

SOT-23 Plastic-Encapsulate Transistors

MMBTA42 TRANSISTOR (NPN)

FEATURES

- High breakdown voltage
- Low collector-emitter saturation voltage
- Complementary to MMBTA92(PNP)

MARKING:1D

MAXIMUM RATINGS ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

| Symbol | Parameter | Value | Units |
|-----------|-------------------------------|---------|--------------------|
| V_{CB0} | Collector-Base Voltage | 300 | V |
| V_{CE0} | Collector-Emitter Voltage | 300 | V |
| V_{EB0} | Emitter-Base Voltage | 5 | V |
| I_C | Collector Current -Continuous | 0.3 | A |
| P_C | Collector Power Dissipation | 0.35 | W |
| T_j | Junction Temperature | 150 | $^{\circ}\text{C}$ |
| T_{stg} | Storage Temperature | -55-150 | $^{\circ}\text{C}$ |

SOT-23



1. BASE
2. EMITTER
3. COLLECTOR

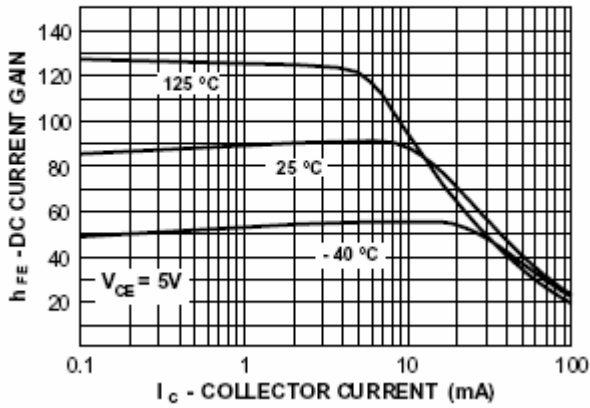
ELECTRICAL CHARACTERISTICS ($T_{amb}=25^{\circ}\text{C}$ unless otherwise specified)

| Parameter | Symbol | Test conditions | MIN | TYP | MAX | UNIT |
|--------------------------------------|---------------|--|-----|-----|------|---------------|
| Collector-base breakdown voltage | $V_{(BR)CBO}$ | $I_C=100\mu\text{A}, I_E=0$ | 300 | | | V |
| Collector-emitter breakdown voltage | $V_{(BR)CEO}$ | $I_C=1\text{mA}, I_B=0$ | 300 | | | V |
| Emitter-base breakdown voltage | $V_{(BR)EBO}$ | $I_E=100\mu\text{A}, I_C=0$ | 5 | | | V |
| Collector cut-off current | I_{CBO} | $V_{CB}=200\text{V}, I_E=0$ | | | 0.25 | μA |
| Emitter cut-off current | I_{EBO} | $V_{EB}=5\text{V}, I_C=0$ | | | 0.1 | μA |
| DC current gain | $h_{FE(1)}$ | $V_{CE}=10\text{V}, I_C=1\text{mA}$ | 60 | | | |
| | $h_{FE(2)}$ | $V_{CE}=10\text{V}, I_C=10\text{mA}$ | 100 | | 200 | |
| | $h_{FE(3)}$ | $V_{CE}=10\text{V}, I_C=30\text{mA}$ | 60 | | | |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C=20\text{mA}, I_B=2\text{mA}$ | | | 0.2 | V |
| Base-emitter saturation voltage | $V_{BE(sat)}$ | $I_C=20\text{mA}, I_B=2\text{mA}$ | | | 0.9 | V |
| Transition frequency | f_T | $V_{CE}=20\text{V}, I_C=10\text{mA}, f=30\text{MHz}$ | 50 | | | MHz |

