

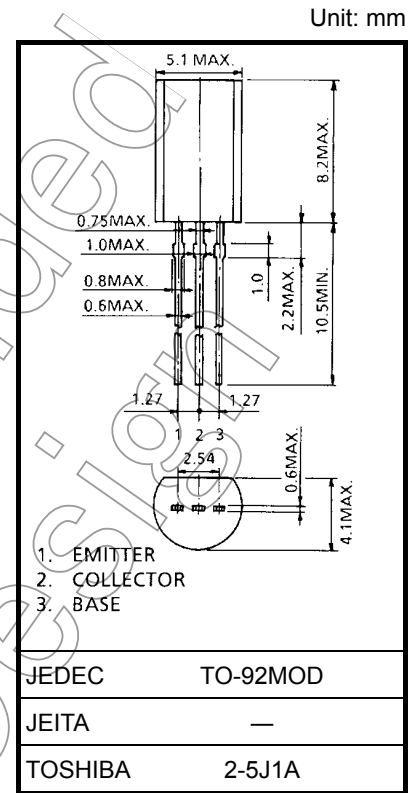
2SA1680

Power Amplifier Applications
 Power Switching Applications

- Low collector-emitter saturation voltage: $V_{CE(sat)} = -0.5 \text{ V (max)}$
 ($I_C = -1 \text{ A}$)
- High collector power dissipation: $P_C = 900 \text{ mW (Ta = 25 °C)}$
- High-speed switching: $t_{stg} = 300 \text{ ns (typ.)}$
- Complementary to 2SC4408.

Absolute Maximum Ratings (Ta = 25°C)

| Characteristics | Symbol | Rating | Unit |
|-----------------------------|-----------|------------|------|
| Collector-base voltage | V_{CBO} | -60 | V |
| Collector-emitter voltage | V_{CEO} | -50 | V |
| Emitter-base voltage | V_{EBO} | -6 | V |
| Collector current | I_C | -2 | A |
| Base current | I_B | -0.2 | A |
| Collector power dissipation | P_C | 900 | mW |
| Junction temperature | T_j | 150 | °C |
| Storage temperature range | T_{stg} | -55 to 150 | °C |



Weight: 0.36 g (typ.)

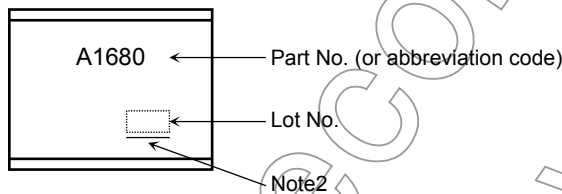
Note1: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings. Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/Derating Concept and Methods) and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

Not for

Electrical Characteristics (Ta = 25°C)

| Characteristics | | Symbol | Test Condition | Min | Typ. | Max | Unit |
|--------------------------------------|--------------|---------------|---|-----|------|------|---------------|
| Collector cut-off current | | I_{CBO} | $V_{CB} = -60\text{ V}, I_E = 0$ | — | — | -1.0 | μA |
| Emitter cut-off current | | I_{EBO} | $V_{EB} = -6\text{ V}, I_C = 0$ | — | — | -1.0 | μA |
| Collector-emitter breakdown voltage | | $V_{(BR)CEO}$ | $I_C = -10\text{ mA}, I_B = 0$ | -50 | — | — | V |
| DC current gain | | $h_{FE(1)}$ | $V_{CE} = -2\text{ V}, I_C = -100\text{ mA}$ | 120 | — | 400 | |
| | | $h_{FE(2)}$ | $V_{CE} = -2\text{ V}, I_C = -1.5\text{ A}$ | 40 | — | — | |
| Collector-emitter saturation voltage | | $V_{CE(sat)}$ | $I_C = -1\text{ A}, I_B = -0.05\text{ A}$ | — | — | -0.5 | V |
| Base-emitter saturation voltage | | $V_{BE(sat)}$ | $I_C = -1\text{ A}, I_B = -0.05\text{ A}$ | — | — | -1.2 | V |
| Transition frequency | | f_T | $V_{CE} = -2\text{ V}, I_C = -100\text{ mA}$ | — | 100 | — | MHz |
| Collector output capacitance | | C_{ob} | $V_{CB} = -10\text{ V}, I_E = 0, f = 1\text{ MHz}$ | — | 23 | — | pF |
| Switching time | Turn-on time | t_{on} | <p>$I_{B1} = 0.05\text{ A}, I_{B2} = 0.05\text{ A}$ duty cycle $\leq 1\%$</p> | — | 0.1 | — | μs |
| | Storage time | t_{stg} | | — | 0.3 | — | |
| | Fall time | t_f | | — | 0.1 | — | |

