



## S8050

## NPN SILICON TRANSISTOR

### LOW VOLTAGE HIGH CURRENT SMALL SIGNAL NPN TRANSISTOR

#### ■ DESCRIPTION

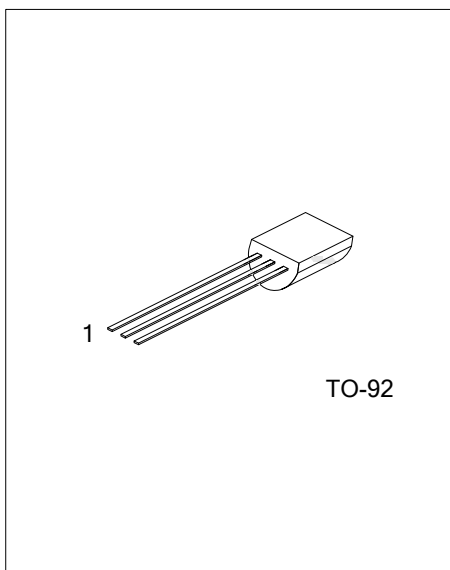
The UTC **S8050** is a low voltage high current small signal NPN transistor, designed for Class B push-pull audio amplifier and general purpose applications.

#### ■ FEATURES

- \* Collector current up to 700mA
- \* Collector-Emitter voltage up to 20 V
- \* Complementary to S8550

#### ■ ORDERING INFORMATION

| Order Number      |                | Package | Pin Assignment |   |   | Packing  |
|-------------------|----------------|---------|----------------|---|---|----------|
| Lead Free Plating | Halogen Free   |         | 1              | 2 | 3 |          |
| S8050L-x-T92-B    | S8050G-x-T92-B | TO-92   | E              | B | C | Tape Box |
| S8050L-x-T92-K    | S8050G-x-T92-K | TO-92   | E              | B | C | Bulk     |



|                                                                                                           |  |                                                                                                                                                              |
|-----------------------------------------------------------------------------------------------------------|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>S8050L-x-T92-B</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Rank</p> <p>(4)Lead Plating</p> |  | <p>(1) B: Tape Box, K: Bulk</p> <p>(2) T92: TO-92</p> <p>(3) x: refer to Classification of <math>h_{FE2}</math></p> <p>(4) L: Lead Free, G: Halogen Free</p> |
|-----------------------------------------------------------------------------------------------------------|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------|

■ **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( $T_A=25^\circ\text{C}$ ) | $P_C$     | 1          | W                |
| Junction Temperature                            | $T_J$     | 150        | $^\circ\text{C}$ |
| Storage Temperature                             | $T_{STG}$ | -65 ~ +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.

