

# UTC PZTA44/45 NPN EPITAXIAL SILICON TRANSISTOR

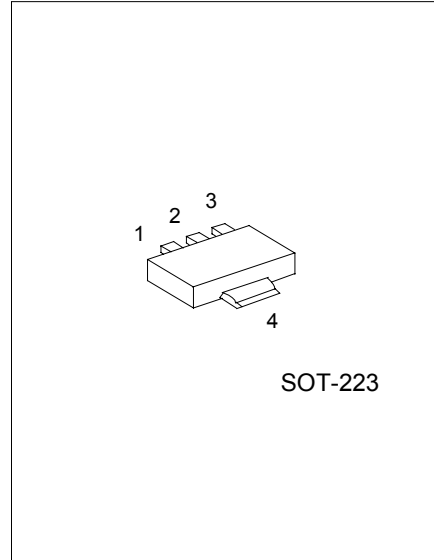
## HIGH VOLTAGE TRANSISTOR

### FEATURES

- \*Collector-Emitter voltage:  
V<sub>CEO</sub>=400V(PZTA44)  
V<sub>CEO</sub>=350V(PZTA45)
- \*Collector current up to 300mA
- \*Complement to PZTA94/93
- \*Collector Dissipation:  
P<sub>c</sub>(max)=2W

### APPLICATION

- \*Telephone switching
- \*High voltage switch



1:EMITTER 2,4:COLLECTOR 3:BASE

### ABSOLUTE MAXIMUM RATINGS (Operating temperature range applies unless otherwise specified)

| PARAMETER                                     | SYMBOL           | RATING     | UNIT |
|---|------------------|------------|------|
| Collector-base voltage<br>PZTA44<br>PZTA45    | V <sub>CB0</sub> | 500<br>400 | V    |
| Collector-emitter voltage<br>PZTA44<br>PZTA45 | V <sub>CEO</sub> | 400<br>350 | V    |
| Emitter-base voltage                          | V <sub>EB0</sub> | 6          | V    |
| Collector dissipation(T <sub>a</sub> =25°C)   | P <sub>c</sub>   | 625        | mW   |
| Collector dissipation(T <sub>c</sub> =25°C)   | P <sub>c</sub>   | 2          | W    |
| Collector current                             | I <sub>c</sub>   | 300        | mA   |
| Junction Temperature                          | T <sub>j</sub>   | 150        | °C   |
| Storage Temperature                           | T <sub>STG</sub> | -55 ~ +150 | °C   |

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

| PARAMETER   | SYMBOL               | TEST CONDITIONS  | MIN                  | TYP | MAX                | UNIT |
|---|----------------------|--|----------------------|-----|--------------------|------|
| Collector-base breakdown voltage<br>PZTA44<br>PZTA45    | BVCBO                | I <sub>c</sub> =100μA, I <sub>B</sub> =0   | 500<br>400           |     |                    | V    |
| Collector-emitter breakdown voltage<br>PZTA44<br>PZTA45 | BVCEO                | I <sub>c</sub> =1mA, I <sub>B</sub> =0   | 400<br>350           |     |                    | V    |
| Emitter-base breakdown voltage                          | BVEBO                | I <sub>E</sub> =100μA, I <sub>C</sub> =0   | 6                    |     |                    | V    |
| Collector cut-off current<br>PZTA44<br>PZTA45           | I <sub>CBO</sub>     | V <sub>CB</sub> =400V, I <sub>E</sub> =0<br>V <sub>CB</sub> =320V, I <sub>E</sub> =0   |                      |     | 0.1<br>0.1         | μA   |
| Collector cut-off current<br>PZTA44<br>PZTA45           | I <sub>CES</sub>     | V <sub>CE</sub> =400V, I <sub>B</sub> =0<br>V <sub>CE</sub> =320V, I <sub>B</sub> =0   |                      |     | 0.5<br>0.5         | μA   |
| Emitter cut-off current                                 | I <sub>EBO</sub>     | V <sub>EB</sub> =4V, I <sub>C</sub> =0   |                      |     | 0.1                | μA   |
| DC current gain(note)                                   | h <sub>FE</sub>      | V <sub>CE</sub> =10V, I <sub>C</sub> =1mA<br>V <sub>CE</sub> =10V, I <sub>C</sub> =10mA<br>V <sub>CE</sub> =10V, I <sub>C</sub> =50mA<br>V <sub>CE</sub> =10V, I <sub>C</sub> =100mA | 40<br>50<br>45<br>40 |     | 240                |      |
| Collector-emitter saturation voltage                    | V <sub>CE(sat)</sub> | I <sub>c</sub> =1mA, I <sub>B</sub> =0.1mA<br>I <sub>c</sub> =10mA, I <sub>B</sub> =1mA<br>I <sub>c</sub> =50mA, I <sub>B</sub> =5mA   |                      |     | 0.4<br>0.5<br>0.75 | V    |
| Base-emitter saturation voltage                         | V <sub>BE(sat)</sub> | I <sub>c</sub> =10mA, I <sub>B</sub> =1mA  |                      |     | 0.75               | V    |
| Current gain bandwidth product                          | f <sub>T</sub>       | V <sub>CE</sub> =20V, I <sub>C</sub> =10mA,<br>f=100MHz  | 50                   |     |                    | MHz  |
| Output capacitance                                      | C <sub>ob</sub>      | V <sub>CB</sub> =20V, I <sub>E</sub> =0<br>f=1MHz  |                      |     | 7                  | pF   |

