

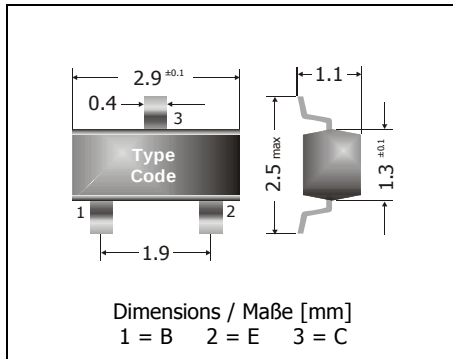
## MMBTA42 / MMBTA43

NPN

Surface mount High Voltage Transistors  
Hochspannungs-Transistoren für die Oberflächenmontage

NPN

Version 2005-06-21



Power dissipation  
Verlustleistung

250 mW

Plastic case  
Kunststoffgehäuse

SOT-23  
(TO-236)

Weight approx. – Gewicht ca.

0.01 g

Plastic material has UL classification 94V-0  
Gehäusematerial UL94V-0 klassifiziert

Standard packaging taped and reeled  
Standard Lieferform getupet auf Rolle



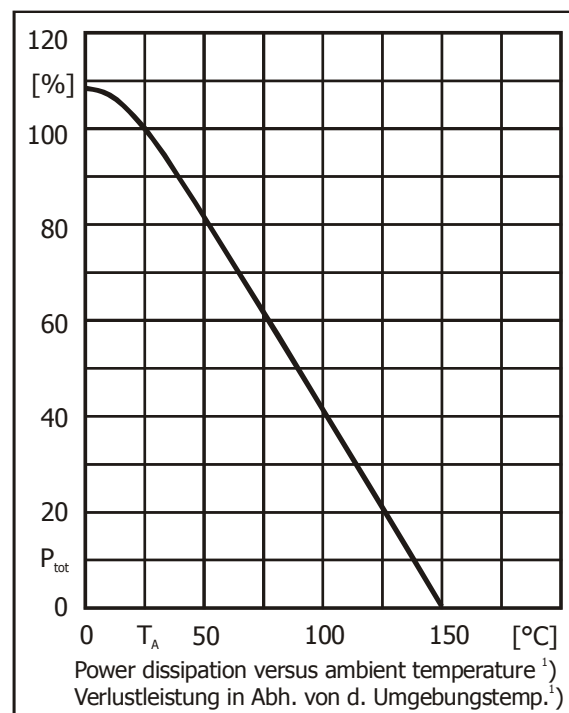
| Maximum ratings (T <sub>A</sub> = 25°C)              |        |                  | Grenzwerte (T <sub>A</sub> = 25°C) |         |
|------------------------------------------------------|--------|------------------|------------------------------------|---------|
|                                                      |        |                  | MMBTA42                            | MMBTA43 |
| Collector-Emitter-volt. - Kollektor-Emitter-Spannung | B open | V <sub>CEO</sub> | 300 V                              | 200 V   |
| Collector-Base-voltage - Kollektor-Basis-Spannung    | E open | V <sub>CBO</sub> | 300 V                              | 200 V   |
| Emitter-Base-voltage - Emitter-Basis-Spannung        | C open | V <sub>EB0</sub> | 6 V                                |         |
| Power dissipation – Verlustleistung                  |        | P <sub>tot</sub> | 250 mW <sup>1)</sup>               |         |
| Collector current – Kollektorstrom (dc)              |        | I <sub>C</sub>   | 500 mA                             |         |
| Junction temperature – Sperrschichttemperatur        |        | T <sub>j</sub>   | -65...+150°C                       |         |
| Storage temperature – Lagerungstemperatur            |        | T <sub>s</sub>   | -65...+150°C                       |         |

