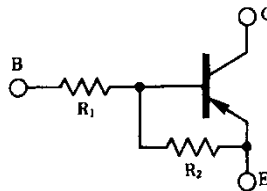


# COMPOUND TRANSISTOR BN1A3Q

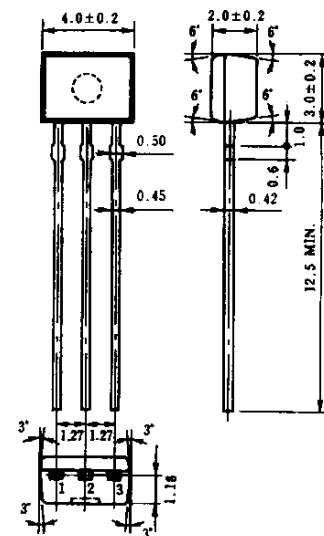
on-chip resistor PNP silicon epitaxial transistor  
For mid-speed switching

### FEATURES

- On-chip bias resistor  
( $R_1 = 1.0 \text{ k}\Omega$ ,  $R_2 = 10 \text{ k}\Omega$ )
- Complementary transistor with BA1A3Q



### PACKAGE DRAWING (UNIT: mm)



Electrode Connection

1. Emitter
2. Collector
3. Base

### 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   |

\*  $PW \leq 10 \text{ ms}$ , duty cycle  $\leq 50 \%$

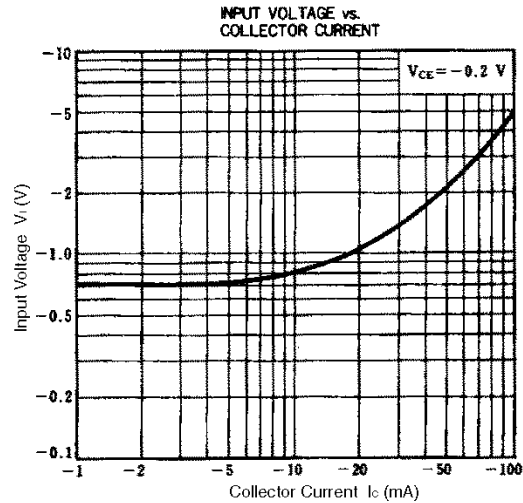
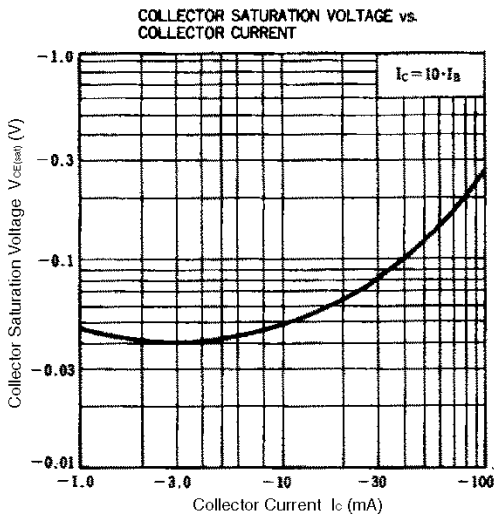
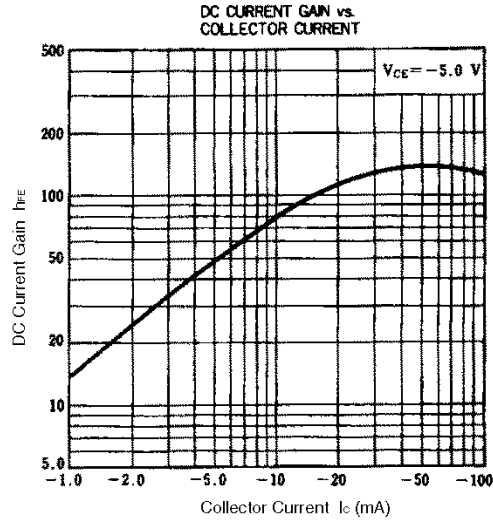
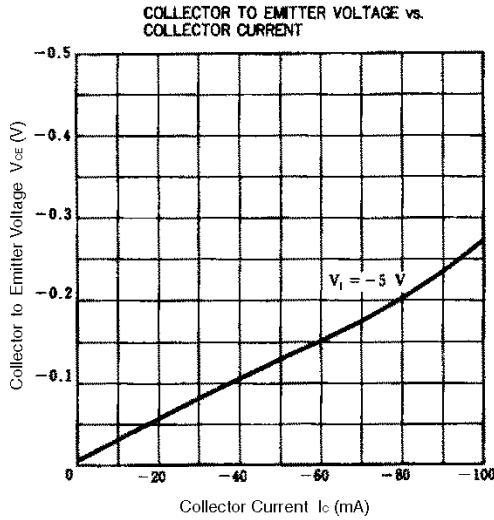
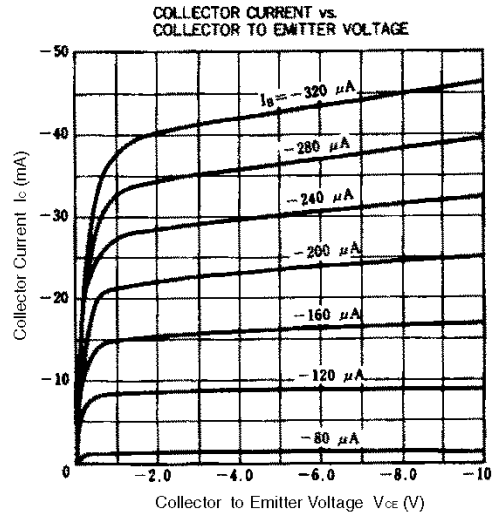
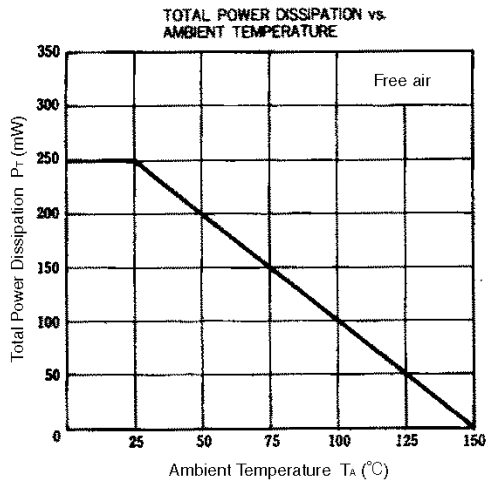
### ELECTRICAL CHARACTERISTICS (Ta = 25°C)

