



MMBTA05 / MMBTA06 / MMBTA55 / MMBTA56

NPN AND PNP HIGH VOLTAGE TRANSISTOR

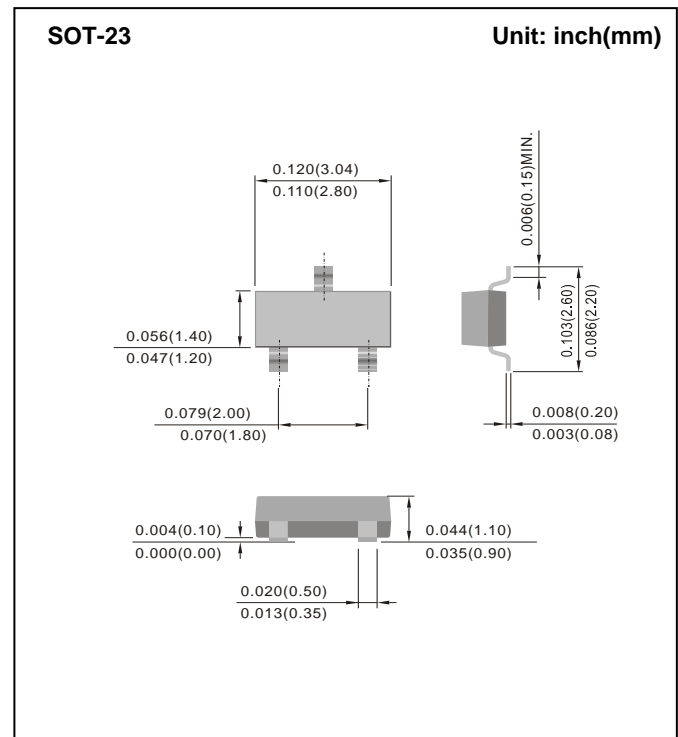
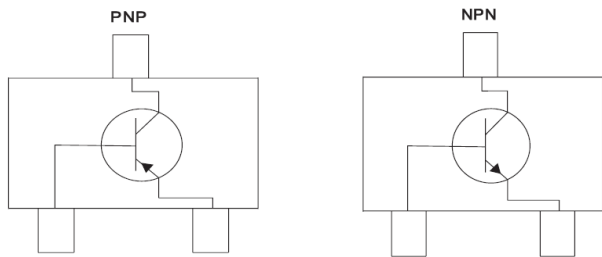
Voltage 60~80V **Power** 225mW

Features

- NPN and PNP silicon, planar design
- Collector current $I_C = 500\text{mA}$
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

Mechanical Data

- Case: SOT-23 Package
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.0003 ounces, 0.0084 grams



Maximum Ratings and Thermal Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)

| PARAMETER | SYMBOL | MMBTA05 | MMBTA55 | MMBTA06 | MMBTA56 | UNITS |
|------------------------------|-----------|---------|---------|---------|---------|-------|
| Marking | | B05 | B55 | B06 | B56 | |
| Collector-Emitter Voltage | V_{CEO} | 60 | | 80 | | V |
| Collector-Base Voltage | V_{CBO} | 60 | | 80 | | V |
| Emitter-Base Voltage | V_{EBO} | 4 | | | | V |
| Collector Current-Continuous | I_C | 500 | | | | mA |
| Circuit Figure | | NPN | PNP | NPN | PNP | |

Maximum Ratings and Thermal Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)

| CHARACTERISTIC | SYMBOL | MAX. | UNITS |
|--|-----------------|------------|----------------------|
| Total device dissipation FR-4 board (Note 1) $T_A=25^\circ\text{C}$ | P_D | 225 | mW |
| derate above 25°C | | 1.8 | mW/ $^\circ\text{C}$ |
| Typical thermal resistance | $R_{\theta JA}$ | 556 | $^\circ\text{C/W}$ |
| Total device dissipation alumina substrate (Note 2) $T_A=25^\circ\text{C}$ | P_D | 300 | mW |
| derate above 25°C | | 2.4 | mW/ $^\circ\text{C}$ |
| Typical thermal resistance | $R_{\theta JA}$ | 417 | $^\circ\text{C/W}$ |
| Operating junction and storage temperature range | T_J, T_{STG} | -55 to 150 | $^\circ\text{C}$ |

Note : 1. FR-4=70 x 60 x 1mm.