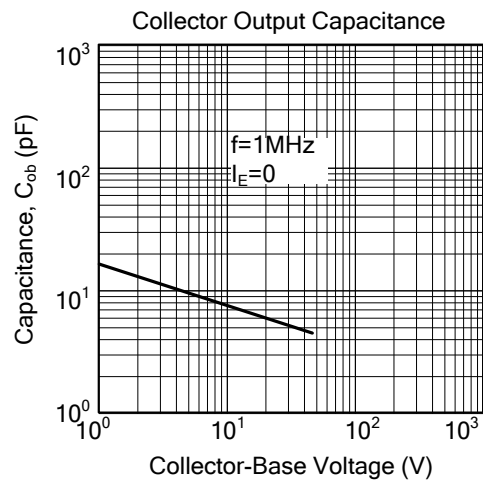
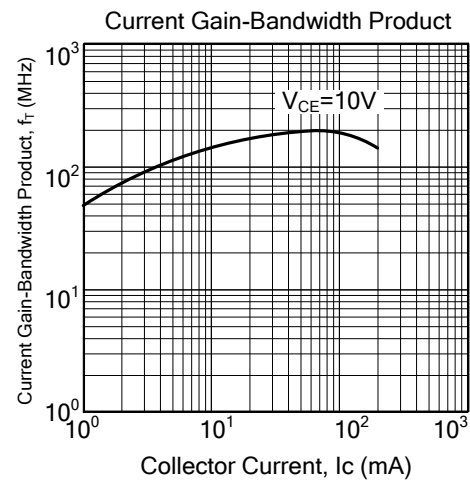
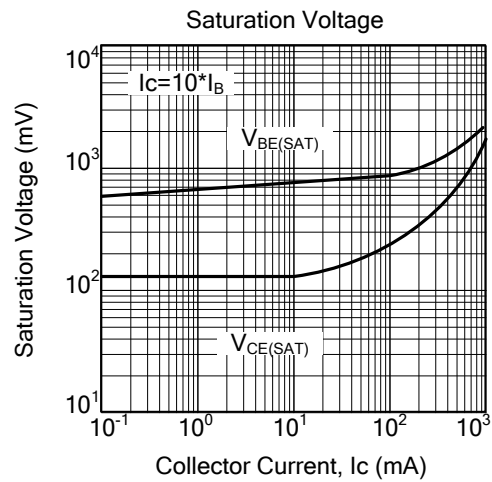
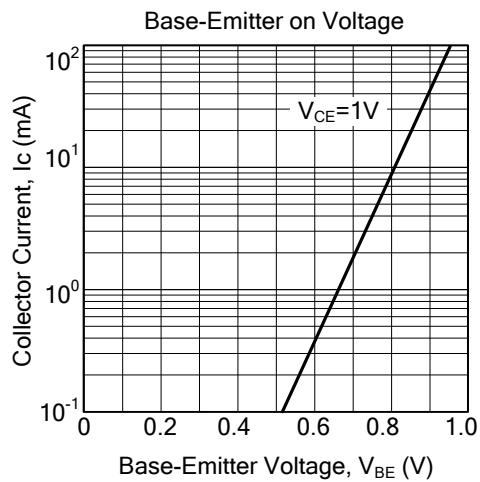
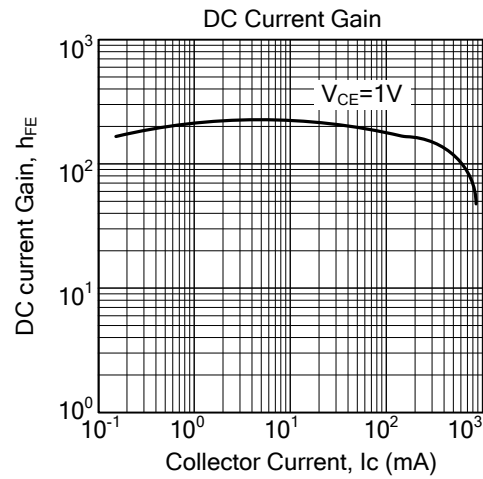
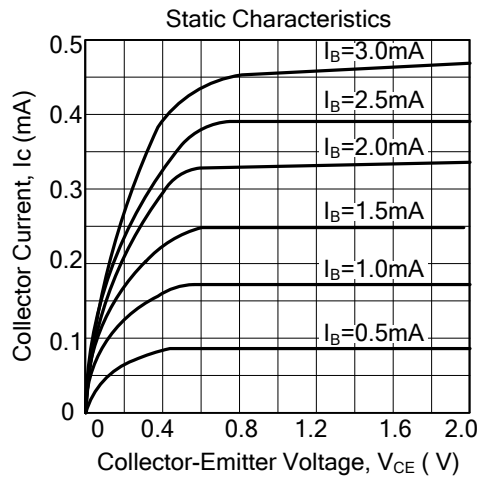
■ **ELECTRICAL CHARACTERISTICS** ( $T_A=25^\circ\text{C}$ , unless otherwise specified)

| 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   | $\mu\text{A}$ |
| Emitter Cut-Off Current              | $I_{EBO}$     | $V_{EB}=5\text{V}$ , $I_C=0$                    |     |     | 100 | nA            |
| DC Current Gain                      | $h_{FE1}$     | $V_{CE}=1\text{V}$ , $I_C=1\text{mA}$           | 100 |     |     |               |
|                                      | $h_{FE2}$     | $V_{CE}=1\text{V}$ , $I_C=150\text{mA}$         | 120 |     | 400 |               |
|                                      | $h_{FE3}$     | $V_{CE}=1\text{V}$ , $I_C=500\text{mA}$         | 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      | $V_{BE}$      | $V_{CE}=1\text{V}$ , $I_C=10\text{mA}$          |     |     | 1.0 | V             |
| Current Gain Bandwidth Product       | $f_T$         | $V_{CE}=10\text{V}$ , $I_C=50\text{mA}$         | 100 |     |     | MHz           |
| Output Capacitance                   | $C_{ob}$      | $V_{CB}=10\text{V}$ , $I_E=0$ , $f=1\text{MHz}$ |     | 9.0 |     | pF            |

■ **CLASSIFICATION OF  $h_{FE2}$**

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

## ■ TYPICAL CHARACTERISTICS



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