



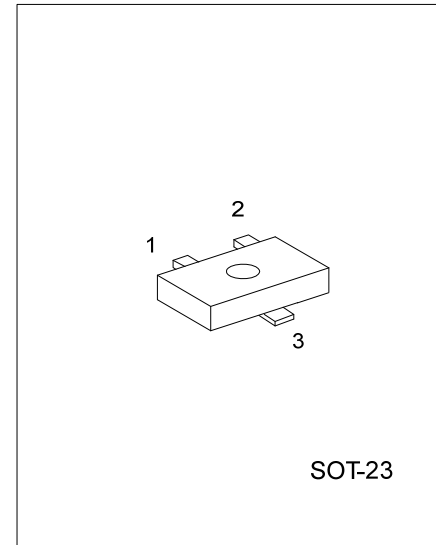
MMBT9013

NPN SILICON TRANSISTOR

1W OUTPUT AMPLIFIER OF
POTABLE RADIOS IN CLASS
B PUSH-PULL OPERATION

■ FEATURES

- *High total Power Dissipation. (625mW)
- *High Collector Current. (500mA)
- *Excellent h_{FE} linearity.
- *Complementary to UTC MMBT9012



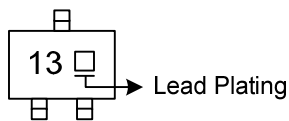
*Pb-free plating product number:
MMBT9013L

■ ORDERING INFORMATION

| Ordering Number | | Package | Pin Assignment | | | Packing |
|------------------|-------------------|---------|----------------|---|---|-----------|
| Normal | Lead Free Plating | | 1 | 2 | 3 | |
| MMBT9013-x-AE3-R | MMBT9013L-x-AE3-R | SOT-23 | E | B | C | Tape Reel |

| | |
|---|--|
| <p>MMBT9013L-x-AE3-R</p> <p>(1)Packing Type (2)Package Type (3)Rank (4)Lead Plating</p> | <p>(1) R: Tape Reel (2) AE3: SOT-23 (3) x: refer to Classification of h_{FE} (4) L: Lead Free Plating, Blank: Pb/Sn</p> |
|---|--|

■ MARKING



MMBT9013

NPN SILICON TRANSISTOR

■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C, unless otherwise specified)

| PARAMETER | SYMBOL | RATING | UNIT |
|---------------------------|------------------|------------|------|
| Collector-Base Voltage | V _{CBO} | 40 | V |
| Collector-Emitter Voltage | V _{CEO} | 20 | V |
| Emitter-Base Voltage | V _{EBO} | 5 | V |
| Collector Current | I _C | 500 | mA |
| Collector Dissipation | P _C | 225 | mW |
| Junction Temperature | T _J | +150 | °C |
| Storage Temperature | T _{STG} | -55 ~ +150 | °C |

