



8050S

NPN SILICON TRANSISTOR

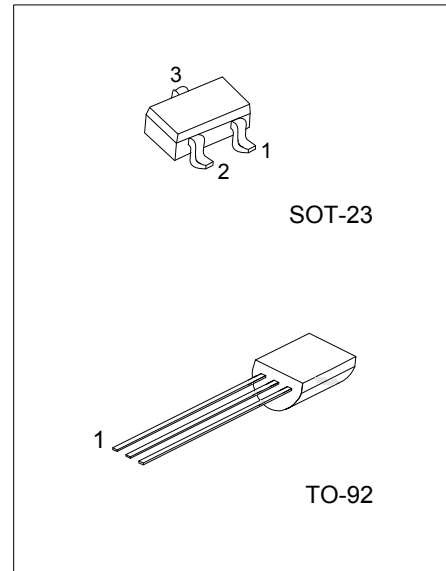
LOW VOLTAGE HIGH
CURRENT SMALL SIGNAL
NPN TRANSISTOR

DESCRIPTION

The UTC **8050S** is a low voltage high current small signal NPN transistor, designed for Class B push-pull audio amplifier and general purpose applications.

FEATURES

- *Collector current up to 700mA
- *Collector-Emitter voltage up to 20V
- *Complementary to UTC 8550S

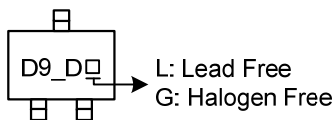


ORDERING INFORMATION

| Ordering Number | | Package | Pin Assignment | | | Packing |
|-----------------|----------------|---------|----------------|---|---|-----------|
| Lead Free | Halogen-Free | | 1 | 2 | 3 | |
| 8050SL-x-AE3-R | 8050SG-x-AE3-R | SOT-23 | E | B | C | Tape Reel |
| 8050SL-x-T92-B | 8050SG-x-T92-B | TO-92 | E | C | B | Tape Box |
| 8050SL-x-T92-K | 8050SG-x-T92-K | TO-92 | E | C | B | Bulk |
| 8050SL-x-T92-R | 8050SG-x-T92-R | TO-92 | E | C | B | Tape Reel |

| | |
|-----------------------|---|
| <p>8050SL-x-AE3-R</p> | <p>(1) B: Tape Box, K: Bulk, R: Tape Reel</p> <p>(2) AE3: SOT-23, T92: TO-92</p> <p>(3) x: refer to Classification of h_{FE2}</p> <p>(4) G: Halogen Free, L: Lead Free</p> |
|-----------------------|---|

MARKING (For SOT-23 Package)



■ ABSOLUTE MAXIMUM RATING ($T_A=25^{\circ}\text{C}$, unless otherwise specified)

| PARAMETER | | SYMBOL | RATINGS | UNIT |
|---|--------|-----------|------------|--------------------|
| Collector-Base Voltage | | V_{CBO} | 30 | V |
| Collector-Emitter Voltage | | V_{CEO} | 20 | V |
| Emitter-Base Voltage | | V_{EBO} | 5 | V |
| Collector Current | | I_C | 700 | mA |
| Collector Dissipation($T_A=25^{\circ}\text{C}$) | SOT-23 | P_C | 350 | mW |
| | TO-92 | | 1 | W |
| Junction Temperature | | T_J | +150 | $^{\circ}\text{C}$ |
| Storage Temperature | | T_{STG} | -40 ~ +150 | $^{\circ}\text{C}$ |

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ ELECTRICAL CHARACTERISTICS ($T_A=25^{\circ}\text{C}$, unless otherwise specified)

