



## UBCX56

## NPN EPITAXIAL SILICON TRANSISTOR

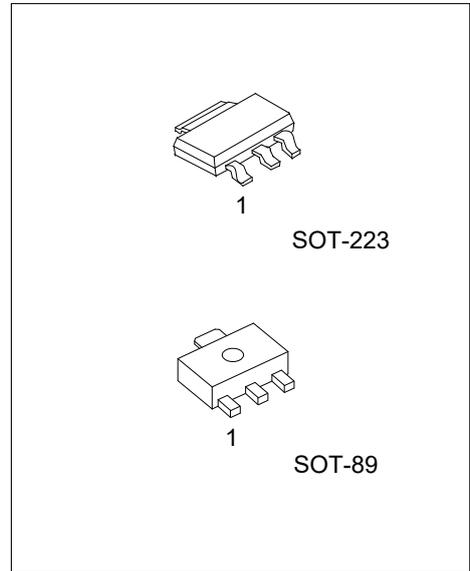
### NPN MEDIUM POWER TRANSISTORS

#### DESCRIPTION

The UTC **UBCX56** is an NPN epitaxial silicon transistor, it uses UTC's advanced technology to provide customers high DC current gain and high current capacity.

#### FEATURES

- \* High Current Capacity
- \* High DC Current Gain



#### ORDERING INFORMATION

| Ordering Number  |                  | Package | Pin Assignment |   |   | Packing   |
|------------------|------------------|---------|----------------|---|---|-----------|
| Lead Free        | Halogen Free     |         | 1              | 2 | 3 |           |
| UBCX56L-xx-AA3-R | UBCX56G-xx-AA3-R | SOT-223 | B              | C | E | Tape Reel |
| UBCX56L-xx-AB3-R | UBCX56G-xx-AB3-R | SOT-89  | B              | C | E | Tape Reel |

Note: Pin Assignment: B: Base C: Collector E: Emitter

|                         |   |
|-------------------------|---|
| <p>UBCX56G-xx-AA3-R</p> | <p>(1) R: Tape Reel<br/>                 (2) AA3: SOT-223, AB3: SOT-89<br/>                 (3) xx: refer to Classification of <math>h_{FE}</math><br/>                 (4) G: Halogen Free and Lead Free, L: Lead Free</p> |
|-------------------------|---|

#### MARKING

| SOT-89  | SOT-223   |
|---|---|
| <p>Date Code<br/>                 L: Lead Free<br/>                 G: Halogen Free</p> | <p>L: Lead Free<br/>                 G: Halogen Free<br/>                 Date Code</p> |

### ■ ABSOLUTE MAXIMUM RATINGS

| PARAMETER   |         | SYMBOL    | RATINGS    | UNIT             |
|---|---------|-----------|------------|------------------|
| Collector-Base Voltage (open emitter)                             |         | $V_{CB0}$ | 100        | V                |
| Collector-Emitter Voltage (open base)                             |         | $V_{CE0}$ | 80         | V                |
| Emitter-Base Voltage (open collector)                             |         | $V_{EB0}$ | 5          | V                |
| Collector Current (DC)  |         | $I_C$     | 1          | A                |
| Peak Collector Current  |         | $I_{CM}$  | 1.5        | A                |
| Peak Base Current   |         | $I_{BM}$  | 0.2        | A                |
| Total Power Dissipation<br>( $T_A \leq 25^\circ\text{C}$ , Note2) | SOT-223 | $P_D$     | 1.5        | W                |
|   | SOT-89  |           | 1.3        | W                |
| Junction Temperature  |         | $T_J$     | +150       | $^\circ\text{C}$ |
| Storage Temperature   |         | $T_{STG}$ | -65 ~ +150 | $^\circ\text{C}$ |
| Operating Ambient Temperature                                     |         | $T_{OPR}$ | -65 ~ +150 | $^\circ\text{C}$ |

Notes: 1. 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.

2. Device mounted on a printed-circuit board, single sided copper, tinplated, mounting pad for collector 6  $\text{cm}^2$ .

### ■ THERMAL DATA

| PARAMETER           |         | SYMBOL        | RATINGS | UNIT               |
|---------------------|---------|---------------|---------|--------------------|
| Junction to Ambient | SOT-223 | $\theta_{JA}$ | 83.3    | $^\circ\text{C/W}$ |
|                     | SOT-89  |               | 94      | $^\circ\text{C/W}$ |

Note: Device mounted on FR-4 substrate  $P_c$  board, 2oz copper, with 1inch square copper plate.

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

| PARAMETER                            | SYMBOL        | TEST CONDITIONS                         | MIN | TYP | MAX | UNIT |
|--------------------------------------|---------------|---|-----|-----|-----|------|
| Collector Base Breakdown Voltage     | $BV_{CB0}$    | $I_C=100\mu\text{A}$ , $I_E=0$          | 100 |     |     | V    |
| Collector Emitter Breakdown Voltage  | $BV_{CE0}$    | $I_C=10\text{mA}$ , $I_B=0$             | 80  |     |     | V    |
| Emitter Base Breakdown Voltage       | $BV_{EB0}$    | $I_E=10\mu\text{A}$ , $I_C=0$           | 5   |     |     | V    |
| Collector Cut-Off Current            | $I_{CBO}$     | $I_E=0$ , $V_{CB}=30\text{V}$           |     |     | 100 | nA   |
| Emitter Cut-Off Current              | $I_{EBO}$     | $I_C=0$ , $V_{EB}=5\text{V}$            |     |     | 100 | nA   |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=500\text{mA}$ , $I_B=50\text{mA}$  |     |     | 0.5 | V    |
| Base-Emitter Voltage                 | $V_{BE}$      | $I_C=500\text{mA}$ , $V_{CE}=2\text{V}$ |     |     | 1   | V    |
| DC Current Gain                      | $h_{FE1}$     | $V_{CE}=2\text{V}$ , $I_C=5\text{mA}$   | 40  |     |     |      |
|                                      | $h_{FE2}$     | $V_{CE}=2\text{V}$ , $I_C=150\text{mA}$ | 63  |     | 250 |      |
|                                      | $h_{FE3}$     | $V_{CE}=2\text{V}$ , $I_C=500\text{mA}$ | 25  |     |     |      |

### ■ CLASSIFICATION OF $h_{FE2}$

|       |          |           |
|-------|----------|-----------|
| RANK  | 10       | 16        |
| RANGE | 63 ~ 100 | 100 ~ 250 |

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