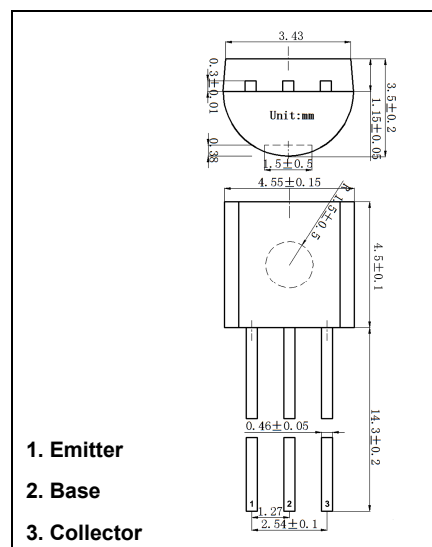


# TO-92 Plastic-Encapsulate Transistors

## S8050D331 NPN Transistors

### Features

- Complimentary to S8550
- Collector current:  $I_C = 0.5A$



### Maximum Ratings ( $T_a=25^\circ C$ unless otherwise noted)

| Symbol    | Parameter                   | Value      | Unit       |
|-----------|-----------------------------|------------|------------|
| $V_{CB0}$ | Collector Base Voltage      | 40         | V          |
| $V_{CEO}$ | Collector Emitter Voltage   | 25         | V          |
| $V_{EBO}$ | Emitter Base Voltage        | 5          | V          |
| $I_C$     | Collector Current           | 500        | mA         |
| $P_C$     | Collector Power Dissipation | 625        | mW         |
| $T_j$     | Junction Temperature        | 150        | $^\circ C$ |
| $T_{stg}$ | Storage Temperature         | -55 ~ +150 | $^\circ C$ |

