



# UBV45

## *NPN SILICON TRANSISTOR*

### HIGH VOLTAGE FAST SWITCHING NPN POWER APPLICATIONS

#### ■ DESCRIPTION

The device is manufactured using High Voltage Multi Epitaxial Planar technology for high switching speeds and high voltage capability.

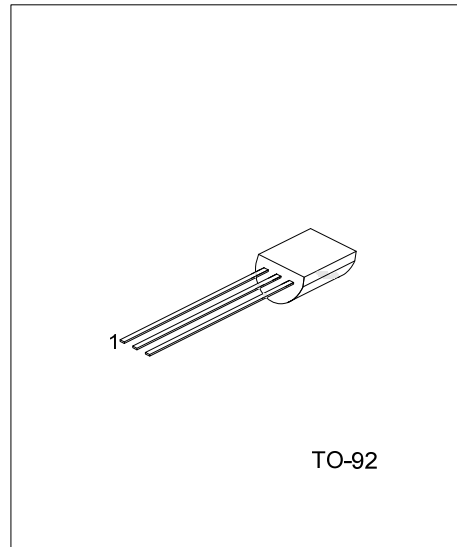
The UTC **UBV45** is designed for use in Compact Fluorescent Lamps.

#### ■ FEATURES

- \* High Voltage Capability
- \* Low Spread of Dynamic Parameters
- \* Very High Switching Speed

#### ■ ORDERING INFORMATION

| Ordering Number   |              | Package | Pin Assignment |   |   | Packing  |
|-------------------|--------------|---------|----------------|---|---|----------|
| Lead Free Plating | Halogen Free |         | 1              | 2 | 3 |          |
| UBV45L-T92-B      | UBV45G-T92-B | TO-92   | E              | C | B | Tape Box |
| UBV45L-T92-K      | UBV45G-T92-K | TO-92   | E              | C | B | Bulk     |



|   |  |
|---|--|
| <p>UBV45L-T92-B</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Lead Free</p> | <p>(1) B: Tape Box, K: Bulk</p> <p>(2) T92: TO-92</p> <p>(3) L: Lead Free, G: Halogen Free</p> |
|---|--|

# UBV45

## NPN SILICON TRANSISTOR

### ■ ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

| PARAMETER                                       | SYMBOL           | RATINGS    | UNIT |
|---|------------------|------------|------|
| Collector Emitter Voltage (V <sub>BE</sub> = 0) | V <sub>CES</sub> | 700        | V    |
| Collector Emitter Voltage (I <sub>B</sub> = 0)  | V <sub>CEO</sub> | 400        | V    |
| Emitter Base Voltage (I <sub>C</sub> = 0)       | V <sub>EBO</sub> | 9          | V    |
| Collector Current                               | I <sub>C</sub>   | 0.75       | A    |
| Collector Peak Current (t <sub>p</sub> < 5 ms)  | I <sub>CM</sub>  | 1.5        | A    |
| Base Current                                    | I <sub>B</sub>   | 0.4        | A    |
| Base Peak Current (t <sub>p</sub> < 5 ms)       | I <sub>BM</sub>  | 0.75       | A    |
| Total Dissipation at Ta = 25°C                  | P <sub>D</sub>   | 0.95       | W    |
| Junction Temperature                            | T <sub>J</sub>   | +150       | °C   |
| Storage Temperature                             | T <sub>STG</sub> | -40 ~ +150 | °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.

### ■ THERMAL DATA

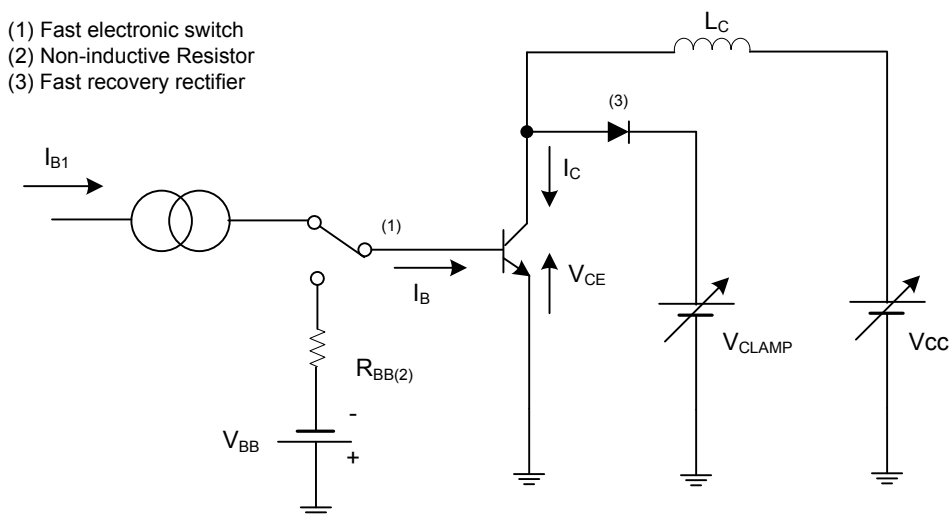
| PARAMETER                           | SYMBOL          | RATINGS | UNIT |
|-------------------------------------|-----------------|---------|------|
| Thermal Resistance Junction-ambient | θ <sub>JA</sub> | 130     | °C/W |

