 mA, f = 1 GHz	7	9	–	dB
Noise Figure	NF	V_{CE} = 3 V, I_C = 7 mA, f = 1 GHz	–	1.2	2.5	dB
Reverse Transfer Capacitance	C_{re} Note 2	V_{CB} = 3 V, I_E = 0, f = 1 MHz	–	0.7	1.5	pF

Notes 1. Pulse measurement: PW ≤ 350 μs, Duty Cycle ≤ 2%

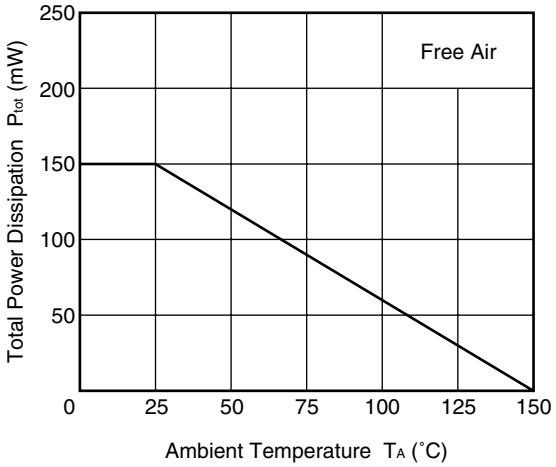
2. Collector to base capacitance when the emitter grounded

<R> h_{FE} CLASSIFICATION

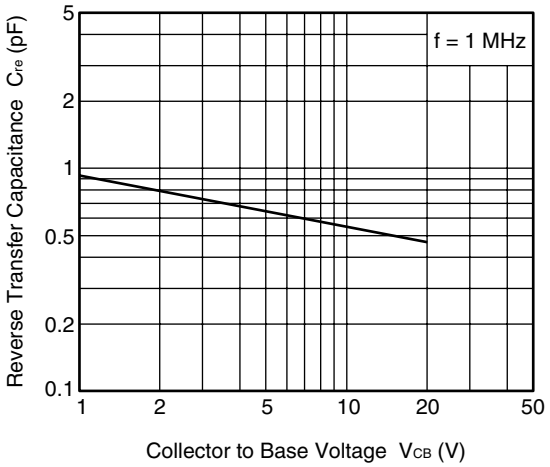
Rank	R23/Y23	R24/Y24	R25/Y25
Marking	R23	R24	R25
h_{FE} Value	40 to 80	70 to 140	125 to 250

TYPICAL CHARACTERISTICS (T_A = +25°C, unless otherwise specified)

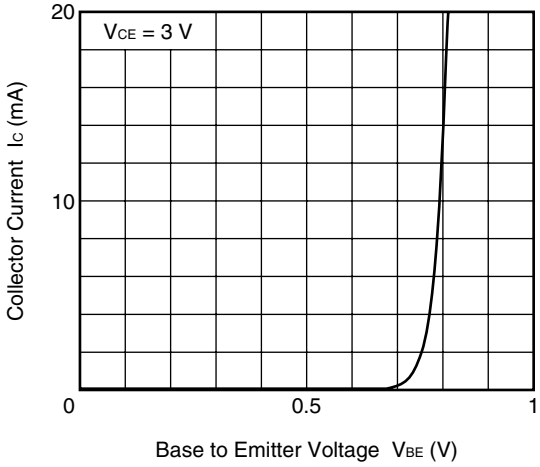
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



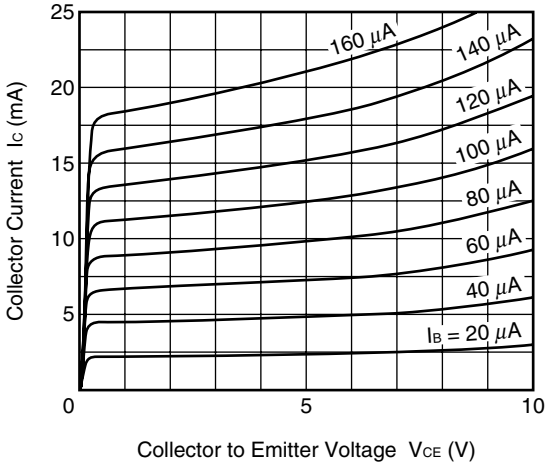
REVERSE TRANSFER CAPACITANCE vs. COLLECTOR TO BASE VOLTAGE



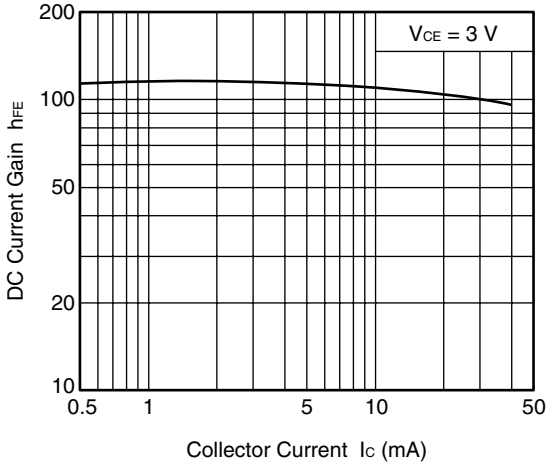
COLLECTOR CURRENT vs. BASE TO EMITTER VOLTAGE



