

2SC1213A(K)

Silicon NPN Epitaxial

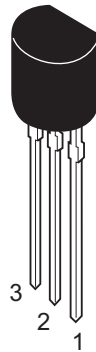
R07DS0432EJ0300
 (Previous: REJ03G0685-0200)
 Rev.3.00
 Jun 07, 2011

Application

- Low frequency amplifier
- Medium speed switching

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 | Ratings | Unit |
|------------------------------|-----------|-------------|------|
| Collector to base voltage | V_{CBO} | 50 | V |
| Collector to emitter voltage | V_{CEO} | 50 | V |
| Emitter to base voltage | V_{EBO} | 4 | V |
| Collector current | I_C | 500 | mA |
| Collector power dissipation | P_C | 400 | mW |
| Junction temperature | T_j | 150 | °C |
| Storage temperature | T_{stg} | -55 to +150 | °C |

Electrical Characteristics

(Ta = 25°C)

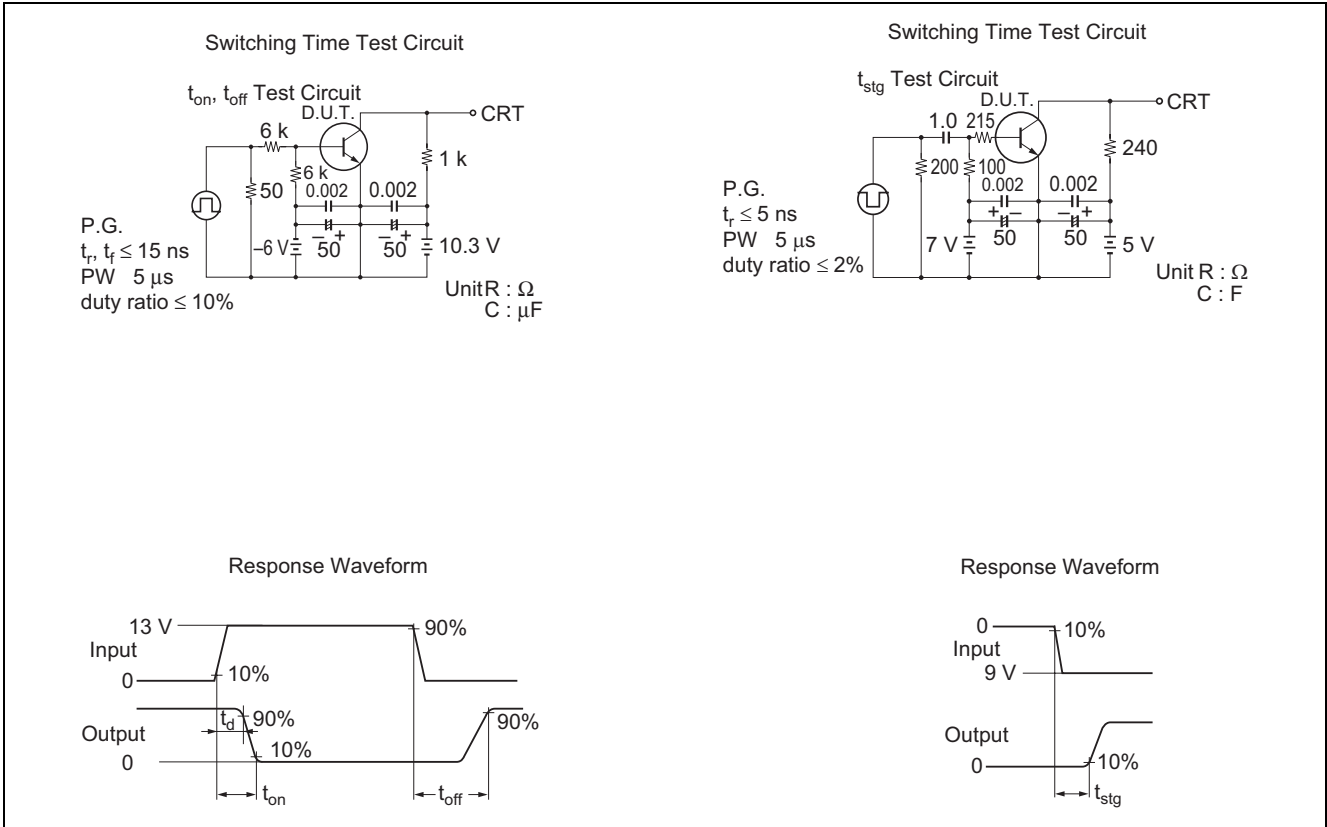
| Item | Symbol | Min | Typ | Max | Unit | Test conditions |
|---|---------------|-----|------|-----|---------|---|
| Collector to base breakdown voltage | $V_{(BR)CBO}$ | 50 | — | — | V | $I_C = 10 \mu A, I_E = 0$ |
| Collector to emitter breakdown voltage | $V_{(BR)CEO}$ | 50 | — | — | V | $I_C = 1.0 \text{ mA}, R_{BE} = \infty$ |
| Emitter to base breakdown voltage | $V_{(BR)EBO}$ | 4 | — | — | V | $I_E = 10 \mu A, I_C = 0$ |