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

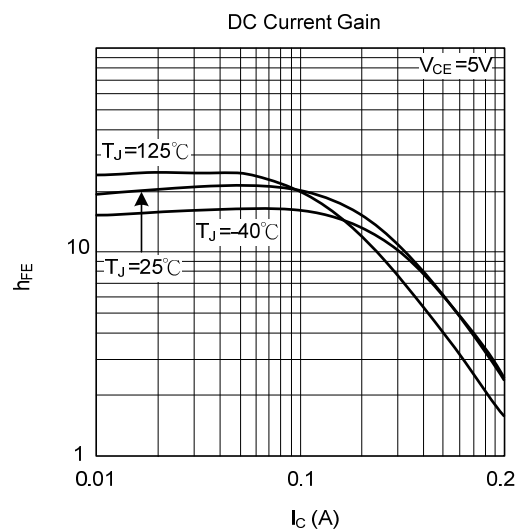
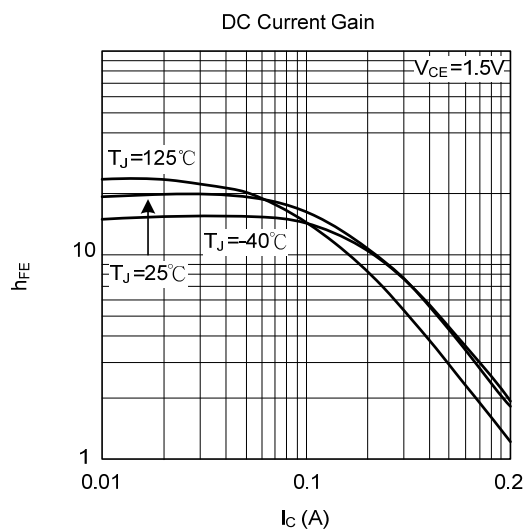
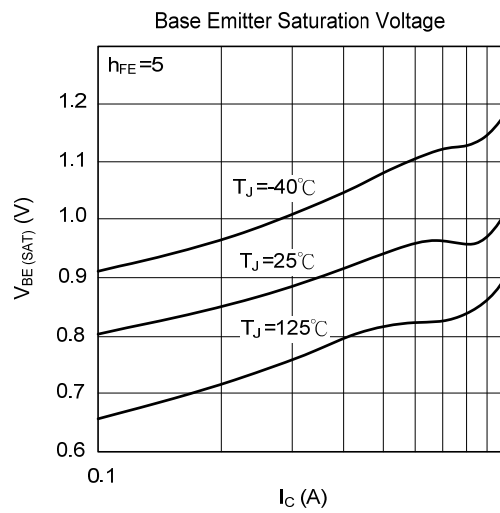
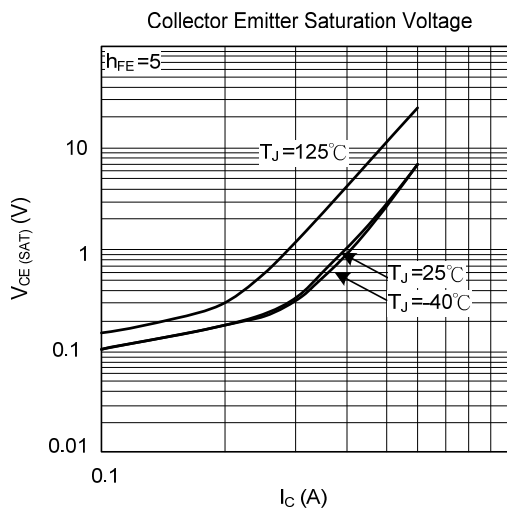
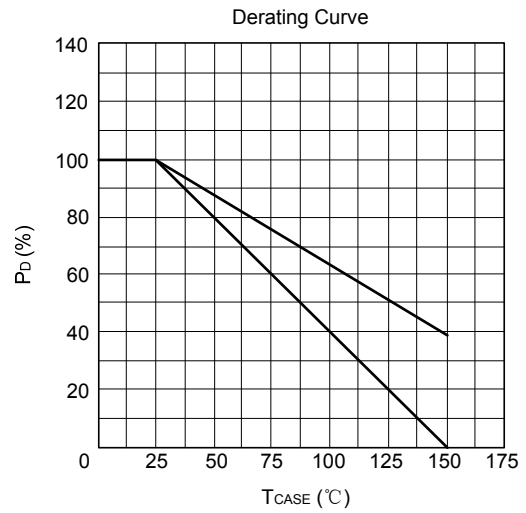
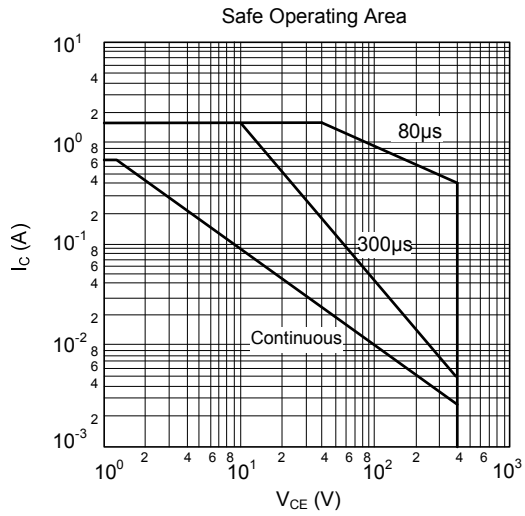
| PARAMETER   | SYMBOL                | TEST CONDITIONS  | MIN | TYP | MAX | UNIT |
|---|-----------------------|--|-----|-----|-----|------|
| Collector Emitter Sustaining Voltage (I <sub>B</sub> = 0)<br>(Note) | V <sub>CEO(SUS)</sub> | I <sub>C</sub> = 1 mA  | 400 |     |     | V    |
| Collector Emitter Saturation Voltage (Note)                         | V <sub>CE(SAT)</sub>  | I <sub>C</sub> = 0.2 A, I <sub>B</sub> = 40 mA   |     | 0.2 | 0.5 | V    |
|   |                       | I <sub>C</sub> = 0.3 A, I <sub>B</sub> = 75 mA   |     | 0.3 | 1   |      |
|   |                       | I <sub>C</sub> = 0.4 A, I <sub>B</sub> = 135 mA  |     | 0.4 | 1.5 |      |
| Base Emitter Saturation Voltage (Note)                              | V <sub>BE(SAT)</sub>  | I <sub>C</sub> = 0.2 A, I <sub>B</sub> = 40 mA   |     |     | 1   | V    |
