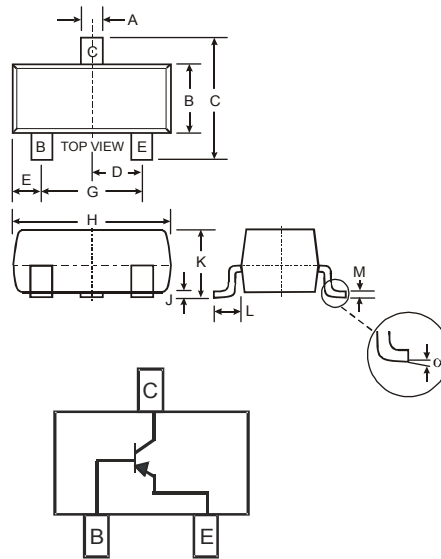


Features

- Epitaxial Planar Die Construction
- Complementary NPN Types Available (MMBTA05 / MMBTA06)
- Ideal for Low 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 3): K2H, K2G
- MMBTA56 Marking (See Page 3): K2G
- Ordering Information: See Page 3
- 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 pulse test used to minimize self-heating effect.
 3. No purposefully added lead.

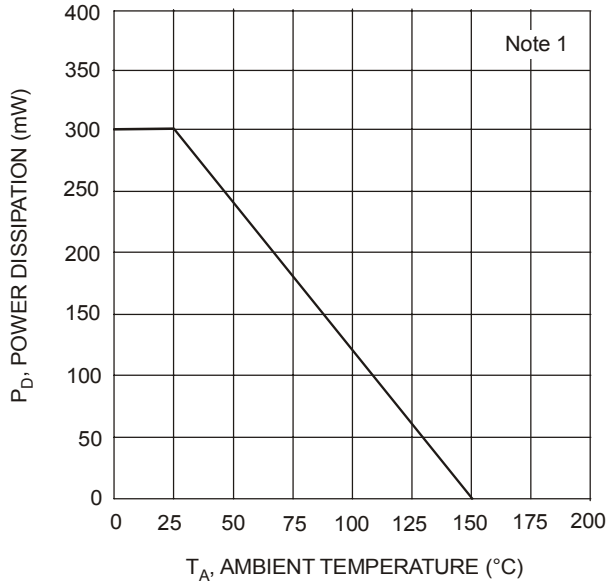


Fig. 1, Max Power Dissipation vs Ambient Temperature

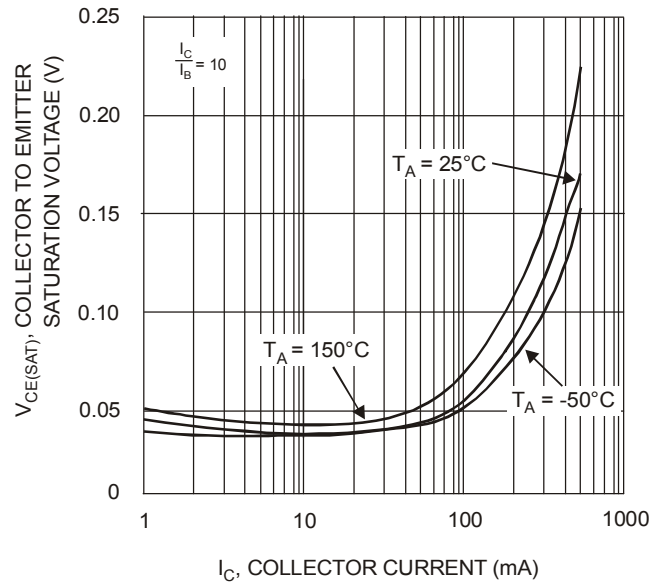


Fig. 2, Collector Emitter Saturation Voltage vs. Collector Current

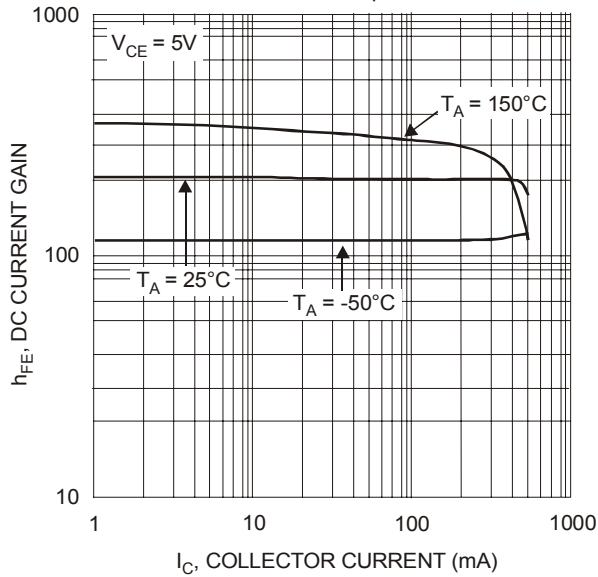


Fig. 3, DC Current Gain vs Collector Current

