

2SC4226

NPN Silicon RF Transistor

R09DS0022EJ0200

Rev.2.00

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

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 : $NF = 1.2 \text{ dB TYP. @ } V_{CE} = 3 \text{ V, } I_C = 7 \text{ mA, } f = 1 \text{ GHz}$
- High gain : $|S_{21e}|^2 = 9 \text{ dB TYP. @ } V_{CE} = 3 \text{ V, } I_C = 7 \text{ mA, } f = 1 \text{ GHz}$
- 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) | <ul style="list-style-type: none"> • 8 mm wide embossed taping • Pin 3 (Collector) face the perforation side of the tape |
| 2SC4226-T1 | 2SC4226-T1-A | | 3 kpcs/reel | |

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 | S _{21e} 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 |

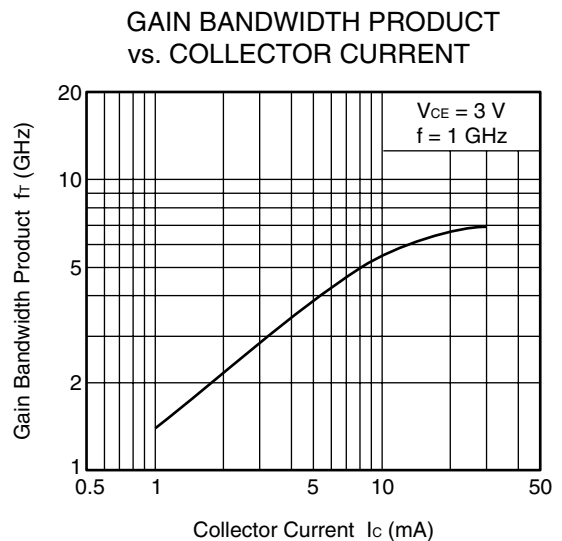
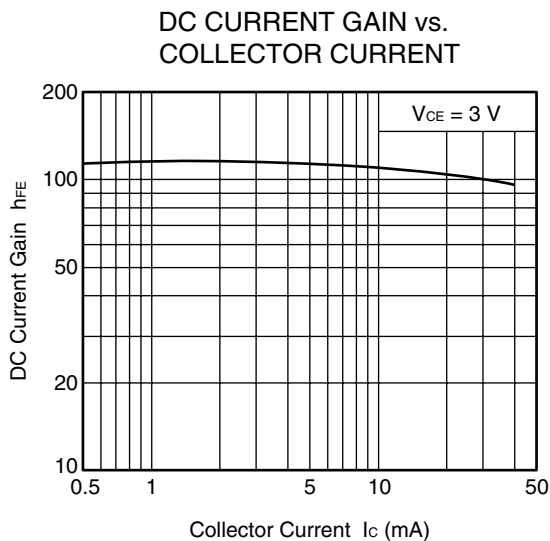
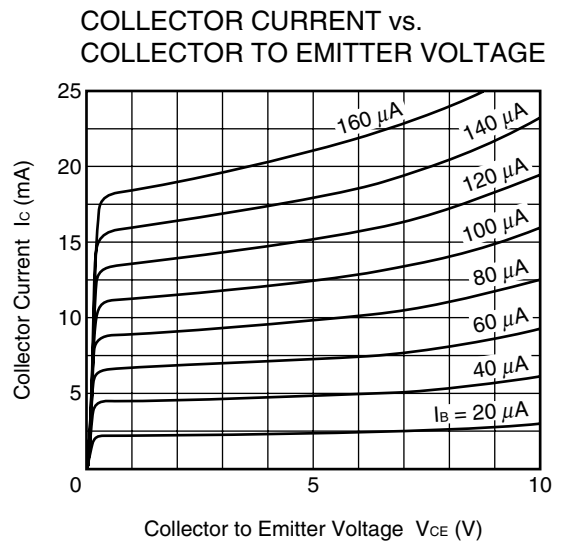
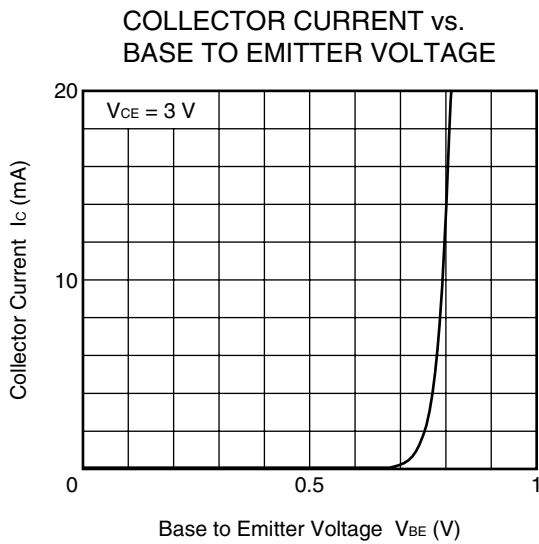
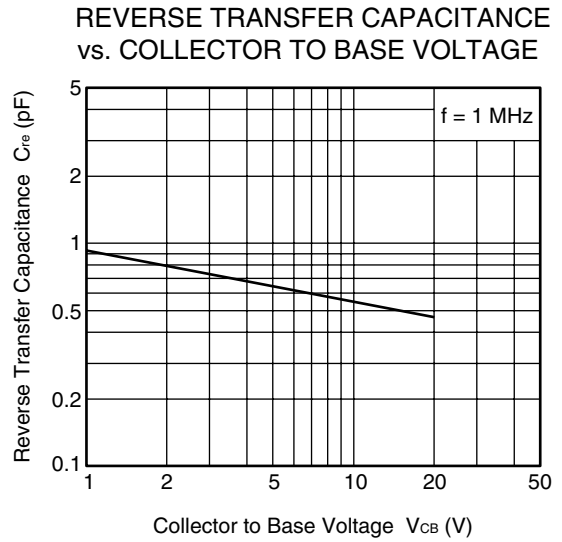
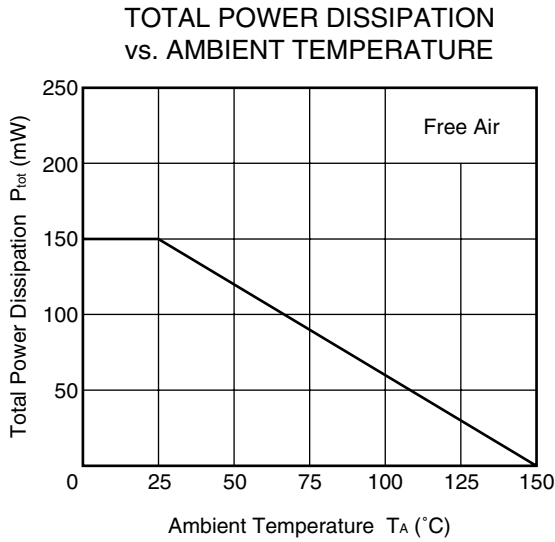
Notes 1. Pulse measurement: PW ≤ 350 μs, Duty Cycle ≤ 2%