|   |                       | I <sub>C</sub> = 0.3 A, I <sub>B</sub> = 75 mA   |     |     | 1.2 |      |
| Emitter Cut off Current (I <sub>C</sub> = 0)                        | I <sub>EBO</sub>      | V <sub>EB</sub> = 9 V  |     |     | 1   | mA   |
| Collector Cut off Current (V <sub>BE</sub> = -1.5V)                 | I <sub>CEV</sub>      | V <sub>CE</sub> = 700 V  |     |     | 250 | μA   |
| DC Current Gain   | h <sub>FE</sub> *     | I <sub>C</sub> = 0.2 A, V <sub>CE</sub> = 5 V  | 12  |     | 27  |      |
|   |                       | I <sub>C</sub> = 0.4 A, V <sub>CE</sub> = 5 V  | 7   |     | 20  |      |
| Inductive Load Fall Time  | t <sub>F</sub>        | I <sub>C</sub> = 0.2 A, V <sub>CLAMP</sub> = 300 V<br>I <sub>B1</sub> = -I <sub>B2</sub> = 40 mA, L = 3 mH |     | 0.3 |     | μs   |

Note: Pulsed: Pulse duration = 300μs, duty cycle = 1.5 %

### ■ INDUCTIVE LOAD SWITCHING TEST CIRCUIT



## TYPICAL CHARACTERISTICS



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