To our customers,

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Renesas Electronics website: http://www.renesas.com

April 1st, 2010
Renesas Electronics Corporation



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# 2SA1084, 2SA1085

Silicon PNP Epitaxial

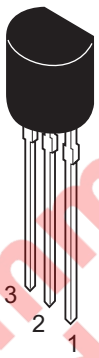
REJ03G0635-0300
(Previous ADE-208-1007A)
Rev.3.00
Aug.10.2005

## Application

Low frequency low noise amplifier

## Outline

RENESAS Package code: PRSS0003DA-A
(Package name: TO-92 (1))




1. Emitter
2. Collector
3. Base



## Absolute Maximum Ratings

(Ta = 25°C)

| Item | Symbol | 2SA1084 | 2SA1085 | Unit |
|---|---|---|---|---|
| Collector to base voltage | $V_{CBO}$ | –90 | –120 | V |
| Collector to emitter voltage | $V_{CEO}$ | –90 | –120 | V |
| Emitter to base voltage | $V_{EBO}$ | –5 | –5 | V |
| Collector current | $I_C$ | –100 | –100 | mA |
| Emitter current | $I_E$ | 100 | 100 | mA |
| Collector power dissipation | $P_C$ | 400 | 400 | mW |
| Junction temperature | Tj | 150 | 150 | °C |
| Storage temperature | Tstg | –55 to +150 | –55 to +150 | °C |

## Electrical Characteristics

(Ta = 25°C)

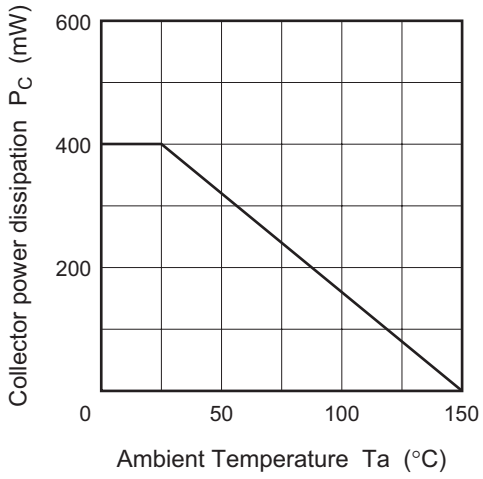
| Item | Symbol | 2SA1084 | | | 2SA1085 | | | Unit | Test conditions |
|---|---|---|---|---|---|---|---|---|---|
| | | Min | Typ | Max | Min | Typ | Max | | |
| Collector to base breakdown voltage | $V_{(BR)CBO}$ | –90 | — | — | –120 | — | — | V | $I_C$ = –10 µA, $I_E$ = 0 |
| Collector to emitter breakdown voltage | $V_{(BR)CEO}$ | –90 | — | — | –120 | — | — | V | $I_C$ = –1 mA, $R_{BE}$ = ∞ |
| Emitter to base breakdown voltage | $V_{(BR)EBO}$ | –5 | — | — | –5 | — | — | V | $I_E$ = –10 µA, $I_C$ = 0 |
| Collector cutoff current | $I_{CBO}$ | — | — | –0.1 | — | — | –0.1 | µA | $V_{CB}$ = –50 V, $I_E$ = 0 |
| Emitter cutoff current | $I_{EBO}$ | — | — | –0.1 | — | — | –0.1 | µA | $V_{EB}$ = –2 V, $I_C$ = 0 |
| DC current transfer ratio | $h_{FE}$*[1] | 250 | — | 800 | 250 | — | 800 | | $V_{CE}$ = –12 V, $I_C$ = –2 mA |
| Collector to emitter saturation voltage | $V_{CE(sat)}$ | — | — | –0.2 | — | — | –0.2 | V | $I_C$ = –10 mA, $I_B$ = –1 mA |
| Base to emitter voltage | $V_{BE}$ | — | –0.6 | — | — | –0.6 | — | V | $V_{CE}$ = –12 V, $I_C$ = –2 mA |
| Gain bandwidth product | $f_T$ | — | 90 | — | — | 90 | — | MHz | $V_{CE}$ = –12 V, $I_C$ = –2 mA |
| Collector output capacitance | Cob | — | 3.5 | — | — | 3.5 | — | pF | $V_{CB}$ = –10 V, $I_E$ = 0, f = 1 MHz |
| Noise voltage referred to input | $e_n$ | — | 0.5 | — | — | 0.5 | — | nV/√Hz | $V_{CE}$ = –6V, $I_C$ = –10 mA, f = 1 kHz, $R_g$ = 0, Δf = 1Hz |

Note: 1. The 2SA1084 and 2SA1085 are grouped by $h_{FE}$ as follows.