2. Collector to base capacitance when the emitter grounded

<R> h_{FE} CLASSIFICATION

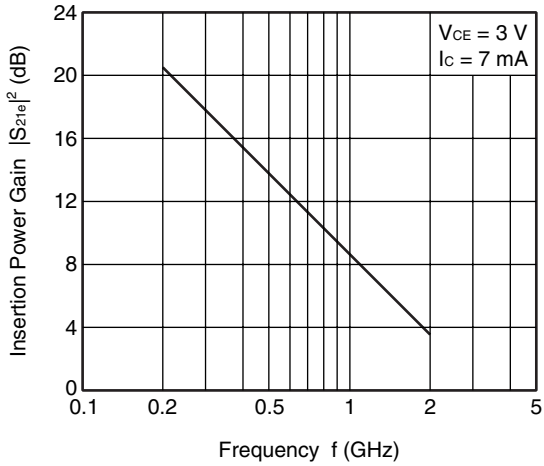
| Rank | R23/Y23 | R24/Y24 | R25/Y25 |
|-----------------------|----------|-----------|------------|
| Marking | R23 | R24 | R25 |
| h _{FE} Value | 40 to 80 | 70 to 140 | 125 to 250 |

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

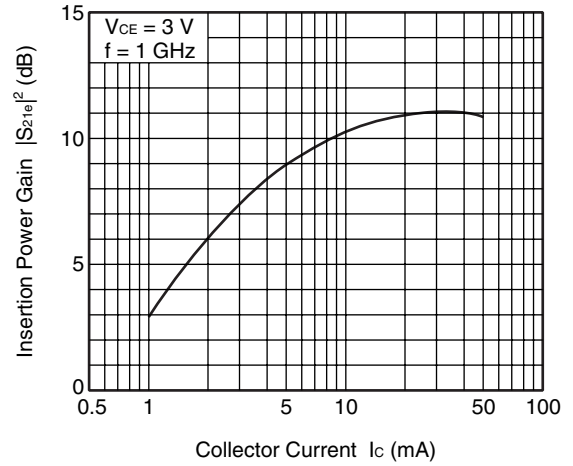


Remark The graphs indicate nominal characteristics.

