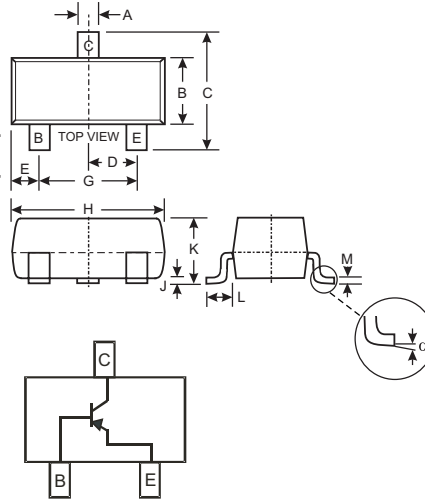


Features

- Epitaxial Planar Die Construction
- Complementary NPN Types Available (MMBTA05 / MMBTA06)
- Ideal for Medium Power Amplification and Switching
- **Lead Free/RoHS Compliant (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

- Case: SOT-23
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminal Connections: See Diagram
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- MMBTA55 Marking (See Page 2): K2H
- MMBTA56 Marking (See Page 2): K2G
- Ordering & Date Code Information: See Page 2
- Weight: 0.008 grams (approximate)



| 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°C unless otherwise specified

| Characteristic | Symbol | MMBTA55 | MMBTA56 | Unit |
|--|-----------------------------------|-------------|---------|------|
| Collector-Base Voltage | V _{CBO} | -60 | -80 | V |
| Collector-Emitter Voltage | V _{CEO} | -60 | -80 | V |
| Emitter-Base Voltage | V _{EBO} | -4.0 | | V |
| Collector Current - Continuous (Note 1) | I _C | -500 | | mA |
| Power Dissipation (Note 1) | P _d | 300 | | mW |
| Thermal Resistance, Junction to Ambient (Note 1) | R _{θJA} | 417 | | °C/W |
| Operating and Storage and Temperature Range | T _J , T _{STG} | -55 to +150 | | °C |

Electrical Characteristics @ T_A = 25°C unless otherwise specified

| Characteristic | Symbol | Min | Max | Unit | Test Condition |
|--------------------------------------|--|------------|-------|------|---|
| OFF CHARACTERISTICS (Note 2) | | | | | |
| Collector-Base Breakdown Voltage | MMBTA55 MMBTA56 V _{(BR)CBO} | -60 -80 | — | V | I _C = -100μA, I _E = 0 |
| Collector-Emitter Breakdown Voltage | MMBTA55 MMBTA56 V _{(BR)CEO} | -60 -80 | — | V | I _C = -1.0mA, I _B = 0 |
| Emitter-Base Breakdown Voltage | V _{(BR)EBO} | -4.0 | — | V | I _E = -100μA, I _C = 0 |
| Collector Cutoff Current | MMBTA55 MMBTA56 I _{CBO} | — | -100 | nA | V _{CB} = -60V, I _E = 0 V _{CB} = -80V, I _E = 0 |
| Collector Cutoff Current | MMBTA55 MMBTA56 I _{CEx} | — | -100 | nA | V _{CE} = -60V, I _{BO} = 0V V _{CE} = -80V, I _{BO} = 0V |
| ON CHARACTERISTICS (Note 2) | | | | | |
| DC Current Gain | h _{FE} | 100 | — | — | I _C = -10mA, V _{CE} = -1.0V I _C = -100mA, V _{CE} = -1.0V |
| Collector-Emitter Saturation Voltage | V _{CE(SAT)} | — | -0.25 | V | I _C = -100mA, I _B = -10mA |
| Base-Emitter Saturation Voltage | V _{BE(SAT)} | — | -1.2 | V | I _C = -100mA, V _{CE} = -1.0V |
| SMALL SIGNAL CHARACTERISTICS | | | | | |
| Current Gain-Bandwidth Product | f _T | 50 | — | MHz | V _{CE} = -1.0V, I _C = -100mA, f = 100MHz |

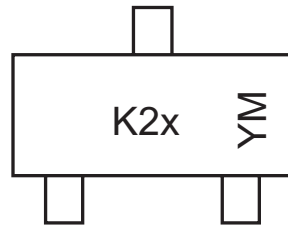
- Notes: 1. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch; pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.
2. Short duration test pulse used to minimize self-heating effect.
3. No purposefully added lead.

Ordering Information (Note 4)

| Device | Packaging | Shipping |
|----------------------------|-----------|------------------|
| MMBTA55-7-F MMBTA56-7-F | SOT-23 | 3000/Tape & Reel |

Notes: 4. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information

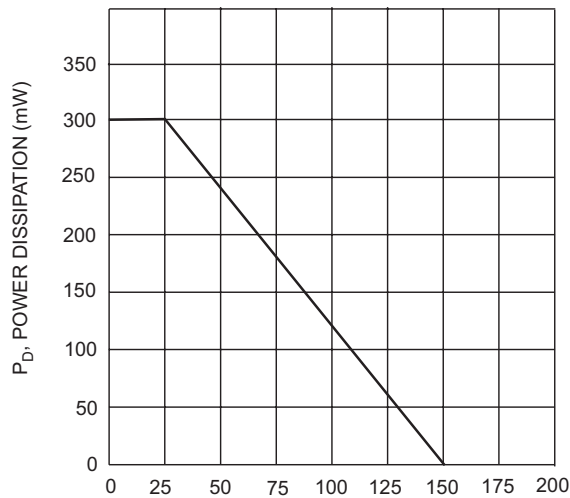


K2x = Product Type Marking Code, ex: K2H = MMBTA55
 YM = Date Code Marking
 Y = Year ex: N = 2002
 M = Month ex: 9 = September