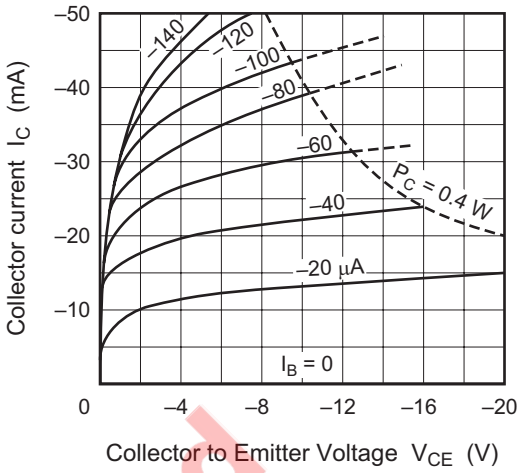
| D | E |
|---|---|
| 250 to 500 | 400 to 800 |

## Main Characteristics

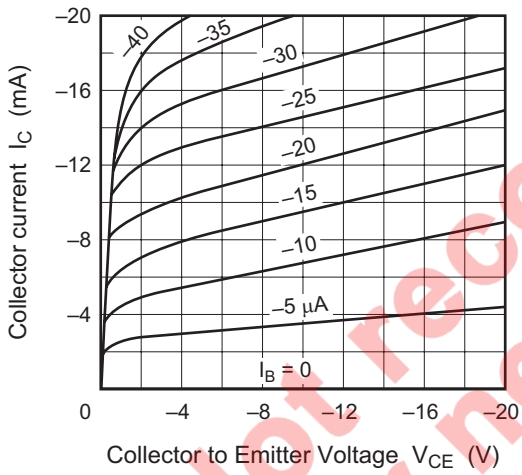
Maximum Collector Dissipation Curve



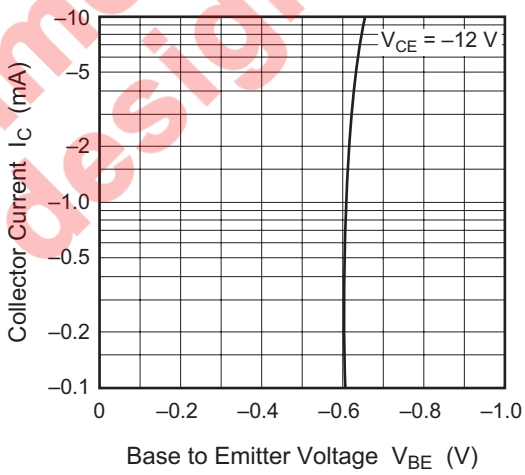

Typical Output Characteristics (1)



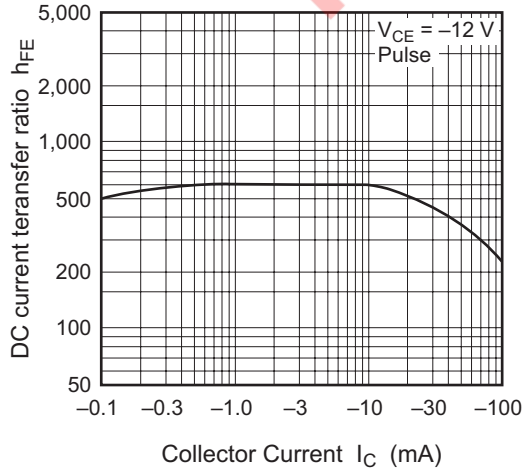

Typical Output Characteristics (2)