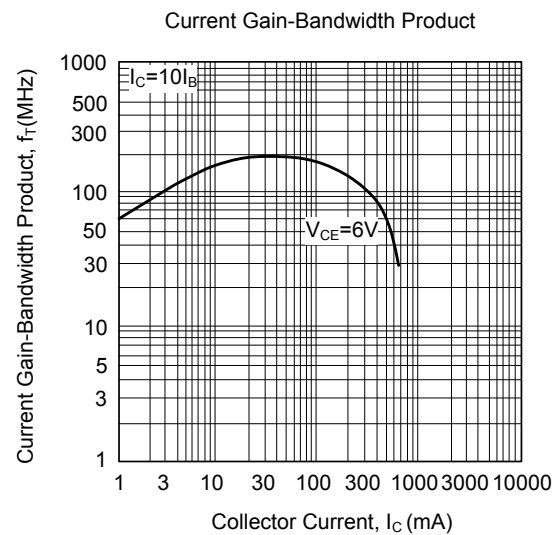
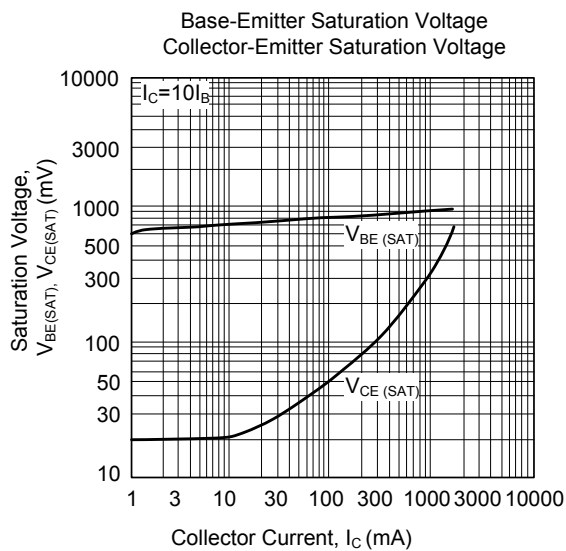
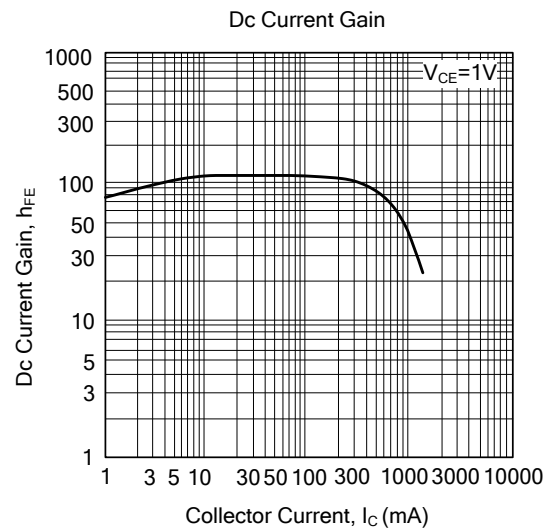
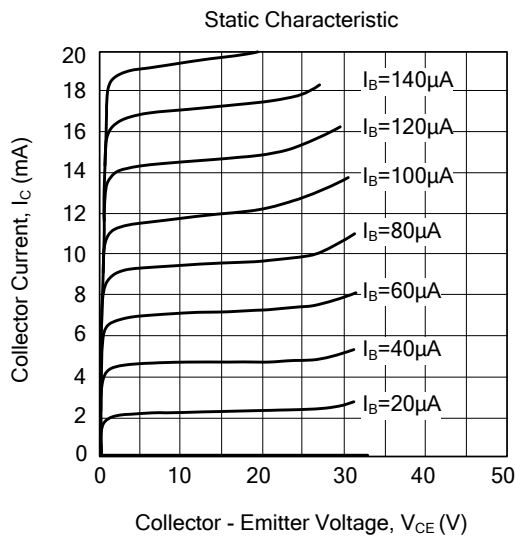
■ ELECTRICAL CHARACTERISTICS (Ta=25°C, unless otherwise specified)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|--------------------------------------|----------------------|---|-----|------|-----|------|
| Collector-Base Breakdown Voltage | BV _{CBO} | I _C =100μA, I _E =0 | 40 | | | V |
| Collector-Emitter Breakdown Voltage | BV _{CEO} | I _C =1mA, I _B =0 | 20 | | | V |
| Emitter-Base Breakdown Voltage | BV _{EBO} | I _E =100μA, I _C =0 | 5 | | | V |
| Collector-Emitter Saturation Voltage | V _{CE(SAT)} | I _C =500mA, I _B =50mA | | 0.16 | 0.6 | V |
| Base-Emitter Saturation Voltage | V _{BE(SAT)} | I _C =500mA, I _B =50mA | | 0.91 | 1.2 | V |
| Base-Emitter On Voltage | V _{BE(ON)} | V _{CE} =1V, I _C =10mA | 0.6 | 0.67 | 0.7 | V |
| Collector Cutoff Current | I _{CBO} | V _{CB} =25V, I _E =0 | | | 100 | nA |
| Emitter Cutoff Current | I _{EBO} | V _{EB} =3V, I _C =0 | | | 100 | nA |
| DC Current Gain | h _{FE1} | V _{CE} =1V, I _C =50mA | 64 | 120 | 300 | |
| | h _{FE2} | V _{CE} =1V, I _C =500mA | 40 | 120 | | |

■ CLASSIFICATION OF h_{FE1}

| RANK | D | E | F | G | H | I |
|-------|-------|--------|--------|---------|---------|---------|
| RANGE | 64-91 | 78-112 | 96-135 | 112-166 | 144-202 | 190-300 |

TYPICAL CHARACTERISTICS



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