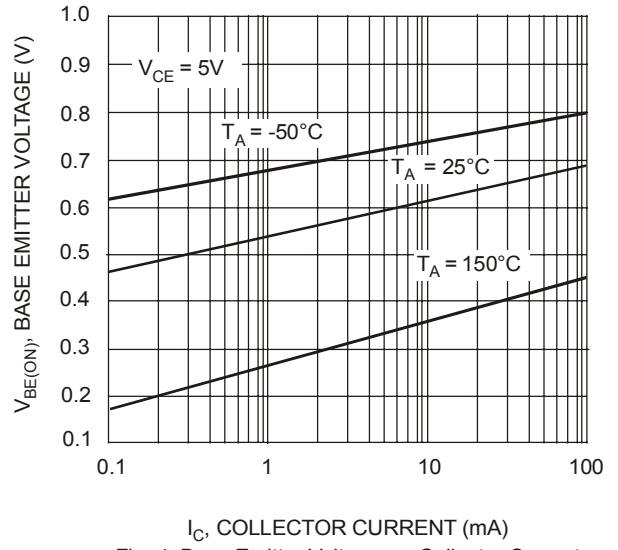


Fig. 4 Base Emitter Voltage vs. Collector Current

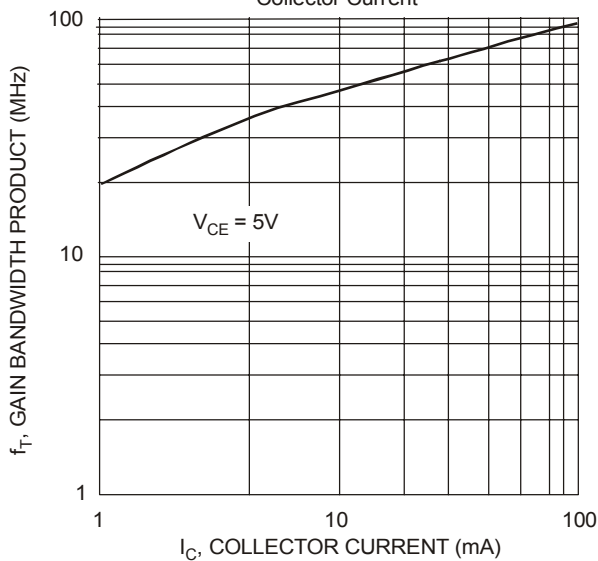


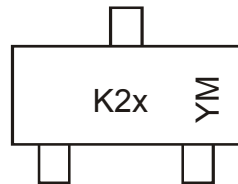
Fig. 5 Gain Bandwidth Product vs. Collector Current

Ordering Information (Note 4)

| Device | Packaging | Shipping |
|-------------|-----------|------------------|
| MMBTA55-7-F | SOT-23 | 3000/Tape & Reel |
| 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 | 2010 | 2011 | 2012 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Code | J | K | L | M | N | P | R | S | T | U | V | W | X | Y | Z |

| Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Code | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | O | N | D |

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