To our customers,

## Old Company Name in Catalogs and Other Documents

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

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (http://www.renesas.com)

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RENESAS

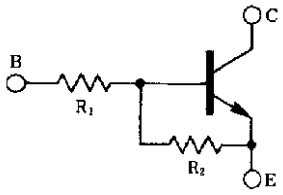
Phase-out/Discontinued

# COMPOUND TRANSISTOR
# AA1A3Q

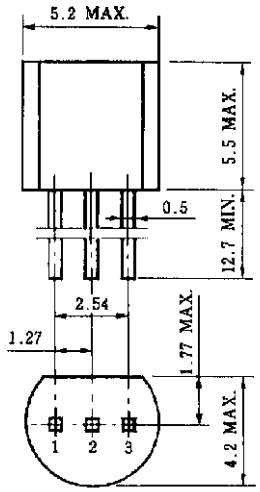
## on-chip resistor NPN silicon epitaxial transistor
## For mid-speed switching

### FEATURES

- On-chip bias resistor
  ($R_1$ = 1.0 kΩ, $R_2$ = 10 kΩ)
- Complementary transistor with AN1A3Q




### PACKAGE DRAWING (UNIT: mm)




Electrode Connection
1. Emitter EIAJ : SC-43B
2. Collector JEDEC : TO-92
3. Base IEC : PA33

### ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

| Parameter | Symbol | Ratings | Unit |
|---|---|---|---|
| Collector to base voltage | $V_{CBO}$ | 60 | V |
| Collector to emitter voltage | $V_{CEO}$ | 50 | V |
| Emitter to base voltage | $V_{EBO}$ | 5 | V |
| Collector current (DC) | $I_{C(DC)}$ | 100 | mA |
| Collector current (Pulse) | $I_{C(pulse)}$ * | 200 | mA |
| Total power dissipation | $P_T$ | 250 | mW |
| Junction temperature | $T_j$ | 150 | °C |
| Storage temperature | $T_{stg}$ | −55 to +150 | °C |

* PW ≤ 10 ms, duty cycle ≤ 50 %

### ELECTRICAL CHARACTERISTICS (Ta = 25°C)

| Parameter | Symbol | Conditions | MIN. | TYP. | MAX. | Unit |
|---|---|---|---|---|---|---|
| Collector cutoff current | $I_{CBO}$ | $V_{CB}$ = 50 V, $I_E$ = 0 | | | 100 | nA |
| DC current gain | $h_{FE1}$ ** | $V_{CE}$ = 5.0 V, $I_C$ = 5.0 mA | 35 | 60 | 100 | − |
| DC current gain | $h_{FE2}$ ** | $V_{CE}$ = 5.0 V, $I_C$ = 50 mA | 80 | 230 | | − |
| Collector saturation voltage | $V_{CE(sat)}$ ** | $I_C$ = 5.0 mA, $I_B$ = 0.25 mA | | 0.05 | 0.2 | V |
| Low level input voltage | $V_{IL}$ ** | $V_{CE}$ = 5.0 V, $I_C$ = 100 μA | | 0.7 | 0.9 | V |
| High level input voltage | $V_{IH}$ ** | $V_{CE}$ = 0.2 V, $I_C$ = 5.0 mA | 2.0 | 1.0 | | V |
| Input resistance | $R_1$ | | 0.7 | 1.0 | 1.3 | kΩ |
| E-to-B resistance | $R_2$ | | 7 | 10 | 13 | kΩ |
| Turn-on time | $t_{on}$ | $V_{CC}$ = 5 V, $R_L$ = 1 kΩ | | | 0.2 | μs |
| Storage time | $t_{stg}$ | $V_I$ = 5 V, PW = 2 μs | | | 5.0 | μs |
| Turn-off time | $t_{off}$ | duty cycle≤2 % | | | 6.0 | μs |

** PW ≤ 350 μs, duty cycle ≤ 2 %



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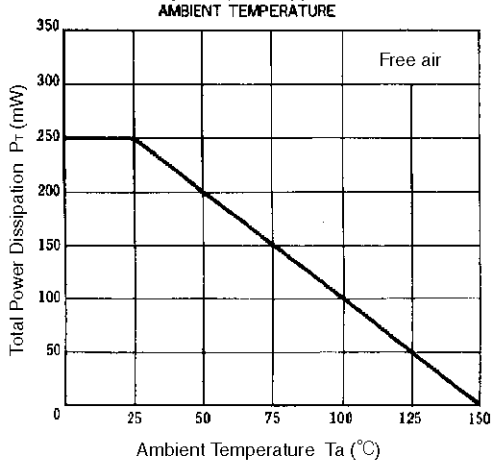
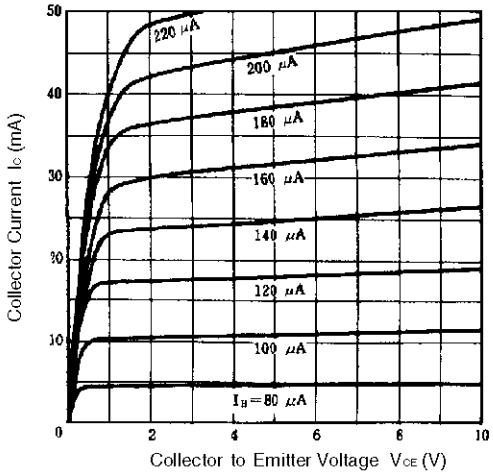
## TYPICAL CHARACTERISTICS ($T_a$ = 25°C)

