



# UTP2012Z

## PNP EPITAXIAL SILICON TRANSISTOR

### 55V PNP LOW SATURATION MEDIUM POWER TRANSISTOR

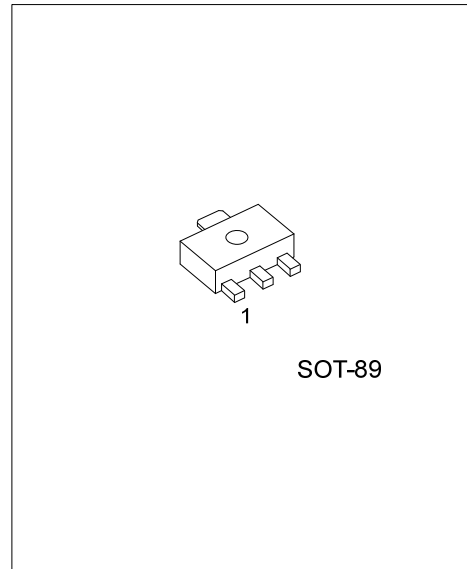
#### DESCRIPTION

The **UTP2012Z** is an PNP low  $V_{CE(SAT)}$  Breakthrough In Small Signal (BISS) transistor in a medium power.

NPN complement: UTN2010Z.

#### FEATURES

- \* Very low collector-emitter saturation voltage  $V_{CE(SAT)}$
- \* High collector current capability  $I_C$  and  $ICM$
- \* High collector current gain ( $h_{FE}$ ) at high  $I_C$
- \* High energy efficiency due to less heat generation
- \* Smaller required Printed-Circuit Board (PCB) area than for conventional transistors



SOT-89

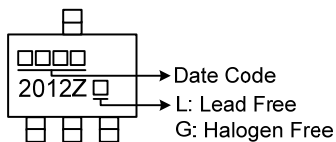
#### ORDERING INFORMATION

| Ordering Number |                 | Package | Pin Assignment |   |   | Packing   |
|-----------------|-----------------|---------|----------------|---|---|-----------|
| Lead Free       | Halogen Free    |         | 1              | 2 | 3 |           |
| UTP2012ZL-AB3-R | UTP2012ZG-AB3-R | SOT-89  | B              | C | E | Tape Reel |

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

|   |   |
|---|---|
| <p>UTP2012ZG-AB3-R</p> <p>(1) Packing Type<br/>(2) Package Type<br/>(3) Green Package</p> | <p>(1) R: Tape Reel<br/>(2) AB3: SOT-89<br/>(3) G: Halogen Free and Lead Free, L: Lead Free</p> |
|---|---|

#### MARKING



■ ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub>= 25°C, unless otherwise specified)

| PARAMETER                                    | SYMBOL           | RATINGS    | UNIT |
|--|------------------|------------|------|
| Collector to Base Voltage                    | V <sub>CBO</sub> | -100       | V    |
| Collector to Emitter Voltage                 | V <sub>CEO</sub> | -55        | V    |
| Emitter to Base Voltage                      | V <sub>EBO</sub> | -7         | V    |
| Base Current                                 | I <sub>B</sub>   | -2         | A    |
| Collector Current                            | I <sub>C</sub>   | -4.3       | A    |
| Peak Collector Current (t <sub>p</sub> ≤1ms) | I <sub>CM</sub>  | -15        | A    |
| Collector Dissipation                        | P <sub>C</sub>   | 1.5        | W    |
| Junction Temperature                         | T <sub>J</sub>   | -40 ~ +150 | °C   |
| Storage Temperature                          | T <sub>STG</sub> | -65 ~ +150 | °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. Single pulse, P<sub>W</sub>=10ms.  
 3. Device mounted on FR-4 PCB with minimum recommended pad layout. (25×25×1.6mm)

■ THERMAL DATA

| PARAMETER           | SYMBOL          | RATINGS | UNIT |
|---------------------|-----------------|---------|------|
| Junction to Ambient | θ <sub>JA</sub> | 83      | °C/W |

Note : Device mounted on FR-4 PCB with minimum recommended pad layout. (25×25×1.6mm).