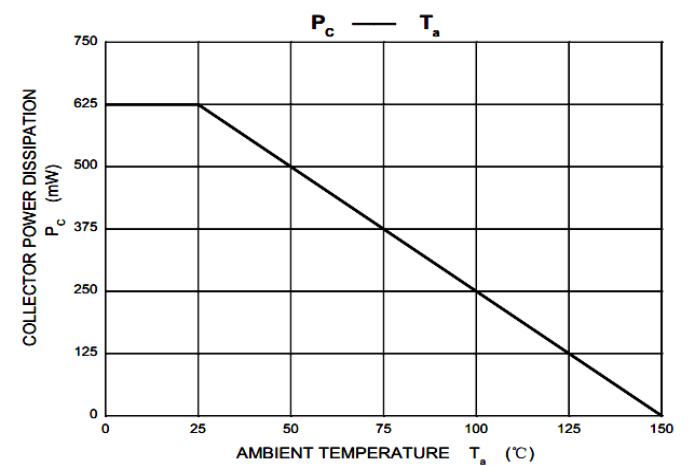
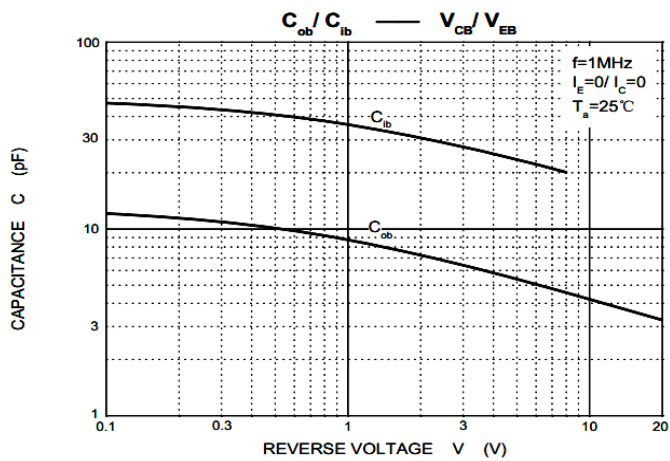
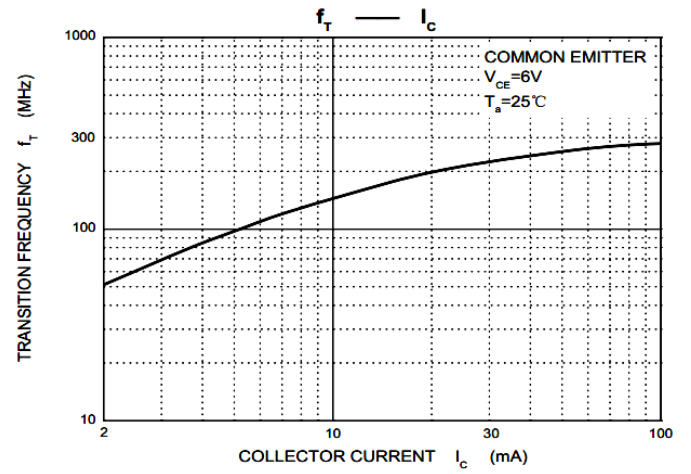
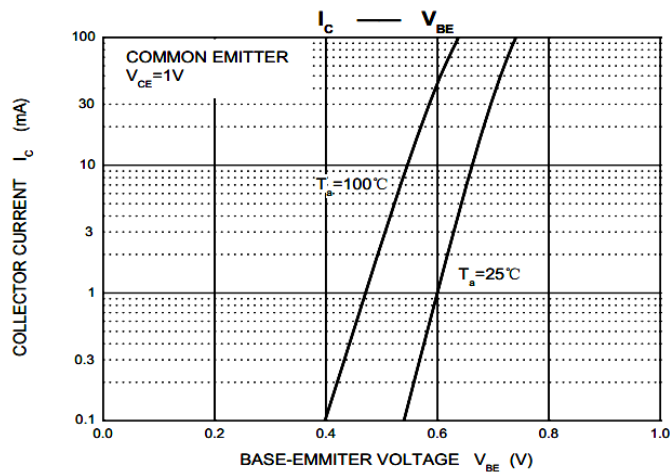
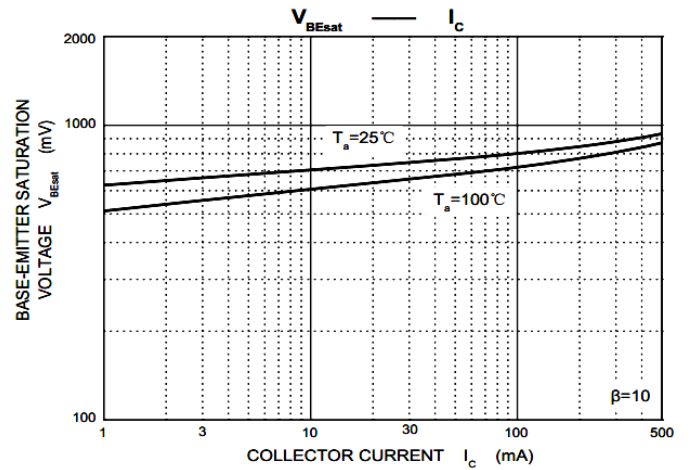
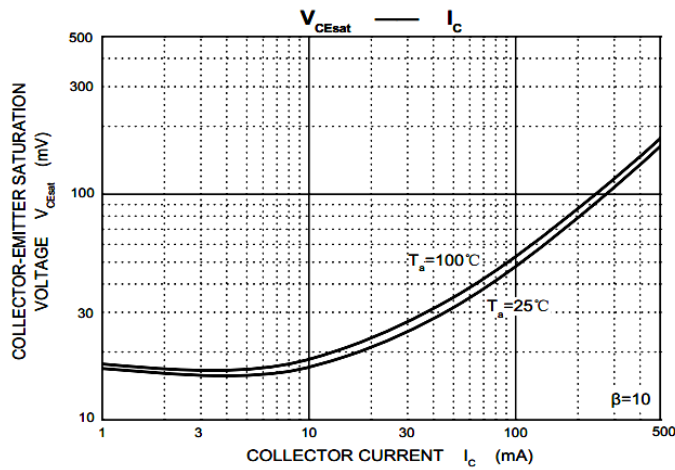
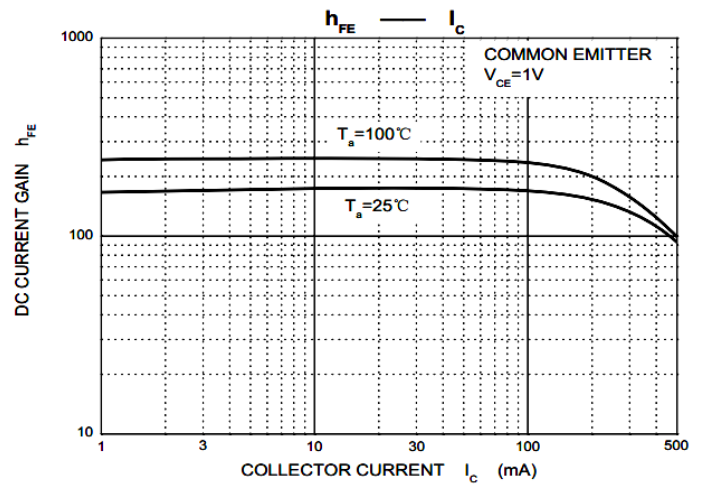
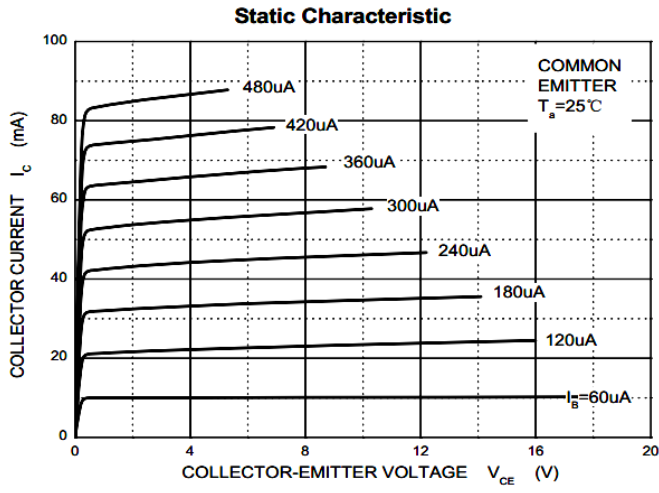
### Electrical Characteristics ( $T_a=25^\circ C$ unless otherwise specified)