| Collector cutoff current | I_{CBO} | — | — | 0.5 | μA | $V_{CB} = 20 \text{ V}, I_E = 0$ |
| DC current transfer ratio | h_{FE}^{*1} | 100 | — | 320 | | $V_{CE} = 3 \text{ V}, I_C = 10 \text{ mA}$ |
| | h_{FE} | 10 | — | — | | $V_{CE} = 3 \text{ V}, I_C = 500 \text{ mA}^{*2}$ |
| Base to emitter voltage | V_{BE} | | 0.64 | — | V | $V_{CE} = 3 \text{ V}, I_C = 10 \text{ mA}$ |
| Collector to emitter saturation voltage | $V_{CE(sat)}$ | — | 0.12 | 0.6 | V | $I_C = 150 \text{ mA}, I_B = 15 \text{ mA}^{*2}$ |
| Base to emitter saturation voltage | $V_{BE(sat)}$ | — | 0.83 | 1.2 | V | $I_C = 150 \text{ mA}, I_B = 15 \text{ mA}^{*2}$ |
| Collector output capacitance | C_{ob} | — | 7.0 | — | pF | $V_{CB} = 10 \text{ V}, I_E = 0, f = 1 \text{ MHz}$ |
| Gain bandwidth product | f_T | — | 120 | — | MHz | $V_{CE} = 3 \text{ V}, I_C = 10 \text{ mA}$ |
| Turn on time | t_{on} | — | 0.25 | — | μS | $V_{CC} = 10.3 \text{ V}$ $I_C = 10 \text{ mA}, I_{B1} = -10 \text{ mA}, I_{B2} = 10 \text{ mA}$ |
| Turn off time | t_{off} | — | 0.85 | — | μS | |
| Storage time | t_{stg} | — | 0.4 | — | μS | $V_{CC} = 5 \text{ V}$ $I_C = I_{B1} = -I_{B2} = 20 \text{ mA}$ |

Notes: 1. The 2SC1213A(K) is grouped by h_{FE} as follows.