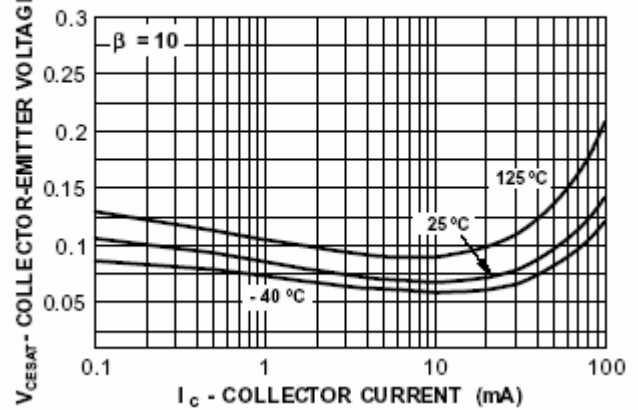
Typical Characteristics

MMBT A42

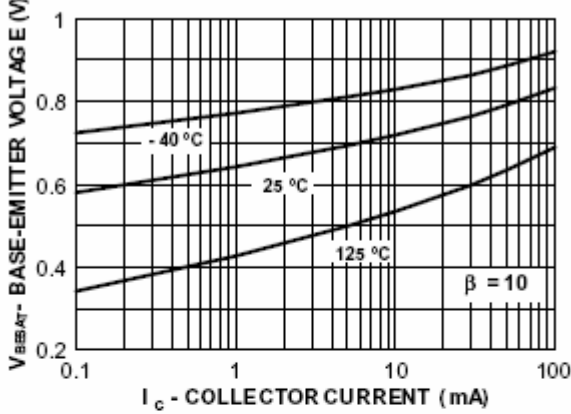
DC Current Gain vs Collector Current



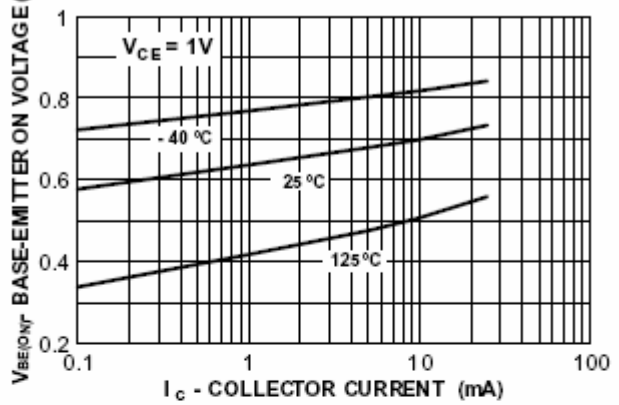
Collector-Emitter Saturation Voltage vs Collector Current



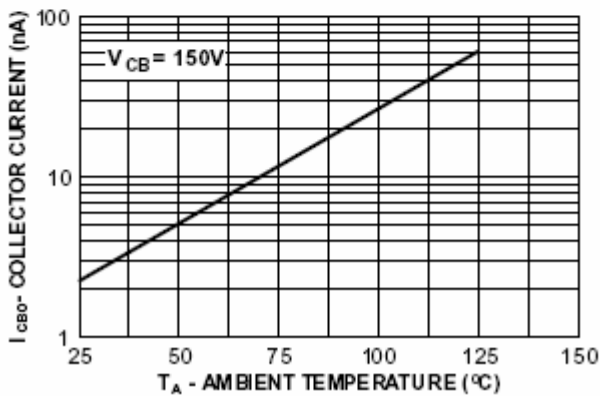
Base-Emitter Saturation Voltage vs Collector Current



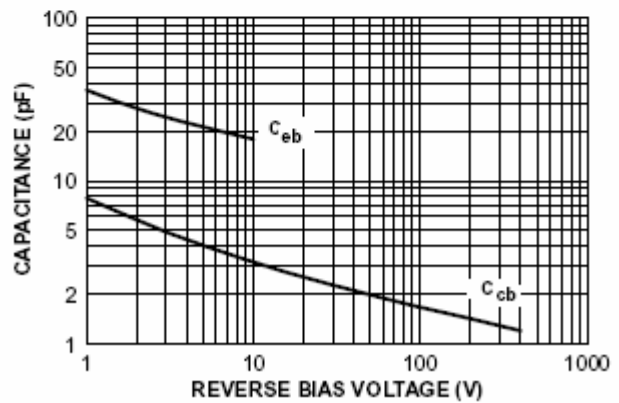
Base-Emitter ON Voltage vs Collector Current



Collector-Cutoff Current vs Ambient Temperature



Collector-Base and Emitter-Base Capacitance vs Reverse Bias Voltage



Power Dissipation vs Ambient Temperature