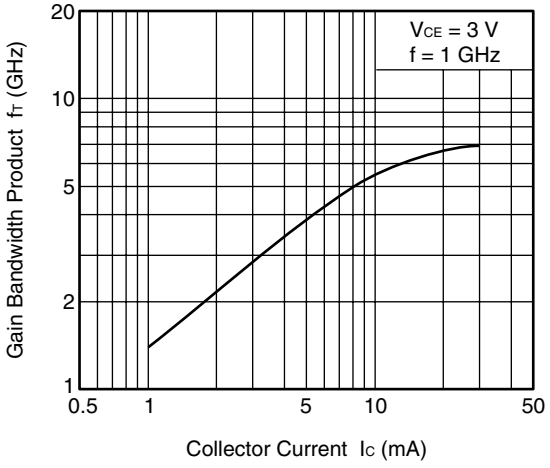
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



DC CURRENT GAIN vs. COLLECTOR CURRENT

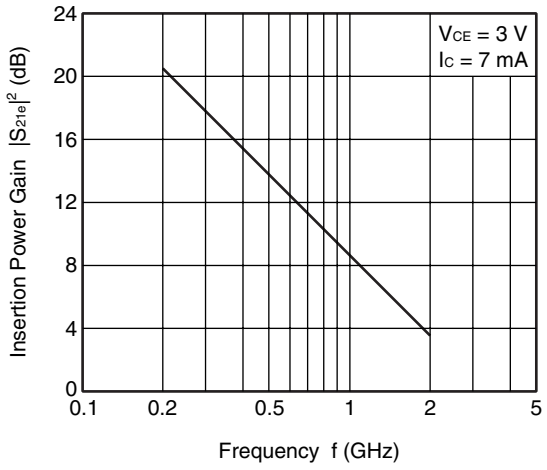


GAIN BANDWIDTH PRODUCT vs. COLLECTOR CURRENT

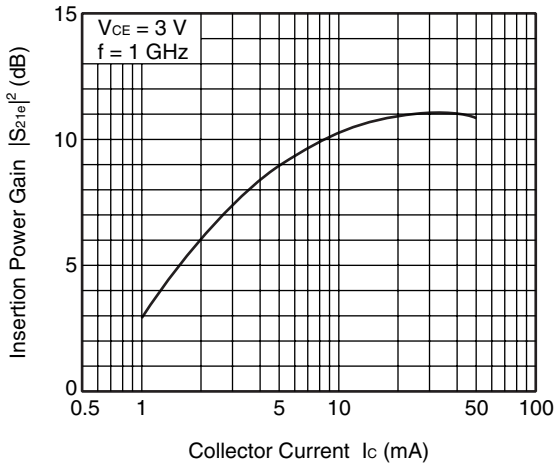


Remark The graphs indicate nominal characteristics.

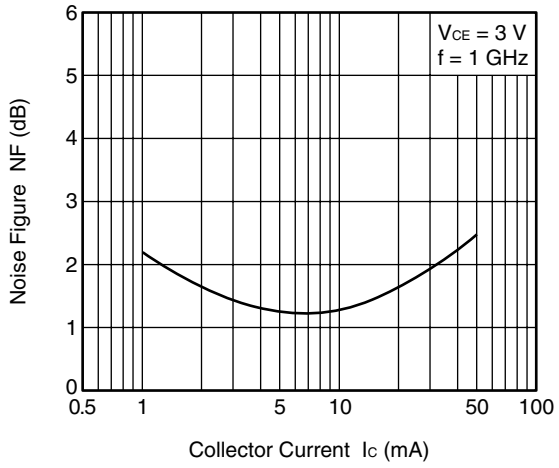
INSERTION POWER GAIN
vs. FREQUENCY



INSERTION POWER GAIN
vs. COLLECTOR CURRENT



NOISE FIGURE vs.
COLLECTOR CURRENT



Remark The graphs indicate nominal characteristics.

S-PARAMETERS

S-parameters and noise parameters are provided on our Web site in a format (S2P) that enables the direct import of the parameters to microwave circuit simulators without the need for keyboard inputs.

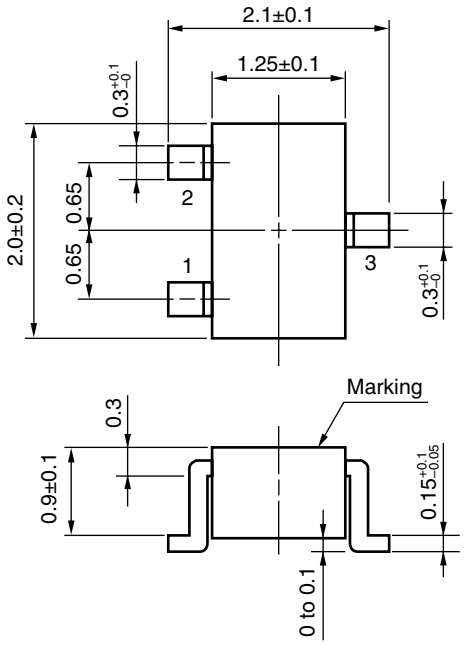
Click here to download S-parameters.

[RF and Microwave] → [Device Parameters]

URL http://www2.renesas.com/microwave/en/download.html

PACKAGE DIMENSIONS

3-PIN SUPER MINIMOLD (UNIT: mm)



PIN CONNECTIONS

1. Emitter
2. Base
3. Collector

(EIAJ : SC-70)

Revision History	2SC4226 Data Sheet

Rev.	Date	Description	
		Page	Summary
–	Dec 2003	–	Previous No. :PU10450EJ01V0DS
2.00	Jun 29, 2011	p.1	Modification of **ORDERING INFORMATION**
		p.2	Modification of $\mathbf{h_{FE}}$ **CLASSIFICATION**

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