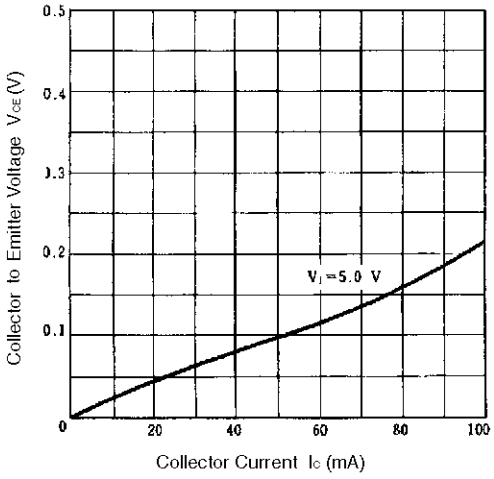
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



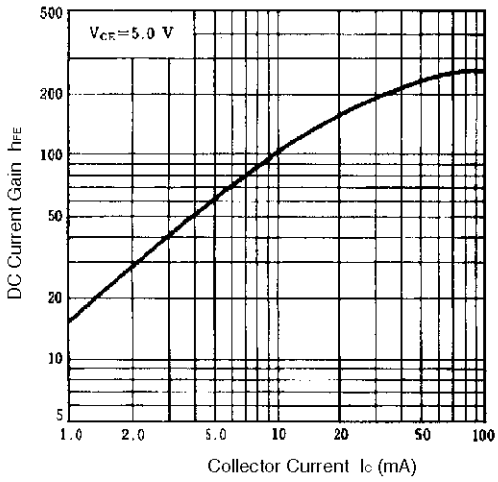

COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



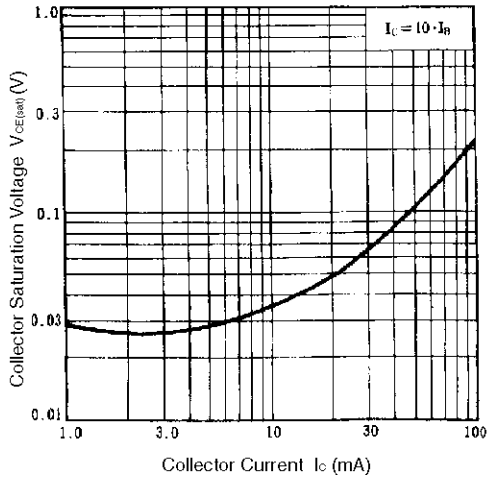

COLLECTOR TO EMITTER VOLTAGE vs. COLLECTOR CURRENT



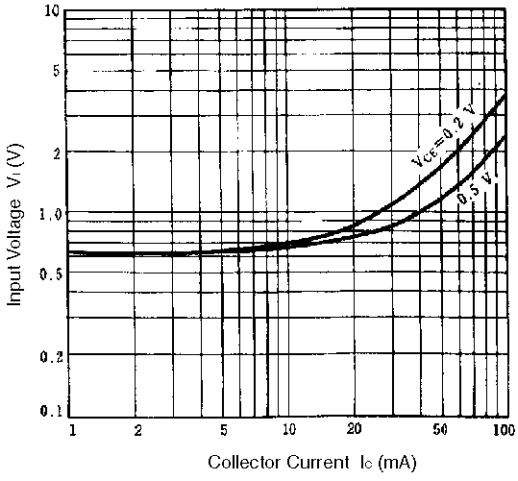

DC CURRENT GAIN vs. COLLECTOR CURRENT



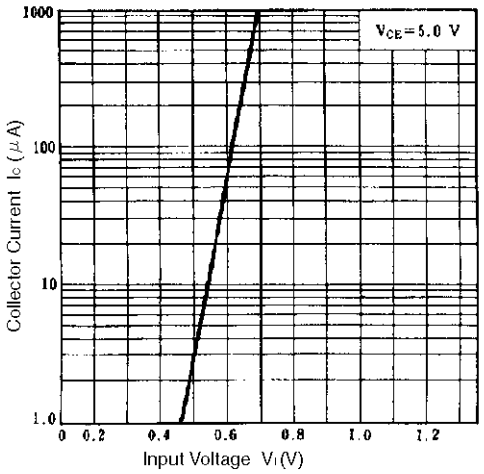

COLLECTOR SATURATION VOLTAGE vs. COLLECTOR CURRENT



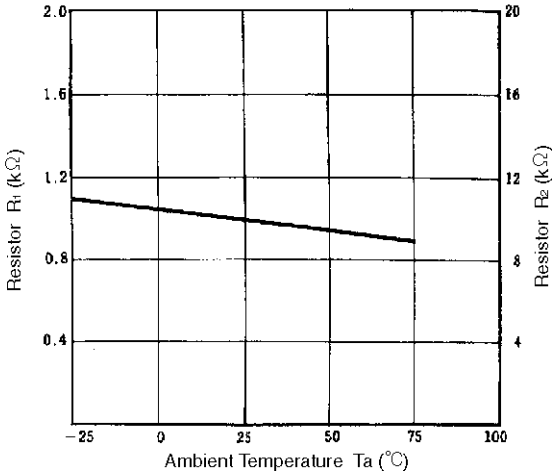

INPUT VOLTAGE vs. COLLECTOR CURRENT



COLLECTOR CURRENT vs.
INPUT VOLTAGE




RESISTOR vs.
AMBIENT TEMPERATURE



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