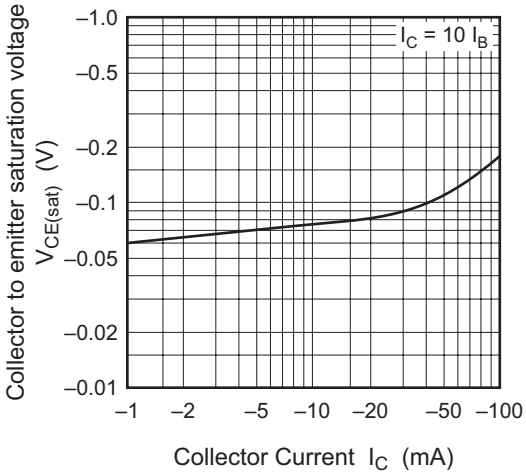

Typicaol Transfer Characteristics



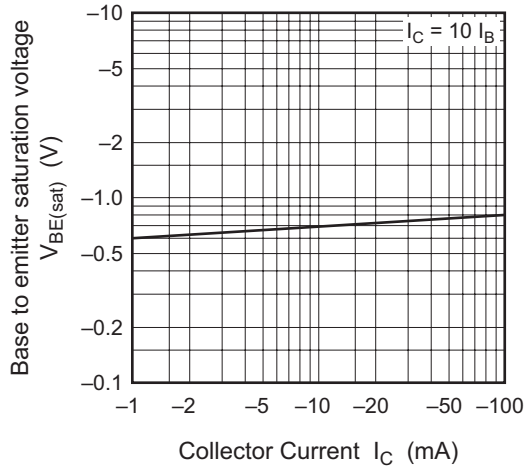

DC Current Transfer Ratio vs. Collector Current



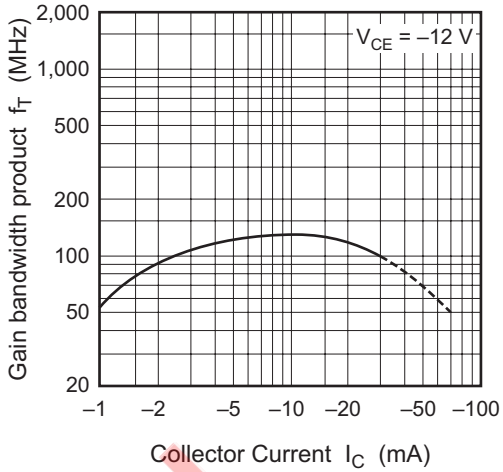

Collector to Emitter Saturation Voltage vs. Collector Current



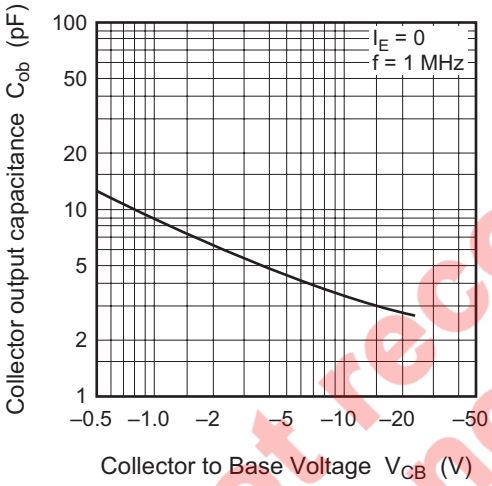
Base to Emitter Saturation Voltage vs. Collector Current



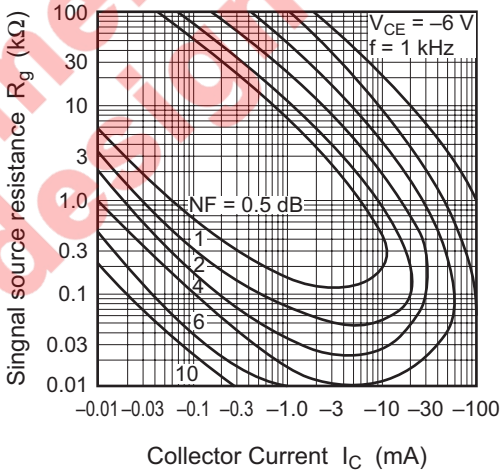

Gain Bandwidth Product vs. Collector Current



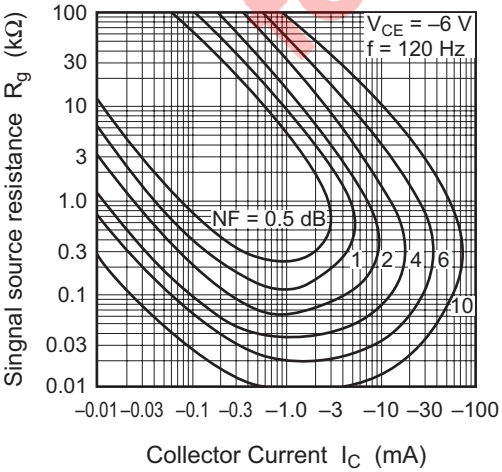

Collector Output Capacitance vs. Collector to Base Voltage



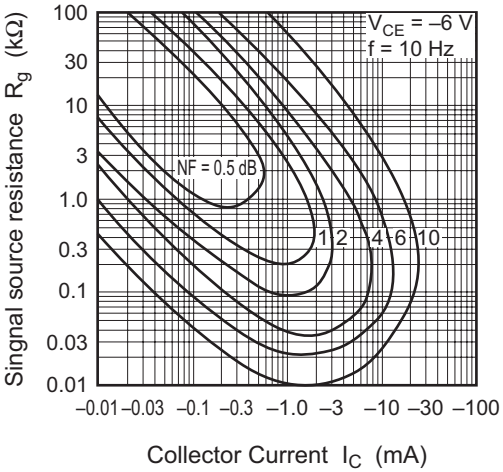

Contours of Constant Noise Figure (1)




