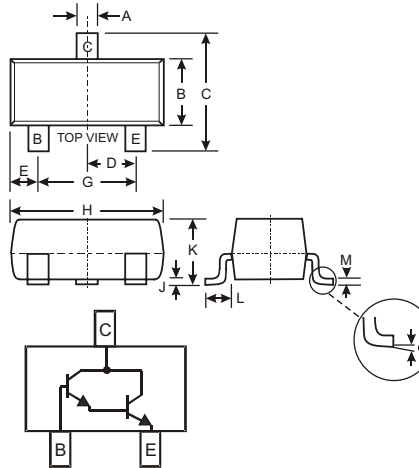


Features

- Epitaxial Planar Die Construction
- Complementary PNP Types Available (MMBTA63 / MMBTA64)
- Ideal for Medium Power Amplification and Switching
- High Current Gain

Mechanical Data

- Case: SOT-23, Molded Plastic
- Case material - UL Flammability Rating Classification 94V-0
- Moisture sensitivity: Level 1 per J-STD-020A
- Terminals: Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- MMBTA13 Marking (See Page 2): K2D, K3D
- MMBTA14 Marking (See Page 2): K3D
- Ordering & Date Code Information: See Page 2
- Weight: 0.008 grams (approx.)



| SOT-23 | | |
|----------------------|-------|-------|
| Dim | Min | Max |
| A | 0.37 | 0.51 |
| B | 1.20 | 1.40 |
| C | 2.30 | 2.50 |
| D | 0.89 | 1.03 |
| E | 0.45 | 0.60 |
| G | 1.78 | 2.05 |
| H | 2.80 | 3.00 |
| J | 0.013 | 0.10 |
| K | 0.903 | 1.10 |
| L | 0.45 | 0.61 |
| M | 0.085 | 0.180 |
| α | 0° | 8° |
| All Dimensions in mm | | |

Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

| Characteristic | Symbol | MMBTA13 | MMBTA14 | Unit |
|--------------------------------------------------|-----------------|-------------|---------|--------------------|
| Collector-Base Voltage | V_{CBO} | 30 | | V |
| Collector-Emitter Voltage | V_{CEO} | 30 | | V |
| Emitter-Base Voltage | V_{EBO} | 10 | | V |
| Collector Current - Continuous (Note 1) | I_C | 300 | | mA |
| Power Dissipation (Note 1) | P_d | 300 | | mW |
| Thermal Resistance, Junction to Ambient (Note 1) | $R_{\theta JA}$ | 417 | | $^\circ\text{C/W}$ |
| Operating and Storage and Temperature Range | T_j, T_{STG} | -55 to +150 | | $^\circ\text{C}$ |

Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

| Characteristic | Symbol | Min | Max | Unit | Test Condition |
|--------------------------------------|------------------------------------------|-------------|-------------------------------------|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OFF CHARACTERISTICS (Note 2) | | | | | |
| Collector-Emitter Breakdown Voltage | $V_{(BR)CEO}$ | 30 | — | V | $I_C = 100\mu\text{A}, V_{BE} = 0\text{V}$ |
| Collector Cutoff Current | I_{CBO} | — | 100 | nA | $V_{CB} = 30\text{V}, I_E = 0$ |
| Emitter Cutoff Current | I_{EBO} | — | 100 | nA | $V_{EB} = 10\text{V}, I_C = 0$ |
| ON CHARACTERISTICS (Note 2) | | | | | |
| DC Current Gain | MMBTA13 MMBTA14 MMBTA13 MMBTA14 | h_{FE} | 5,000 10,000 10,000 20,000 | — | $I_C = 10\text{mA}, V_{CE} = 5.0\text{V}$ $I_C = 10\text{mA}, V_{CE} = 5.0\text{V}$ $I_C = 100\text{mA}, V_{CE} = 5.0\text{V}$ $I_C = 100\text{mA}, V_{CE} = 5.0\text{V}$ |
| Collector-Emitter Saturation Voltage | $V_{CE(SAT)}$ | — | 1.5 | V | $I_C = 100\text{mA}, I_B = 100\mu\text{A}$ |
| Base- Emitter Saturation Voltage | $V_{BE(SAT)}$ | — | 2.0 | V | $I_C = 100\text{mA}, V_{CE} = 5.0\text{V}$ |
| SMALL SIGNAL CHARACTERISTICS | | | | | |
| Output Capacitance | C_{obo} | 8.0 Typical | | pF | $V_{CB} = 10\text{V}, f = 1.0\text{MHz}, I_E = 0$ |
| Input Capacitance | C_{ibo} | 15 Typical | | pF | $V_{EB} = 0.5\text{V}, f = 1.0\text{MHz}, I_C = 0$ |
| Current Gain-Bandwidth Product | f_T | 125 | — | MHz | $V_{CE} = 5.0\text{V}, I_C = 10\text{mA}, f = 100\text{MHz}$ |

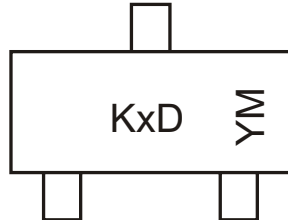
Note: 1. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch; pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.
2. Short duration test pulse used to minimize self-heating effect.

Ordering Information (Note 3)

| Device | Packaging | Shipping |
|------------------------|-----------|------------------|
| MMBTA13-7 MMBTA14-7 | SOT-23 | 3000/Tape & Reel |

Notes: 3. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information



KxD = Product Type Marking Code, ex: K2D = MMBTA13
 YM = Date Code Marking
 Y = Year ex: N = 2002
 M = Month ex: 9 = September

Date Code Key

| | | | | | | | | | | | | |
|--------------|-------------|-------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Year | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
| Code | J | K | L | M | N | P | R | S | T | U | V | W |
| Month | Jan | Feb | March | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| Code | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | O | N | D |