

# UTC HE8050 NPN EPITAXIAL SILICON TRANSISTOR

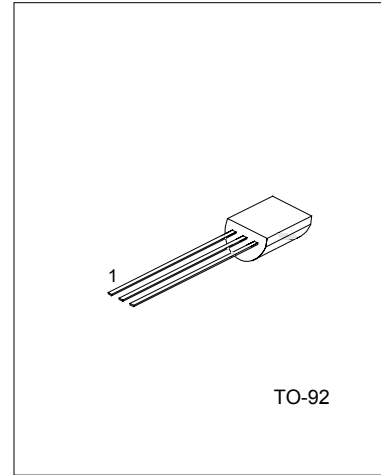
## LOW VOLTAGE HIGH CURRENT SMALL SIGNAL NPN TRANSISTOR

### DESCRIPTION

The UTC HE8050 is a low voltage high current small signal NPN transistor, designed for Class B push-pull 2W audio amplifier for portable radio and general purpose applications.

### FEATURES

- \*Collector current up to 1.5A
- \*Collector-Emitter voltage up to 25 V
- \*complimentary to UTC HE8550



1:EMITTER 2:COLLECTOR 3:BASE

### ABSOLUTE MAXIMUM RATINGS (Ta=25°C, unless otherwise specified)

| PARAMETER                      | SYMBOL           | VALUE      | UNIT |
|--------------------------------|------------------|------------|------|
| Collector-Base Voltage         | V <sub>CB0</sub> | 40         | V    |
| Collector-Emitter Voltage      | V <sub>CE0</sub> | 25         | V    |
| Emitter-Base Voltage           | V <sub>EB0</sub> | 6          | V    |
| Collector Dissipation(Ta=25°C) | P <sub>c</sub>   | 1          | W    |
| Collector Current              | I <sub>c</sub>   | 1.5        | A    |
| Junction Temperature           | T <sub>j</sub>   | 150        | °C   |
| Storage Temperature            | T <sub>STG</sub> | -65 ~ +150 | °C   |

### ELECTRICAL CHARACTERISTICS (Ta=25°C, unless otherwise specified)

| Parameter                            | Symbol               | Test conditions                                   | MIN | TYP | MAX | UNIT |
|--------------------------------------|----------------------|---|-----|-----|-----|------|
| Collector-Base Breakdown Voltage     | BV <sub>CB0</sub>    | I <sub>c</sub> =100μA, I <sub>E</sub> =0          | 40  |     |     | V    |
| Collector-Emitter Breakdown Voltage  | BV <sub>CE0</sub>    | I <sub>c</sub> =2mA, I <sub>B</sub> =0            | 25  |     |     | V    |
| Emitter-Base Breakdown Voltage       | BV <sub>EB0</sub>    | I <sub>E</sub> =100μA, I <sub>c</sub> =0          | 6   |     |     | V    |
| Collector Cut-Off Current            | I <sub>CB0</sub>     | V <sub>CB</sub> =35V, I <sub>E</sub> =0           |     |     | 100 | nA   |
| Emitter Cut-Off Current              | I <sub>EB0</sub>     | V <sub>EB</sub> =6V, I <sub>c</sub> =0            |     |     | 100 | nA   |
| DC Current Gain                      | h <sub>FE1</sub>     | V <sub>CE</sub> =1V, I <sub>c</sub> =5mA          | 45  | 135 |     |      |
|                                      | h <sub>FE2</sub>     | V <sub>CE</sub> =1V, I <sub>c</sub> =100mA        | 85  | 160 | 500 |      |
|                                      | h <sub>FE3</sub>     | V <sub>CE</sub> =1V, I <sub>c</sub> =800mA        | 40  | 110 |     |      |
| Collector-Emitter Saturation Voltage | V <sub>CE(sat)</sub> | I <sub>c</sub> =800mA, I <sub>B</sub> =80mA       |     |     | 0.5 | V    |
| Base-Emitter Saturation Voltage      | V <sub>BE(sat)</sub> | I <sub>c</sub> =800mA, I <sub>B</sub> =80mA       |     |     | 1.2 | V    |
| Base-Emitter Saturation Voltage      | V <sub>BE</sub>      | V <sub>CE</sub> =1V, I <sub>c</sub> =10mA         |     |     | 1.0 | V    |
| Current Gain Bandwidth Product       | f <sub>T</sub>       | V <sub>CE</sub> =10V, I <sub>c</sub> =50mA        | 100 |     |     | MHz  |
| Output Capacitance                   | C <sub>ob</sub>      | V <sub>CB</sub> =10V, I <sub>E</sub> =0<br>f=1MHz |     | 9.0 |     | pF   |

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## CLASSIFICATION OF hFE

| RANK  | C       | D       | E       |
|-------|---------|---------|---------|
| RANGE | 120-200 | 160-300 | 250-500 |

## TYPICAL PERFORMANCE CHARACTERISTICS

Fig.1 Static characteristics

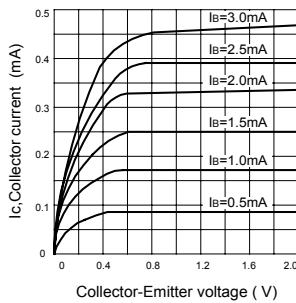


Fig.2 DC current Gain

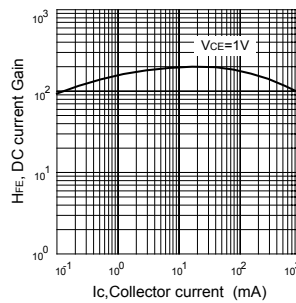


Fig.3 Base-Emitter on Voltage

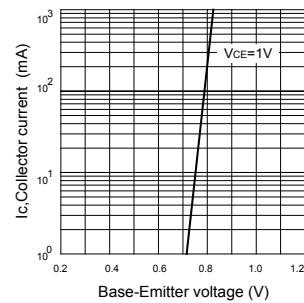


Fig.4 Saturation voltage

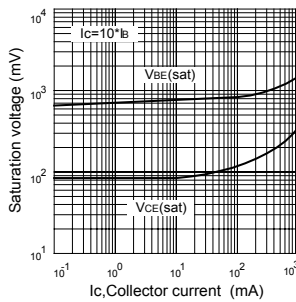


Fig.5 Current gain-bandwidth product

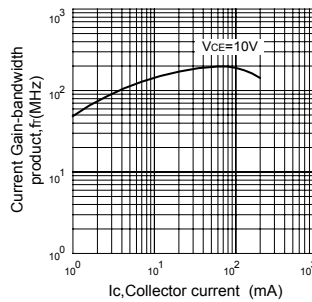
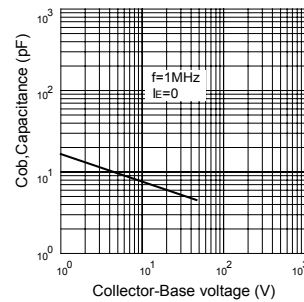


Fig.6 Collector output Capacitance



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