■ ELECTRICAL CHARACTERISTICS (T<sub>A</sub>= 25°C, unless otherwise specified)

| PARAMETER                                   | SYMBOL                | TEST CONDITIONS  | MIN  | TYP | MAX   | UNIT |
|---|-----------------------|--|------|-----|-------|------|
| Collector-Base Breakdown Voltage            | BV <sub>CBO</sub>     | I <sub>C</sub> =-100μA   | -100 |     |       | V    |
| Collector-Emitter Breakdown Voltage         | BV <sub>CER</sub>     | I <sub>C</sub> =-1μA, R <sub>B</sub> ≤1kΩ                        | -100 |     |       | V    |
| Collector-Emitter Breakdown Voltage         | BV <sub>CEO</sub>     | I <sub>C</sub> =-10mA  | -55  |     |       | V    |
| Emitter-Base Breakdown Voltage              | BV <sub>EBO</sub>     | I <sub>E</sub> =-100μA   | -7.0 |     |       | V    |
| Collector-Base Cut-off Current              | I <sub>CBO</sub>      | V <sub>CB</sub> =-80V, I <sub>E</sub> =0A                        |      |     | -20   | nA   |
|   |                       | V <sub>CB</sub> =-80V, I <sub>E</sub> =0A, T <sub>A</sub> =100°C |      |     | -500  | nA   |
| Collector-Emitter Cut-off Current           | I <sub>CER</sub>      | V <sub>CE</sub> =-80V, R <sub>B</sub> ≤1kΩ                       |      |     | -20   | nA   |
| Emitter-Base Cut-off Current                | I <sub>EBO</sub>      | V <sub>EB</sub> =-6V, I <sub>C</sub> =0A                         |      |     | -10   | nA   |
| Base-Emitter On Voltage (Note)              | V <sub>BE (ON)</sub>  | V <sub>CE</sub> =-1V, I <sub>C</sub> =-5A                        |      |     | -950  | mV   |
| Base-Emitter Saturation Voltage (Note)      | V <sub>BE (SAT)</sub> | I <sub>C</sub> =-5A, I <sub>B</sub> =-500mA                      |      |     | -1050 | mV   |
| Collector-Emitter Saturation Voltage (Note) | V <sub>CE(SAT)</sub>  | I <sub>C</sub> =-100mA, I <sub>B</sub> =-10mA                    |      |     | -20   | mV   |
|   |                       | I <sub>C</sub> =-1A, I <sub>B</sub> =-100mA                      |      |     | -65   | mV   |
|   |                       | I <sub>C</sub> =-2A, I <sub>B</sub> =-200mA                      |      |     | -110  | mV   |
|   |                       | I <sub>C</sub> =-5A, I <sub>B</sub> =-500mA                      |      |     | -300  | mV   |
| DC Current Transfer Ratio (Note)            | h <sub>FE</sub>       | I <sub>C</sub> =-10mA, V <sub>CE</sub> =-1V                      | 100  |     | 300   |      |
|   |                       | I <sub>C</sub> =-2A, V <sub>CE</sub> =-1V                        | 100  |     | 300   |      |
|   |                       | I <sub>C</sub> =-5A, V <sub>CE</sub> =-1V                        | 45   |     |       |      |
|   |                       | I <sub>C</sub> =-10A, V <sub>CE</sub> =-1V                       | 10   |     |       |      |
| Transition Frequency (Note)                 | f <sub>T</sub>        | I <sub>C</sub> =-100mA, V <sub>CE</sub> =-10V, f=50MHz           |      | 120 |       | MHz  |
| Collector Capacitance                       | C <sub>OB</sub>       | V <sub>CB</sub> =-10V, f=1MHz                                    |      | 90  |       | pF   |

Note : Measured under pulsed conditions. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%.

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