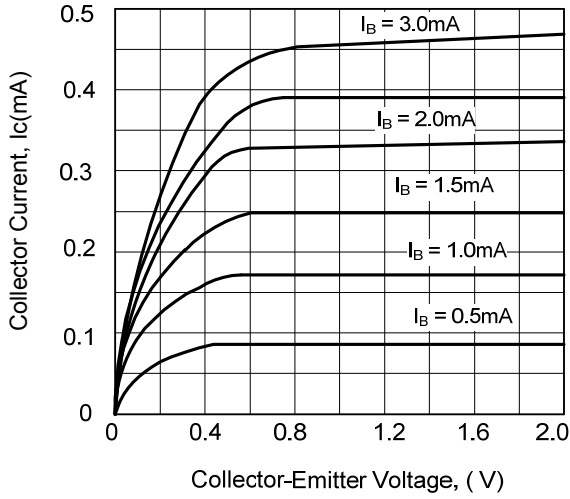
| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|--------------------------------------|---------------|---|-----|-----|-----|---------------|
| Collector-Base Breakdown Voltage | BV_{CBO} | $I_C = 100\mu\text{A}, I_E = 0$ | 30 | | | V |
| Collector-Emitter Breakdown Voltage | BV_{CEO} | $I_C = 1\text{mA}, I_B = 0$ | 20 | | | V |
| Emitter-Base Breakdown Voltage | BV_{EBO} | $I_E = 100\mu\text{A}, I_C = 0$ | 5 | | | V |
| Collector Cut-Off Current | I_{CBO} | $V_{CB} = 30\text{V}, I_E = 0$ | | | 1 | μA |
| Emitter Cut-Off Current | I_{EBO} | $V_{EB} = 5\text{V}, I_C = 0$ | | | 100 | nA |
| DC Current Gain(note) | h_{FE1} | $V_{CE} = 1\text{V}, I_C = 1\text{mA}$ | 100 | | 400 | |
| | h_{FE2} | $V_{CE} = 1\text{V}, I_C = 150\text{mA}$ | 120 | | | |
| | h_{FE3} | $V_{CE} = 1\text{V}, I_C = 500\text{mA}$ | 40 | | | |
| Collector-Emitter Saturation Voltage | $V_{CE(SAT)}$ | $I_C = 500\text{mA}, I_B = 50\text{mA}$ | | | 0.5 | V |
| Base-Emitter Saturation Voltage | $V_{BE(SAT)}$ | $I_C = 500\text{mA}, I_B = 50\text{mA}$ | | | 1.2 | V |
| Base-Emitter Saturation Voltage | $V_{BE(SAT)}$ | $V_{CE} = 1\text{V}, I_C = 10\text{mA}$ | | | 1.0 | V |
| Current Gain Bandwidth Product | f_T | $V_{CE} = 10\text{V}, I_C = 50\text{mA}$ | 100 | | | MHz |
| Output Capacitance | Cob | $V_{CB} = 10\text{V}, I_E = 0, f = 1\text{MHz}$ | | 9.0 | | pF |

■ CLASSIFICATION OF h_{FE2}

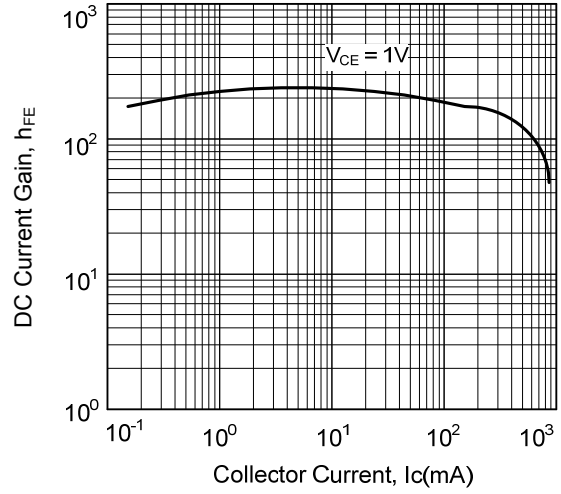
| RANK | C | D | E |
|-------|---------|---------|---------|
| RANGE | 120-200 | 160-300 | 280-400 |