| Symbol        | Parameter                            | Test Conditions                | Min | Typ | Max | Unit |
|---------------|--------------------------------------|--------------------------------|-----|-----|-----|------|
| $V_{(BR)CBO}$ | Collector-base breakdown voltage     | $I_C = 100\mu A, I_E = 0$      | 40  |     |     | V    |
| $V_{(BR)CEO}$ | Collector-emitter breakdown voltage  | $I_C = 0.1mA, I_B = 0$         | 25  |     |     | V    |
| $V_{(BR)EBO}$ | Emitter-base breakdown voltage       | $I_E = 100\mu A, I_C = 0$      | 5   |     |     | V    |
| $I_{CBO}$     | Collector cut-off current            | $V_{CB} = 40V, I_E = 0$        |     |     | 100 | nA   |
| $I_{CEO}$     | Collector cut-off current            | $V_{CE} = 20V, I_E = 0$        |     |     | 100 | nA   |
| $I_{EBO}$     | Emitter cut-off current              | $V_{EB} = 5V, I_C = 0$         |     |     | 100 | nA   |
| $h_{FE(1)}$   | DC current gain                      | $V_{CE} = 1V, I_C = 50mA$      | 85  |     | 400 |      |
| $h_{FE(2)}$   |                                      | $V_{CE} = 5V, I_C = 100mA$     | 85  |     |     |      |
| $h_{FE(3)}$   |                                      | $V_{CE} = 1V, I_C = 500mA$     | 50  |     |     |      |
| $V_{CE(sat)}$ | Collector-emitter saturation voltage | $I_C = 500mA, I_B = 50mA$      |     |     | 0.6 | V    |
| $V_{BE(sat)}$ | Base-emitter saturation voltage      | $I_C = 500mA, I_B = 50mA$      |     |     | 1.2 | V    |
| $f_T$         | Transition frequency                 | $V_{CE}=6V, I_C=20mA, f=30MHz$ | 150 |     |     | MHz  |

### Classification OF $h_{FE(2)}$

| Rank  | B      | C       | D       | D3      |
|-------|--------|---------|---------|---------|
| Range | 85-160 | 120-200 | 160-300 | 300-400 |

# Typical Characteristics



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