



MMBT945

NPN SILICON TRANSISTOR

DESCRIPTION

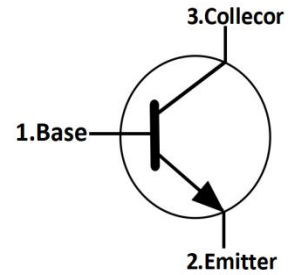
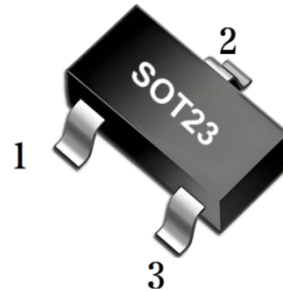
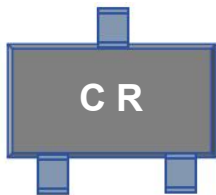
The MMBT945 is an audio frequency amplifier high frequency OSC NPN transistor.

FEATURES

- *Collector-Emitter Voltage: $V_{CE0}=60V$.
- *Collector Current up to 150mA.
- *High h_{FE} Linearity.

MARKING

Type Code: Marking: C R



ABSOLUTE MAXIMUM RATINGS ($T_c=25^{\circ}C$, unless otherwise specified)

| SYMBOL | PARAMETER | VALUE | UNIT |
|-----------------|---|---------|---------------|
| V_{CBO} | Collector-base voltage | 60 | V |
| V_{CEO} | Collector-emitter voltage | 50 | V |
| V_{EBO} | Emitter-base voltage | 5 | V |
| I_C | Collector current | 150 | mA |
| I_B | Base Current | 50 | mA |
| P_C | Collector Power Dissipation | 200 | mW |
| T_j | Junction Temperature | 150 | $^{\circ}C$ |
| T_{stg} | Storage Temperature | -55~150 | $^{\circ}C$ |
| $R_{\theta JA}$ | Thermal Resistance From Junction To Ambient | 625 | $^{\circ}C/W$ |

ELECTRICAL CHARACTERISTICS ($T_c=25^{\circ}C$, unless otherwise specified)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|--|---------------|--------------------------------|-----|-----|-----|---------|
| Collector-base breakdown voltage | $V_{(BR)CBO}$ | $I_C=100\mu A, I_E=0$ | 60 | | | V |
| Collector-emitter breakdown voltage | $V_{(BR)CEO}$ | $I_C=1mA, I_B=0$ | 50 | | | V |
| Emitter-base breakdown voltage | $V_{(BR)EBO}$ | $I_E=0.1mA, I_C=0$ | 5 | | | V |
| Collector cutoff current | I_{CBO} | $V_{CB}=40V, I_E=0$ | | | 0.1 | μA |
| Collector cut-off current | I_{CER} | $V_{CE}=55V, R=10M\Omega$ | | | 0.1 | μA |
| Emitter cut-off current | I_{EBO} | $V_{EB}=5V, I_C=0$ | | | 0.1 | μA |
| DC Current Gain (CLASSIFICATION OF h_{FE}) | h_{FE1} | A | 130 | | 200 | |
| | | B | | | | |
| | h_{FE2} | $V_{CE}=6V, I_C=0.1mA$ | 40 | | | |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C=100mA, I_B=10mA$ | | | 0.3 | V |
| Base-emitter saturation voltage | $V_{BE(sat)}$ | $I_C=100mA, I_B=10mA$ | | | 1 | V |
| Transition frequency | f_T | $V_{CE}=6V, I_C=10mA, f=30MHz$ | 150 | | | MHz |