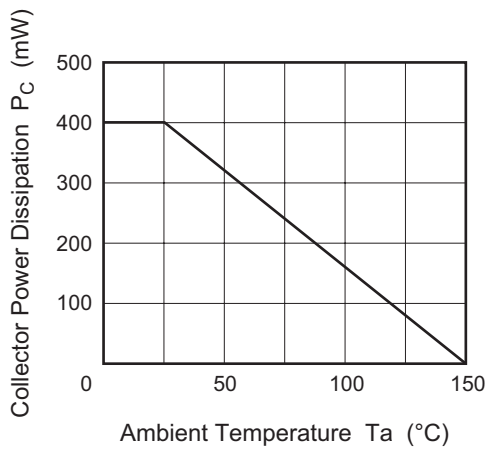
2. Pulse test

| C | D |
|------------|------------|
| 100 to 200 | 160 to 320 |

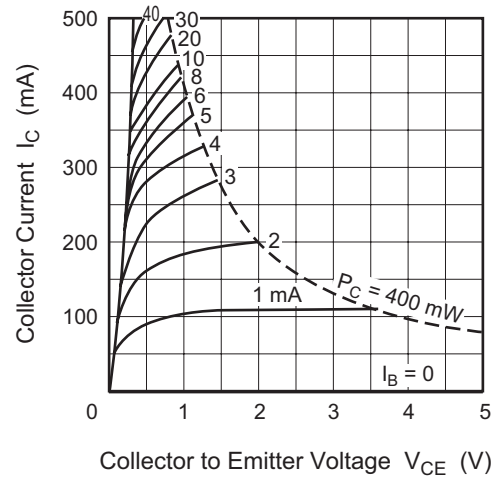
Main Characteristics



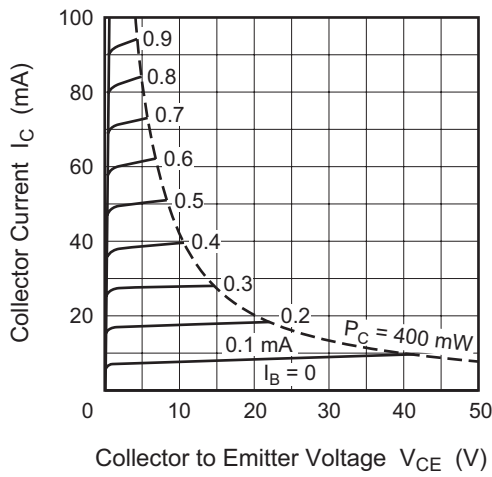
Maximum Collector Dissipation Curve



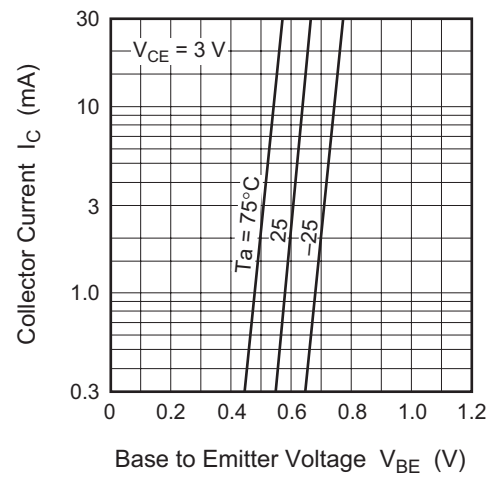
Typical Output Characteristics (1)



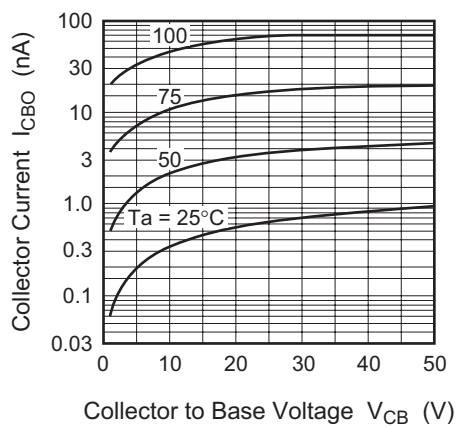
Typical Output Characteristics (2)