2. Alumina=0.4 x 0.3 x 0.024 in. 99.5 alumina.



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Electrical Characteristics (T_A=25°C unless otherwise noted)

| PARAMETER | SYMBOL | MIN. | MAX. | UNITS |
|---|--------------------------------------|----------------------|----------|-------------|
| OFF Characteristics | | | | |
| Collector-Emitter Breakdown Voltage (I _C =1.0mA, I _B =0) | MMBTA05, MMBTA55 MMBAT06, MMBTA56 | V _{(BR)CEO} | 60 80 | - - V |
| Emitter-Base Breakdown Voltage (I _E =100μA, I _C =0) | | V _{(BR)EBO} | 4 | - V |
| Collector Cutoff Current (V _{CE} =60V, I _B =0) | | I _{CES} | - | 0.1 μA |
| Collector Cutoff Current (V _{CB} =60V, I _E =0) | MMBTA05, MMBTA55 | I _{CBO} | - | 0.1 μA |
| (V _{CB} =80V, I _E =0) | MMBAT06, MMBTA56 | | - | 0.1 μA |
| ON characteristics | | | | |
| DC Current Gain (I _C =10mA, V _{CE} =1V) | | h _{FE} | 100 | - - |
| (I _C =100mA, V _{CE} =1V) | | | 100 | - - |
| Collector-Emitter Saturation Voltage (I _C =100mA, I _B =10mA) | | V _{CE(SAT)} | - | 0.25 V |
| Base-Emitter On Voltage (I _C =100mA, V _{CE} =1V) | | V _{BE(ON)} | - | 1.2 V |
| Small-signal characteristics | | | | |
| Current-Gain-Bandwidth Product (I _C =10mA, V _{CE} =2V, f=100MHz) | | f _T | 100 | - MHz |



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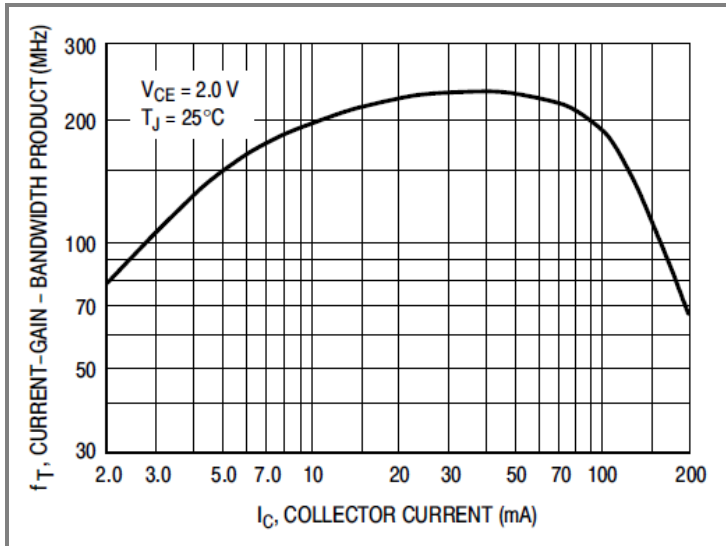