Note: Pulse test: PW<300μs, Duty Cycle<2%

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## TYPICAL CHARACTERISTIC CURVES

Fig.1 DC current gain

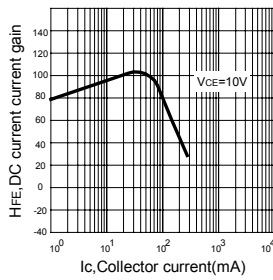


Fig.2 Turn-on switching times

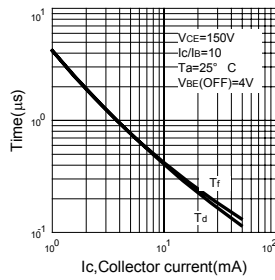


Fig.3 Turn-off switching times

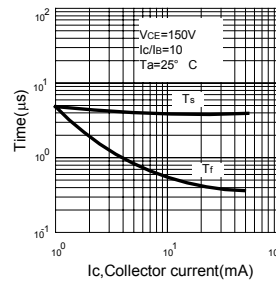


Fig.4 Capacitance

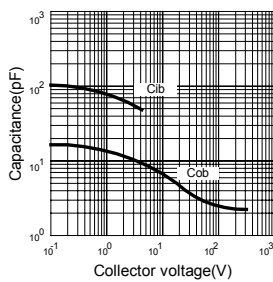


Fig.5 ON Voltage

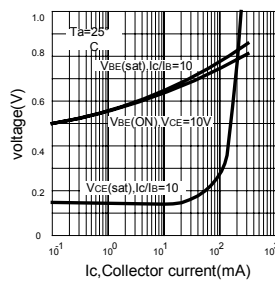


Fig.6 Collector saturation region

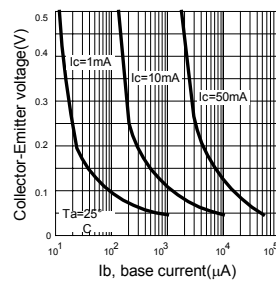


Fig.7 High Frequency current gain

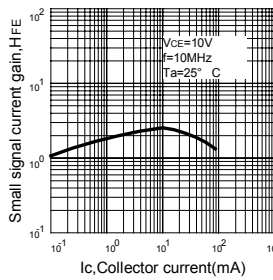
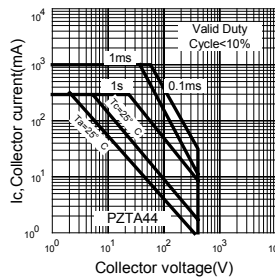


Fig.8 Safe operating area



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