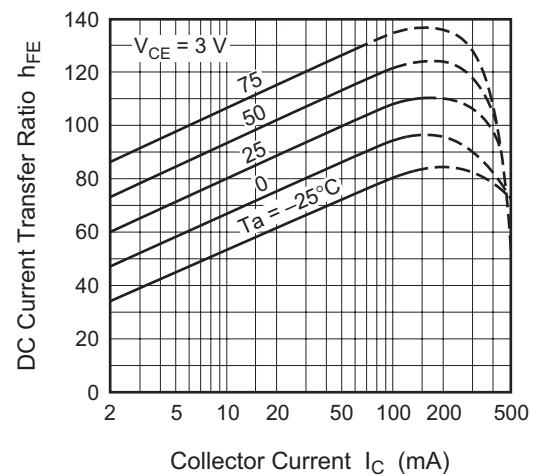
Typical Transfer Characteristics

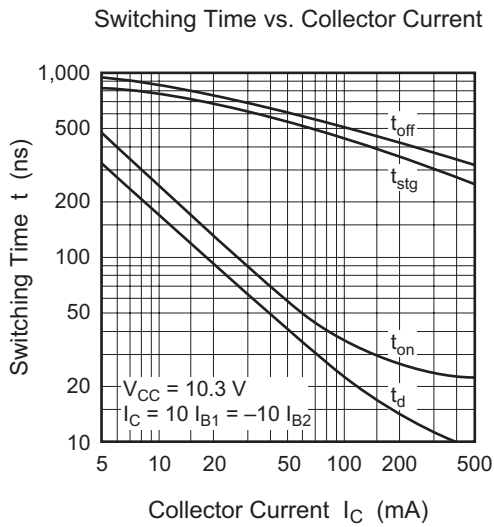
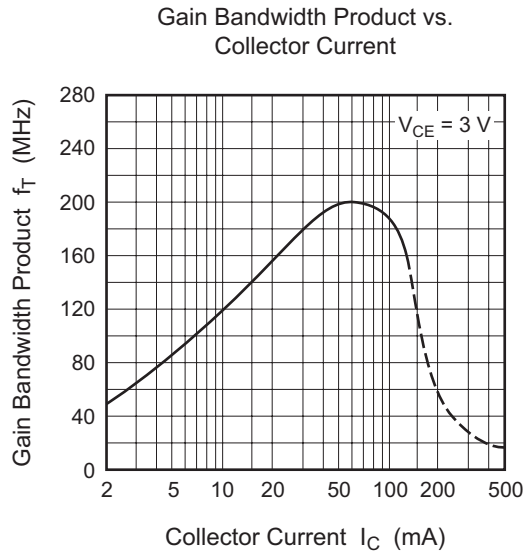
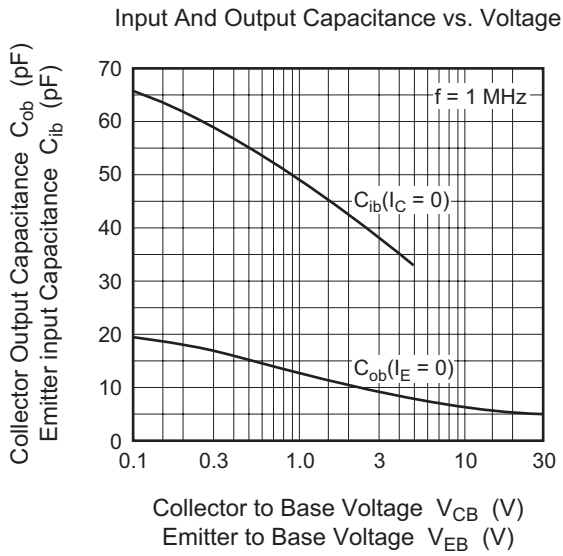
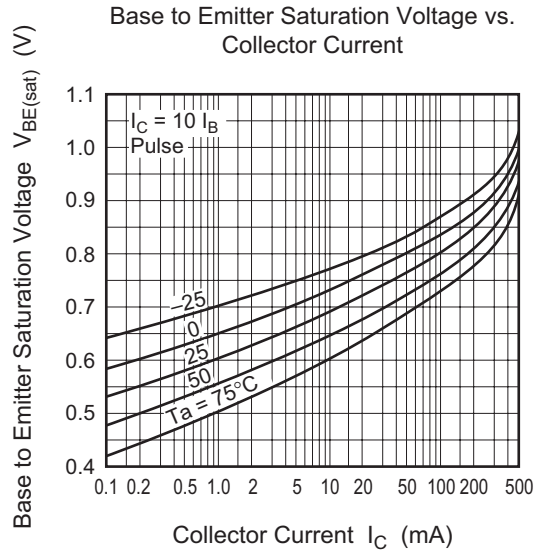
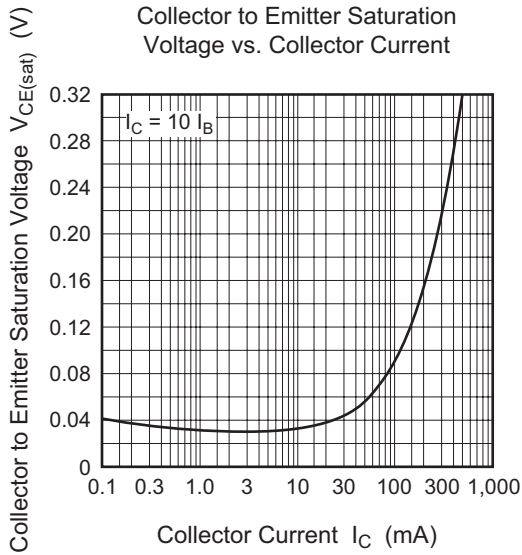