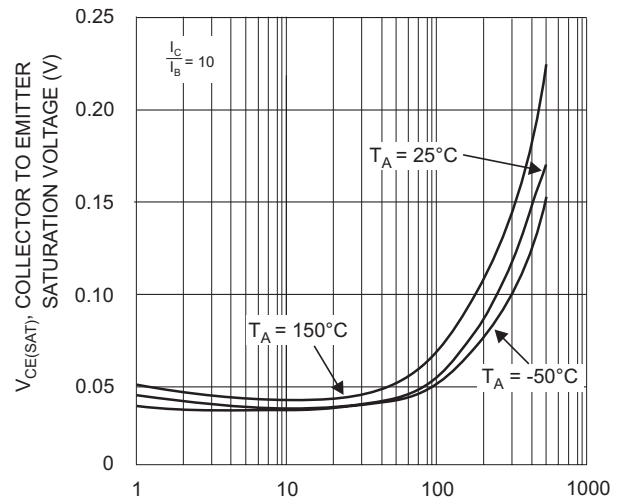
Date Code Key

| 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 |



T_A, AMBIENT TEMPERATURE (°C)
 Fig. 1, Max Power Dissipation vs Ambient Temperature



I_C, COLLECTOR CURRENT (mA)
 Fig. 2, Collector Emitter Saturation Voltage vs. Collector Current

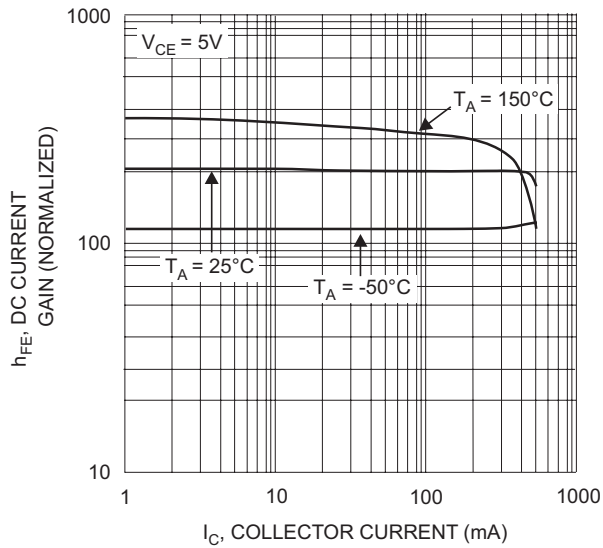


Fig. 3, DC Current Gain vs Collector Current

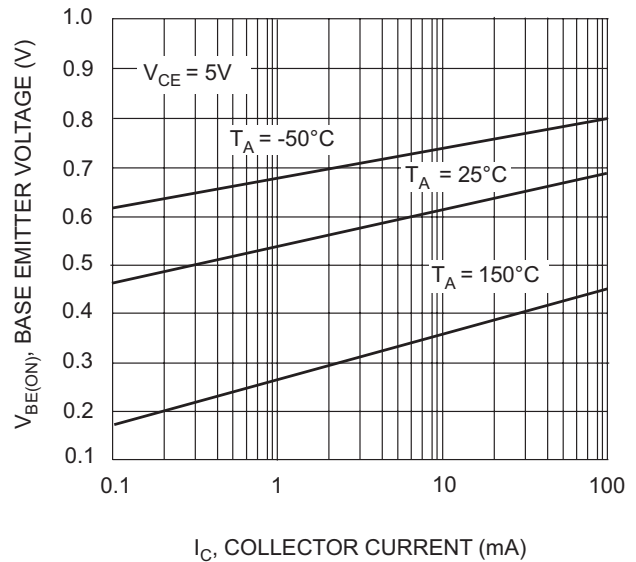


Fig. 4 Base Emitter Voltage vs. Collector Current

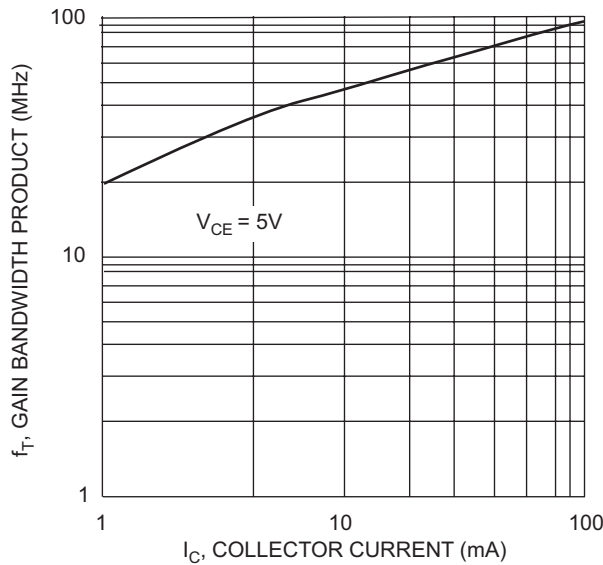


Fig. 5 Gain Bandwidth Product vs. Collector Current

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