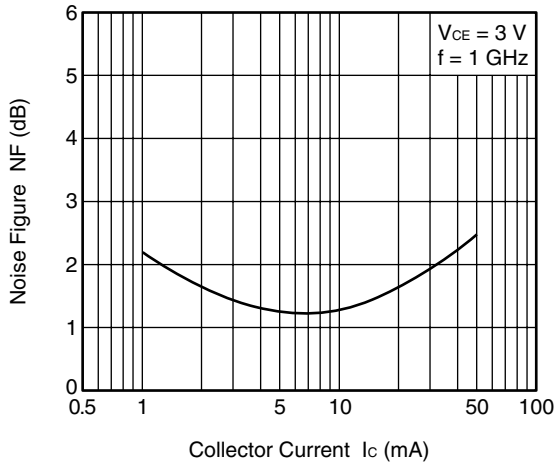
INSERTION POWER GAIN vs. FREQUENCY



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.

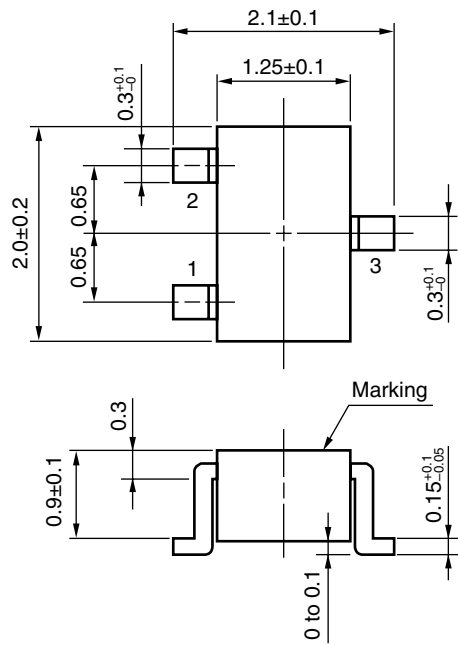
Click here to download S-parameters.

[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 h_{FE} CLASSIFICATION |

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Renesas Electronics America Inc.
2880 Scott Boulevard Santa Clara, CA 95050-2554, U.S.A.
Tel: +1-408-586-6000, Fax: +1-408-586-6130

Renesas Electronics Canada Limited
1101 Nicholson Road, Newmarket, Ontario L3Y 9C3, Canada
Tel: +1-905-898-5441, Fax: +1-905-898-3220

Renesas Electronics Europe Limited
Dukes Meadow, Millboard Road, Bourne End, Buckinghamshire, SL8 5FH, U.K.
Tel: +44-1628-585-100, Fax: +44-1628-585-900

Renesas Electronics Europe GmbH
Arcadiastrasse 10, 40472 Düsseldorf, Germany
Tel: +49-211-65030, Fax: +49-211-6503-1327

Renesas Electronics (China) Co., Ltd.
7th Floor, Quantum Plaza, No.27 ZhiChunLu Haidian District, Beijing 100083, P.R.China
Tel: +86-10-8235-1155, Fax: +86-10-8235-7679

Renesas Electronics (Shanghai) Co., Ltd.
Unit 204, 205, AZIA Center, No.1233 Lujiazui Ring Rd., Pudong District, Shanghai 200120, China
Tel: +86-21-5877-1818, Fax: +86-21-6887-7858 / -7898

Renesas Electronics Hong Kong Limited
Unit 1601-1613, 16/F., Tower 2, Grand Century Place, 193 Prince Edward Road West, Mongkok, Kowloon, Hong Kong
Tel: +852-2886-9318, Fax: +852 2886-9022/9044

Renesas Electronics Taiwan Co., Ltd.
13F, No. 363, Fu Shing North Road, Taipei, Taiwan
Tel: +886-2-8175-9600, Fax: +886 2-8175-9670

Renesas Electronics Singapore Pte. Ltd.
1 HarbourFront Avenue, #06-10, Keppel Bay Tower, Singapore 098632
Tel: +65-6213-0200, Fax: +65-6276-8001

Renesas Electronics Malaysia Sdn.Bhd.
Unit 906, Block B, Menara Amcorp, Amcorp Trade Centre, No. 18, Jin Persiaran Barat, 46050 Petaling Jaya, Selangor Darul Ehsan, Malaysia
Tel: +60-3-7955-9390, Fax: +60-3-7955-9510

Renesas Electronics Korea Co., Ltd.
11F., Samik Lavied' or Bldg., 720-2 Yeoksam-Dong, Kangnam-Ku, Seoul 135-080, Korea
Tel: +82-2-558-3737, Fax: +82-2-558-5141