Contours of Constant Noise Figure (2)



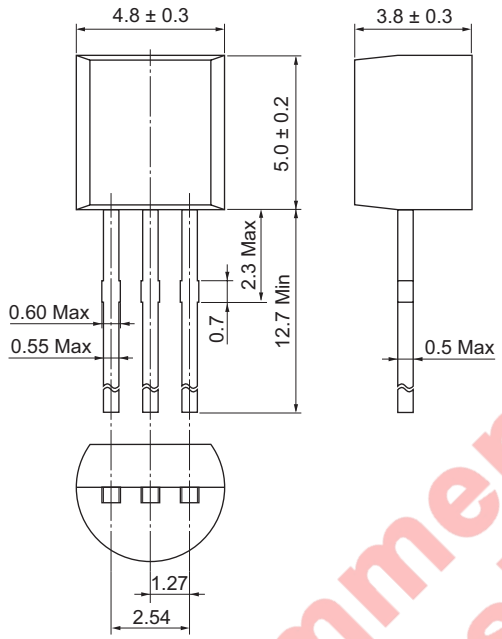

Contours of Constant Noise Figure (3)



## Package Dimensions

| JEITA Package Code | RENESAS Code | Package Name | MASS[Typ.] |
|---|---|---|---|
| SC-43A | PRSS0003DA-A | TO-92(1) / TO-92(1)V | 0.25g |

Unit: mm






## Ordering Information

| Part Name | Quantity | Shipping Container |
|---|---|---|
| 2SA1084ETZ-E<br>2SA1085DTZ-E<br>2SA1085ETZ-E | 2500 | Hold Box, Radial Taping |

Note: For some grades, production may be terminated. Please contact the Renesas sales office to check the state of production before ordering the product.

Renesas Technology Corp. Sales Strategic Planning Div. Nippon Bldg., 2-6-2, Ohte-machi, Chiyoda-ku, Tokyo 100-0004, Japan





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**Renesas Technology America, Inc.**
450 Holger Way, San Jose, CA 95134-1368, U.S.A
Tel: <1> (408) 382-7500, Fax: <1> (408) 382-7501

**Renesas Technology Europe Limited**
Dukes Meadow, Millboard Road, Bourne End, Buckinghamshire, SL8 5FH, U.K.
Tel: <44> (1628) 585-100, Fax: <44> (1628) 585-900

**Renesas Technology Hong Kong Ltd.**
7th Floor, North Tower, World Finance Centre, Harbour City, 1 Canton Road, Tsimshatsui, Kowloon, Hong Kong
Tel: <852> 2265-6688, Fax: <852> 2730-6071

**Renesas Technology Taiwan Co., Ltd.**
10th Floor, No.99, Fushing North Road, Taipei, Taiwan
Tel: <886> (2) 2715-2888, Fax: <886> (2) 2713-2999

**Renesas Technology (Shanghai) Co., Ltd.**
Unit2607 Ruijing Building, No.205 Maoming Road (S), Shanghai 200020, China
Tel: <86> (21) 6472-1001, Fax: <86> (21) 6415-2952

**Renesas Technology Singapore Pte. Ltd.**
1 Harbour Front Avenue, #06-10, Keppel Bay Tower, Singapore 098632
Tel: <65> 6213-0200, Fax: <65> 6278-8001

**Renesas Technology Korea Co., Ltd.**
Kukje Center Bldg. 18th Fl., 191, 2-ka, Hangang-ro, Yongsan-ku, Seoul 140-702, Korea
Tel: <82> 2-796-3115, Fax: <82> 2-796-2145

**Renesas Technology Malaysia Sdn. Bhd.**
Unit 906, Block B, Menara Amcorp, Amcorp Trade Centre, No.18, Jalan Persiaran Barat, 46050 Petaling Jaya, Selangor Darul Ehsan, Malaysia
Tel: <603> 7955-9390, Fax: <603> 7955-9510



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