■ TYPICAL CHARACTERISTICS

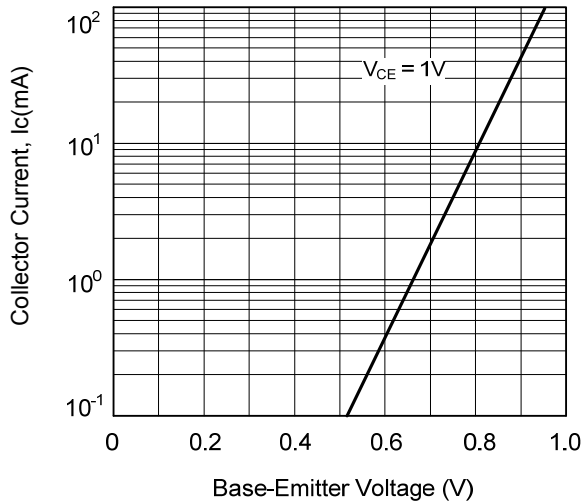
Static Characteristics



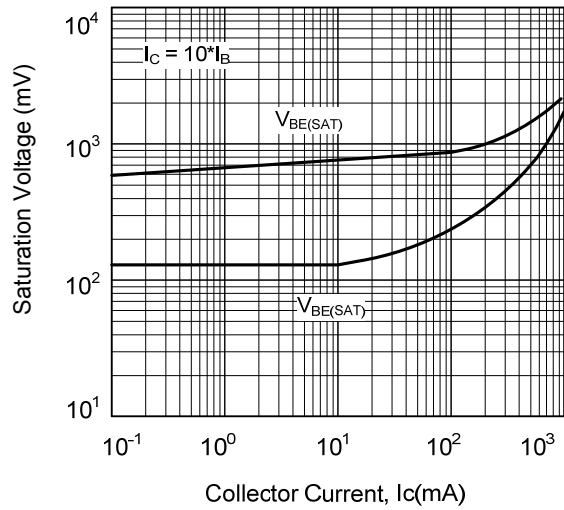
DC Current Gain



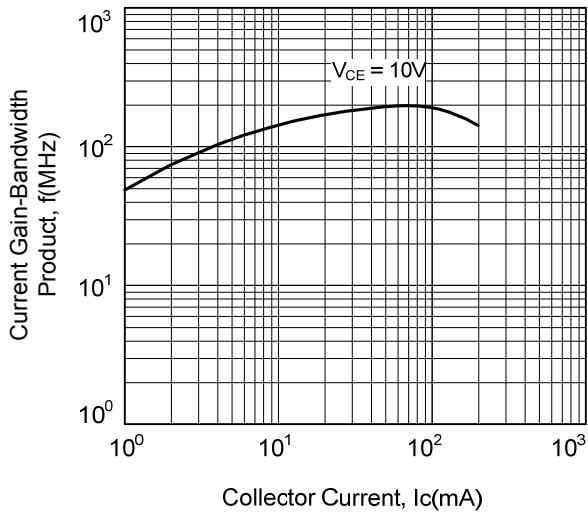
Base-Emitter on Voltage



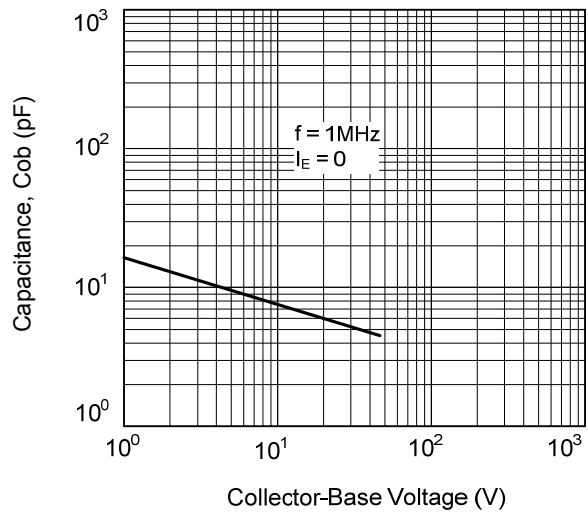
Saturation Voltage



Current Gain-Bandwidth Product



Collector Output Capacitance



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