Fig.1 Current-Gain—Bandwidth Product

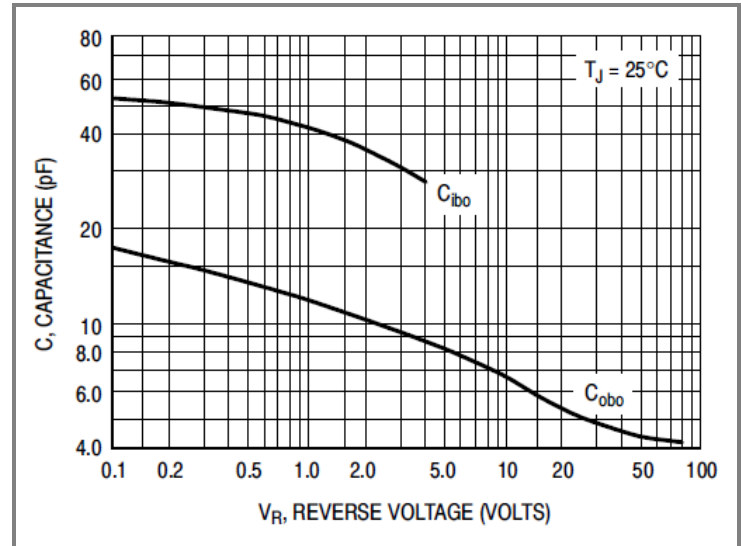


Fig.2 Capacitance

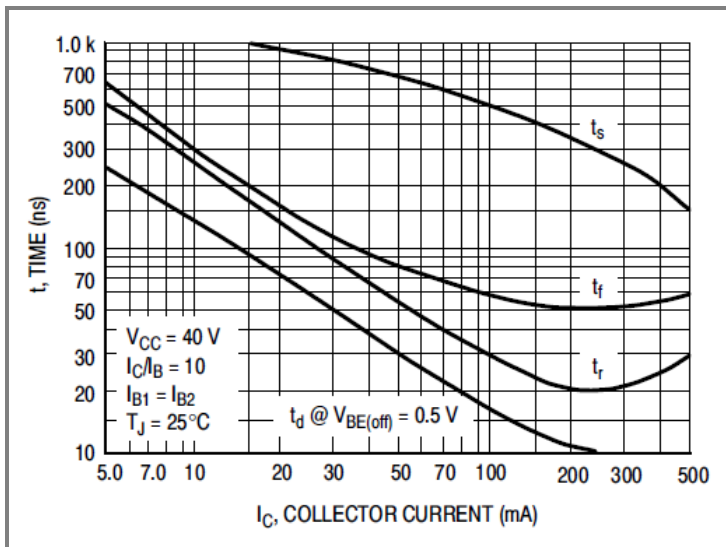


Fig.3 Switching Time

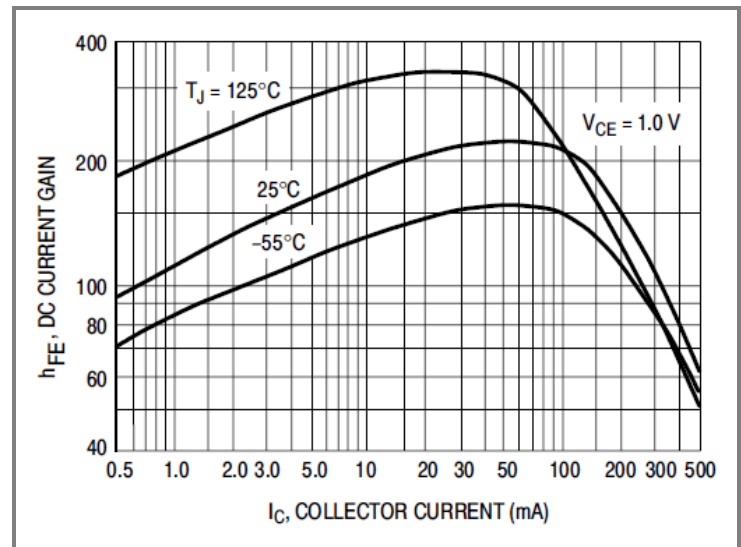


Fig.4 DC Current Gain

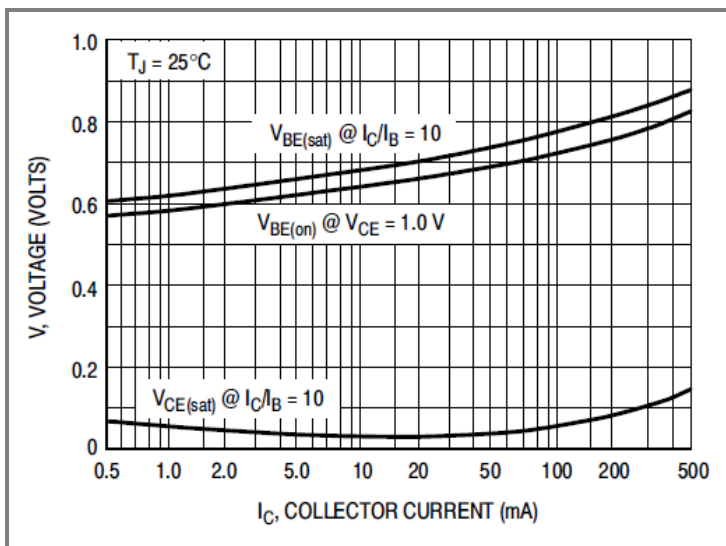


Fig.5 ON Voltages

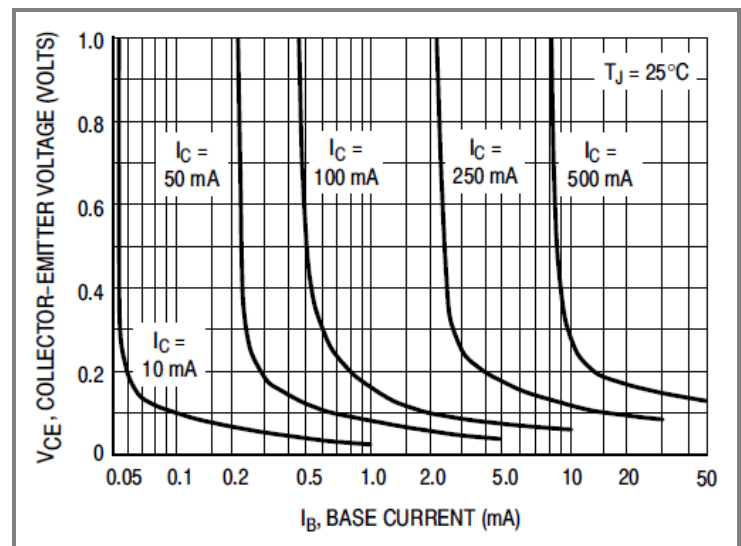


Fig.6 Collector Saturation Region



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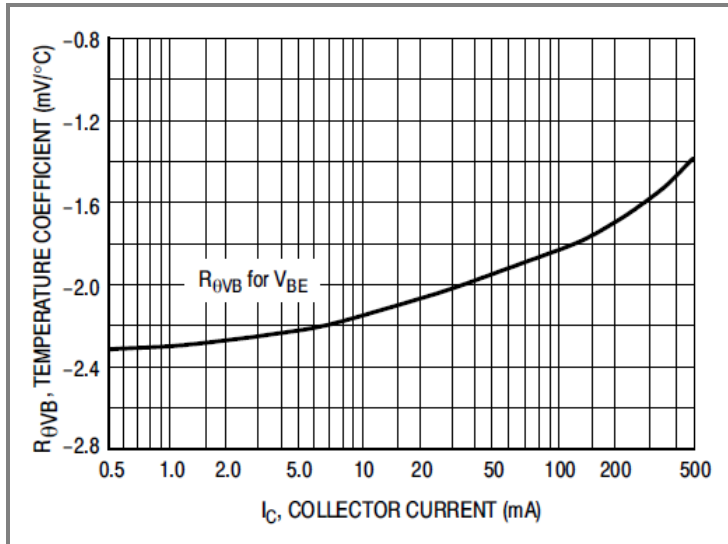


Fig.7 Base-Emitter Temperature Coefficient