Collector Cutoff Current vs. Collector to Base Voltage

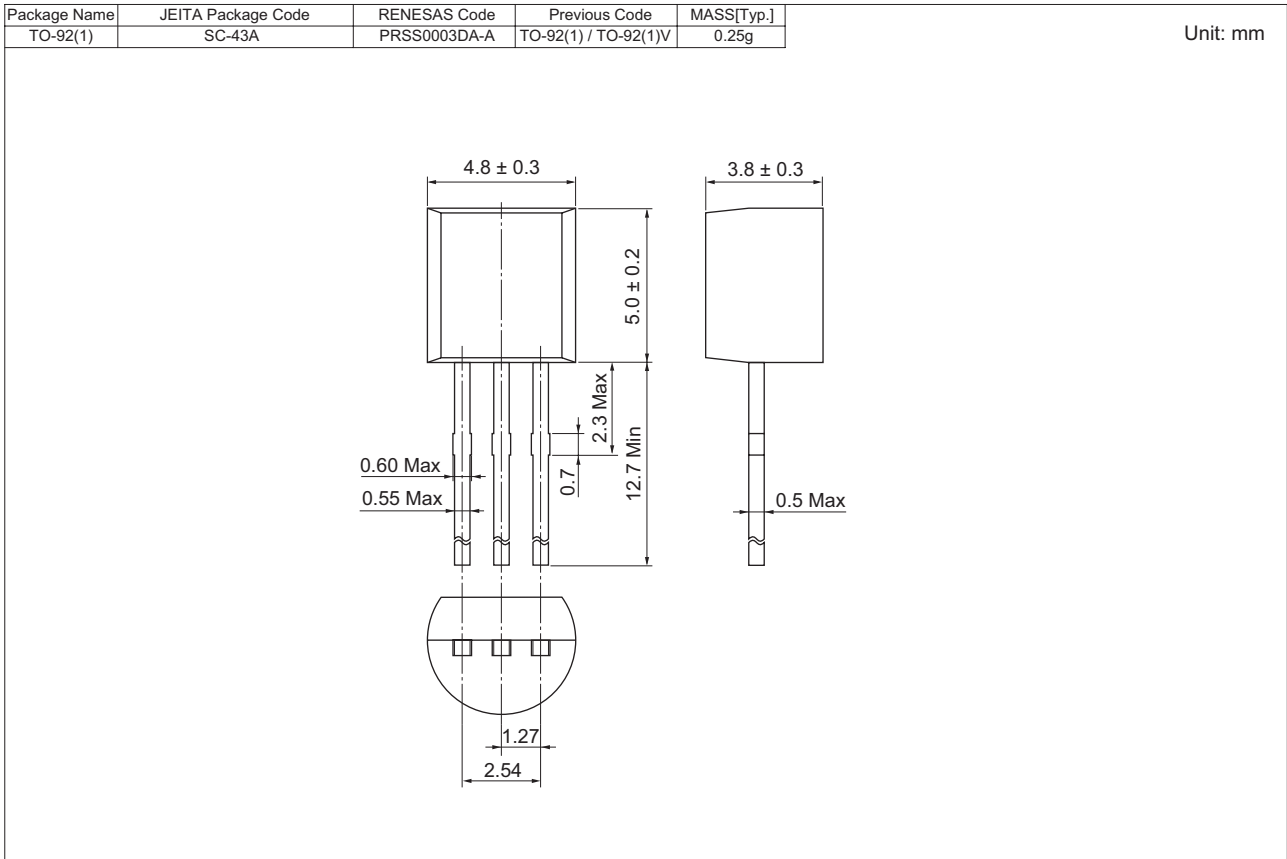


DC Current Transfer Ratio vs. Collector Current





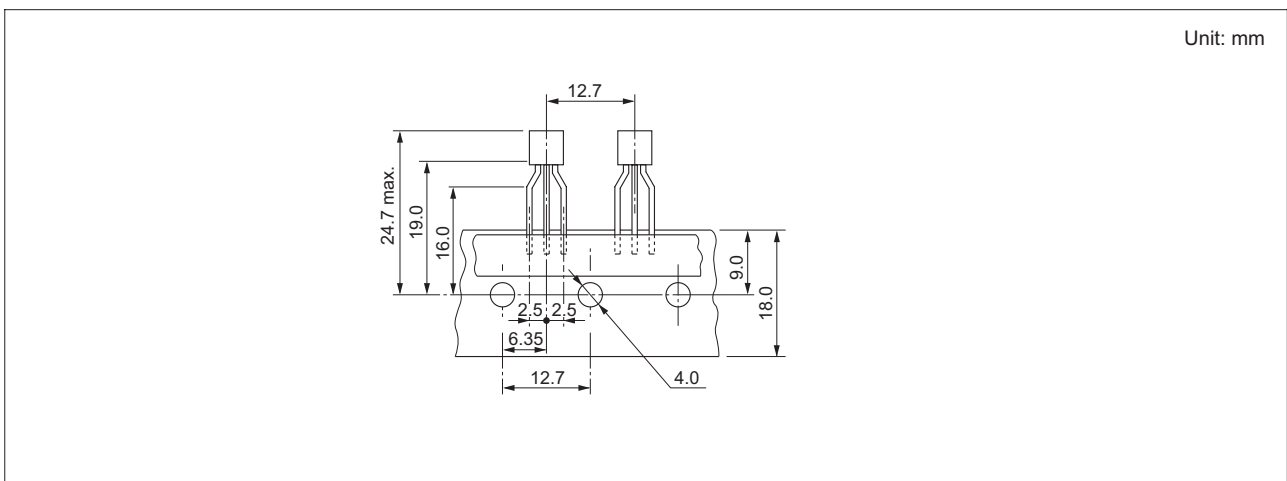
Package Dimensions



Ordering Information

| Part Name | Quantity | Shipping Container |
|----------------|----------|-------------------------|
| 2SC1213AKCTZ-E | 2500 | Hold Box, Radial Taping |

- Notes: 1. For some grades, production may be terminated. Please contact the Renesas sales office to check the state of production before ordering the product.
2. Leads is forming applied as following figure.



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