Marking

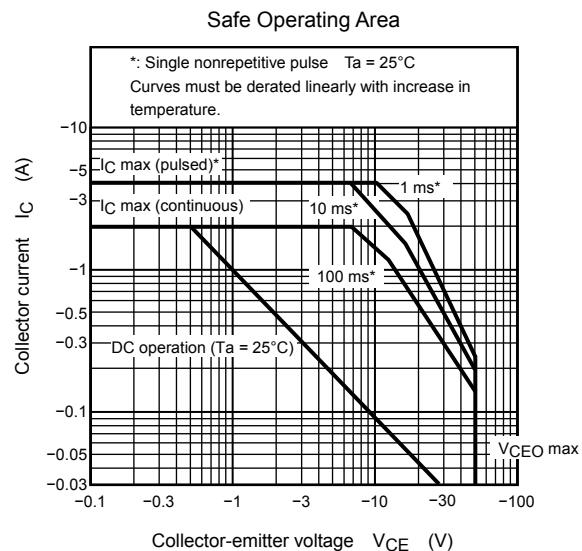
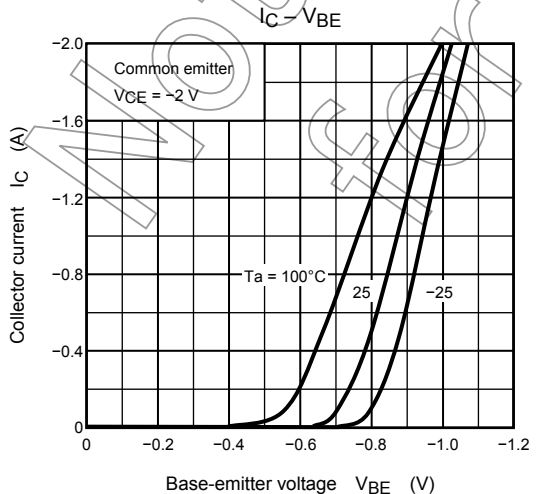
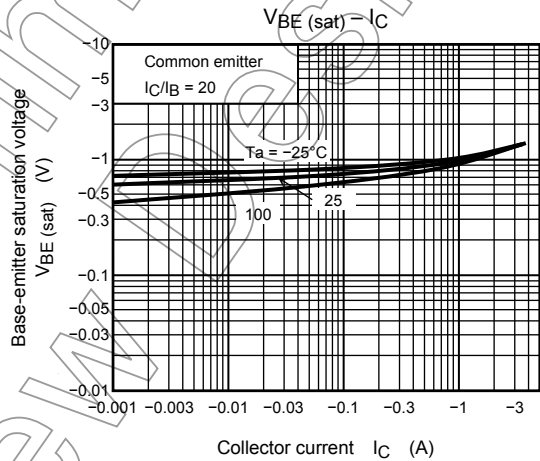
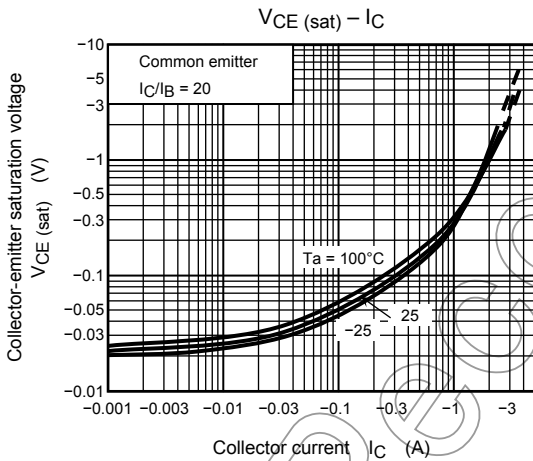
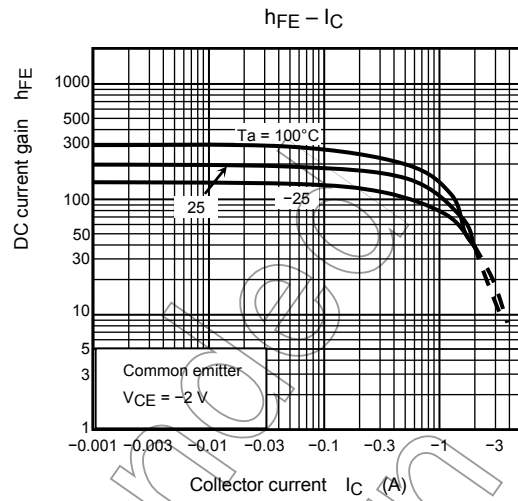
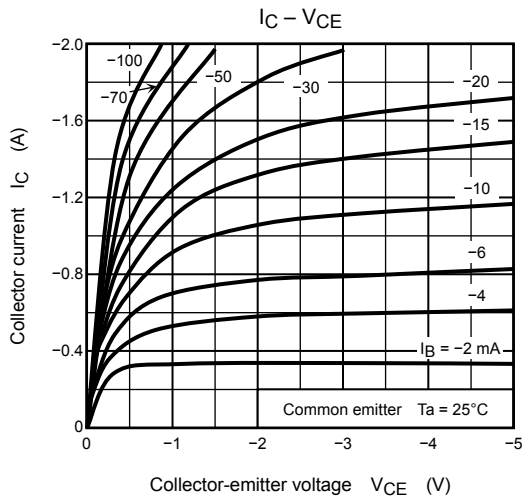


Note2: A line under a Lot No. identifies the indication of product Labels.

Not underlined: [[Pb]]/INCLUDES > MCV

Underlined: [[G]]/RoHS COMPATIBLE or [[G]]/RoHS [[Pb]]

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