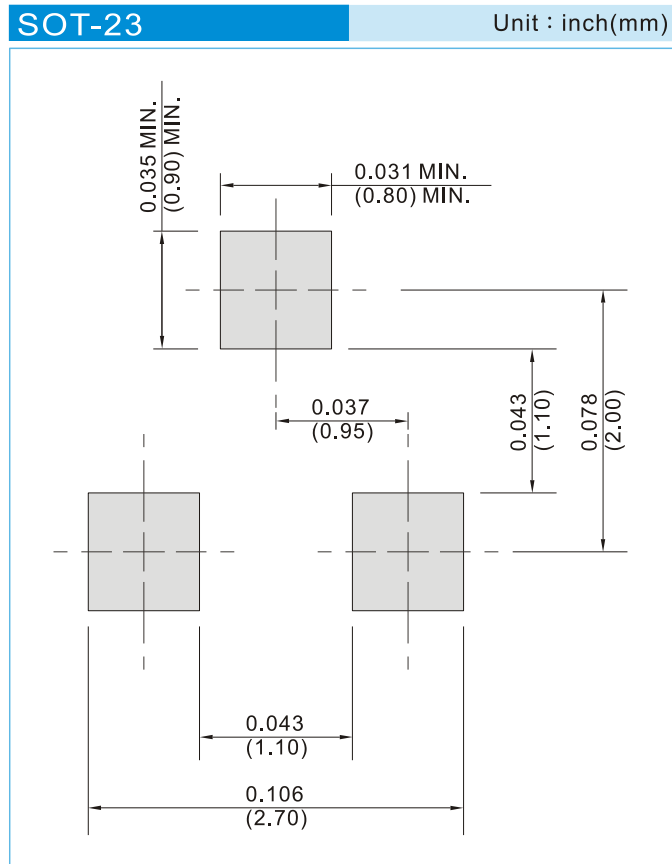


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Part No. Packing Code Version

| Part No. Packing Code | Package Type | Packing Type | Marking | Version |
|-----------------------|--------------|----------------|---------|--------------------------------|
| MMBTA05_R1_00001 | SOT-23 | 3K / 7" Reel | B05 | Halogen free RoHS compliant |
| MMBTA05_R2_00001 | SOT-23 | 12K / 13" Reel | B05 | Halogen free RoHS compliant |

Mounting Pad Layout





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