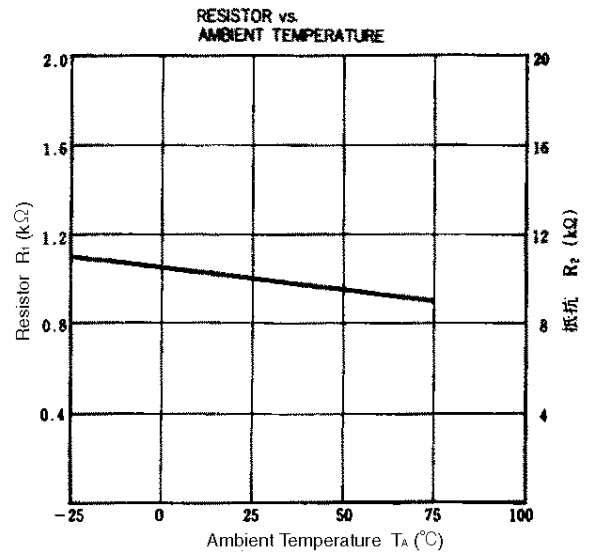
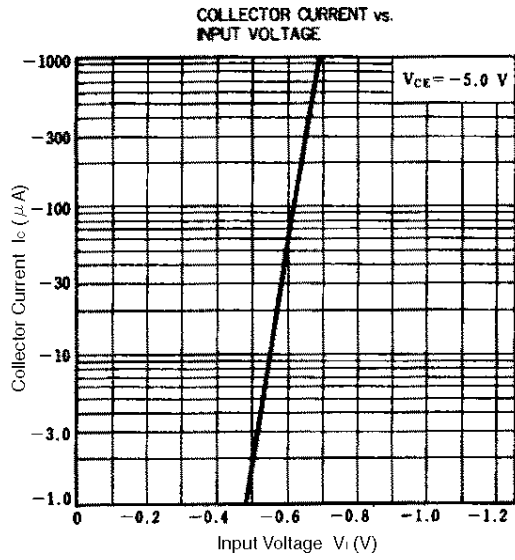
| Parameter                    | Symbol           | Conditions   | MIN. | TYP.  | MAX. | Unit          |
|------------------------------|------------------|--|------|-------|------|---------------|
| Collector cutoff current     | $I_{CBO}$        | $V_{CB} = -50 \text{ V}$ , $I_E = 0$                 |      |       | -100 | nA            |
| DC current gain              | $h_{FE1}$ **     | $V_{CE} = -5.0 \text{ V}$ , $I_C = -5.0 \text{ mA}$  | 35   | 60    | 80   | -             |
| DC current gain              | $h_{FE2}$ **     | $V_{CE} = -5.0 \text{ V}$ , $I_C = -50 \text{ mA}$   | 80   | 200   |      | -             |
| Collector saturation voltage | $V_{CE(sat)}$ ** | $I_C = -5.0 \text{ mA}$ , $I_B = -0.25 \text{ mA}$   |      | -0.04 | -0.2 | V             |
| Low level input voltage      | $V_{IL}$ **      | $V_{CE} = -5.0 \text{ V}$ , $I_B = -100 \mu\text{A}$ |      | -0.7  | -0.5 | V             |
| High level input voltage     | $V_{IH}$ **      | $V_{CE} = -0.2 \text{ V}$ , $I_C = -5.0 \text{ mA}$  | -2.0 | -1.0  |      | V             |
| Input resistance             | $R_1$            |  | 0.7  | 1.0   | 1.3  | k $\Omega$    |
| E-to-B resistance            | $R_2$            |  | 7    | 10    | 13   | k $\Omega$    |
| Turn-on time                 | $t_{on}$         | $V_{CC} = -5 \text{ V}$ , $R_L = 1 \text{ k}\Omega$  |      |       | 0.2  | $\mu\text{s}$ |
| Storage time                 | $t_{stg}$        | $V_i = -5 \text{ V}$ , $PW = 2 \mu\text{s}$          |      |       | 5.0  | $\mu\text{s}$ |
| Turn-off time                | $t_{off}$        | duty cycle $\leq 2 \%$                               |      |       | 6.0  | $\mu\text{s}$ |

\*\*  $PW \leq 350 \mu\text{s}$ , duty cycle  $\leq 2 \%$

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TYPICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ )





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