| Characteristics (T <sub>j</sub> = 25°C)                                   |         |                    | Kennwerte (T <sub>j</sub> = 25°C) |      |        |
|---------------------------------------------------------------------------|---------|--------------------|-----------------------------------|------|--------|
|                                                                           |         |                    | Min.                              | Typ. | Max.   |
| Collector-Base cutoff current – Kollektorreststrom                        |         |                    |                                   |      |        |
| I <sub>E</sub> = 0, V <sub>CB</sub> = 200 V                               | MMBTA42 | I <sub>CB0</sub>   | –                                 | –    | 100 nA |
| I <sub>E</sub> = 0, V <sub>CB</sub> = 160 V                               | MMBTA43 | I <sub>CB0</sub>   | –                                 | –    | 100 nA |
| Emitter-Base cutoff current – Emitterreststrom                            |         |                    |                                   |      |        |
| I <sub>C</sub> = 0, V <sub>EB</sub> = 6 V                                 | MMBTA42 | I <sub>EB0</sub>   | –                                 | –    | 100 nA |
| I <sub>C</sub> = 0, V <sub>EB</sub> = 4 V                                 | MMBTA43 | I <sub>EB0</sub>   | –                                 | –    | 100 nA |
| Collector saturation voltage – Kollektor-Sättigungsspannung <sup>2)</sup> |         |                    |                                   |      |        |
| I <sub>C</sub> = 20 mA, I <sub>B</sub> = 2 mA                             |         | V <sub>CEsat</sub> | –                                 | –    | 500 mV |
| Base saturation voltage – Basis-Sättigungsspannung <sup>2)</sup>          |         |                    |                                   |      |        |
| I <sub>C</sub> = 20 mA, I <sub>B</sub> = 2 mA                             |         | V <sub>BEsat</sub> | –                                 | –    | 900 mV |

1 Mounted on P.C. board with 3 mm<sup>2</sup> copper pad at each terminal  
Montage auf Leiterplatte mit 3 mm<sup>2</sup> Kupferbelag (Lötpad) an jedem Anschluss

2 Tested with pulses t<sub>p</sub> = 300 μs, duty cycle ≤ 2% – Gemessen mit Impulsen t<sub>p</sub> = 300 μs, Schaltverhältnis ≤ 2%

| Characteristics (T <sub>j</sub> = 25°C)                                                    |                  |                         | Kennwerte (T <sub>j</sub> = 25°C) |      |      |
|--------------------------------------------------------------------------------------------|------------------|-------------------------|-----------------------------------|------|------|
|                                                                                            |                  |                         | Min.                              | Typ. | Max. |
| DC current gain – Kollektor-Basis-Stromverhältnis                                          |                  |                         |                                   |      |      |
| V <sub>CE</sub> = 10 V, I <sub>C</sub> = 1 mA                                              | h <sub>FE</sub>  |                         | 25                                | –    | –    |
| V <sub>CE</sub> = 10 V, I <sub>C</sub> = 10 mA                                             | h <sub>FE</sub>  |                         | 40                                | –    | –    |
| V <sub>CE</sub> = 10 V, I <sub>C</sub> = 30 mA                                             | h <sub>FE</sub>  |                         | 40                                | –    | –    |
| Gain-Bandwidth Product – Transitfrequenz                                                   |                  |                         |                                   |      |      |
| V <sub>CE</sub> = 10 V, I <sub>C</sub> = 20 mA, f = 100 MHz                                | f <sub>T</sub>   |                         | 50 MHz                            | –    | –    |
| Collector-Base capacitance – Kollektor-Basis-Kapazität                                     |                  |                         |                                   |      |      |
| V <sub>CB</sub> = 20 V, I <sub>E</sub> = i <sub>e</sub> = 0, f = 1 MHz                     | MMBTA42          | C <sub>CB0</sub>        | –                                 | –    | 3 pF |
|                                                                                            | MMBTA43          | C <sub>CB0</sub>        | –                                 | –    | 4 pF |
| Thermal resistance junction – ambient air<br>Wärmewiderstand Sperrschicht – umgebende Luft | R <sub>thA</sub> | < 420 K/W <sup>1)</sup> |                                   |      |      |
| Recommended complementary PNP transistors<br>Empfohlene komplementäre PNP-Transistoren     |                  |                         | MMBTA92, MMBTA93                  |      |      |
| Marking - Stempelung                                                                       |                  |                         | MMBTA42 = 1D<br>MMBTA43 = 1E      |      |      |



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Montage auf Leiterplatte mit 3 mm<sup>2</sup> Kupferbelag (Löt-pad) an jedem Anschluss