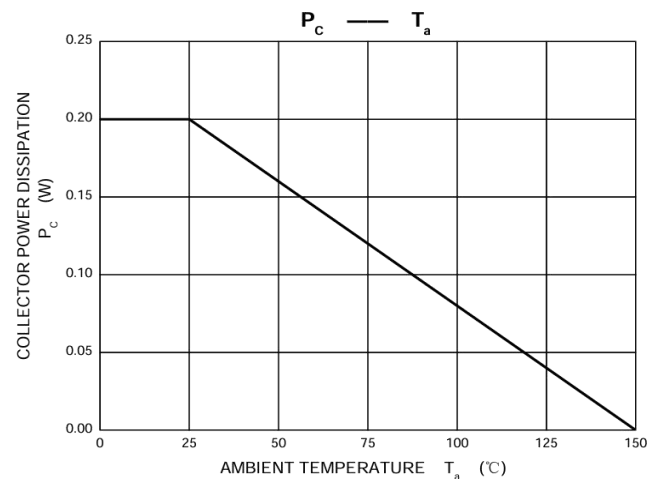
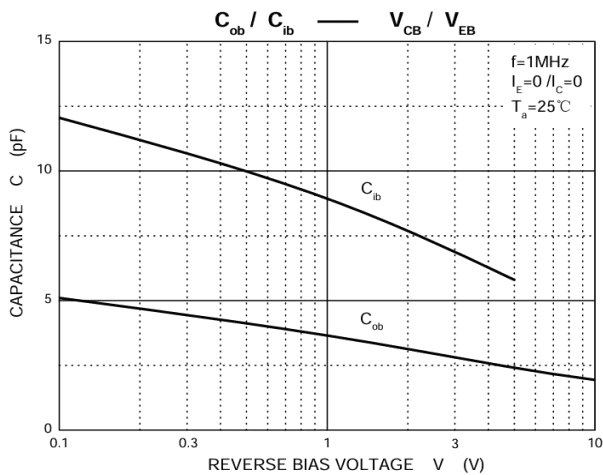
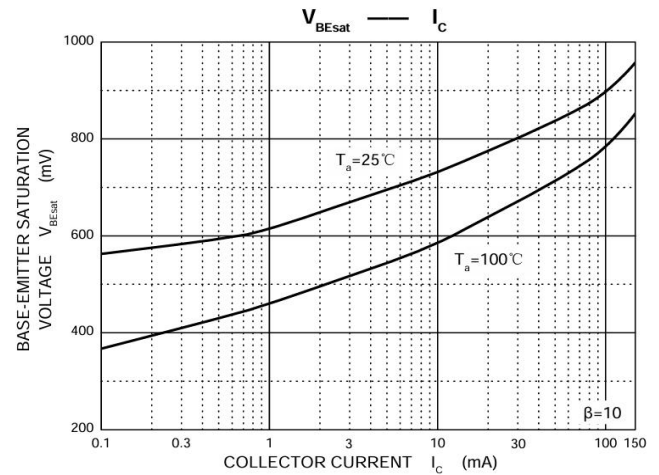
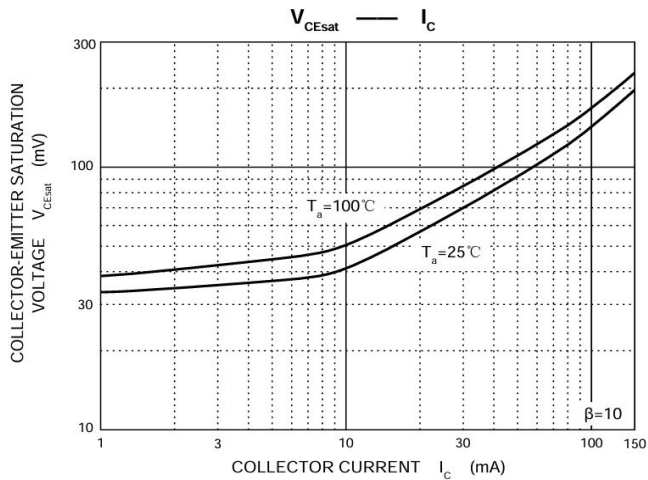
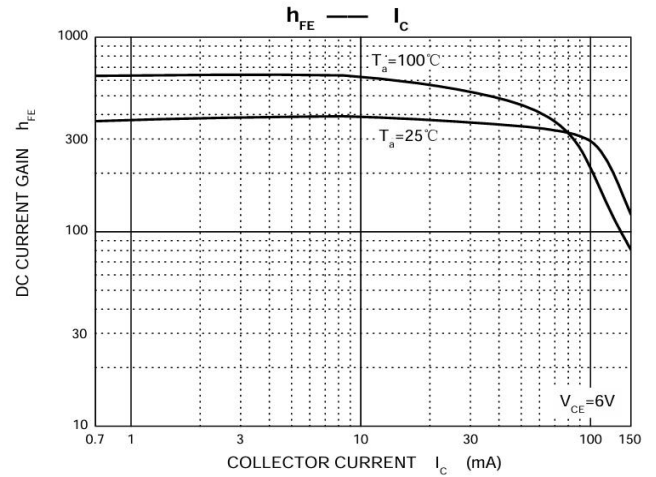
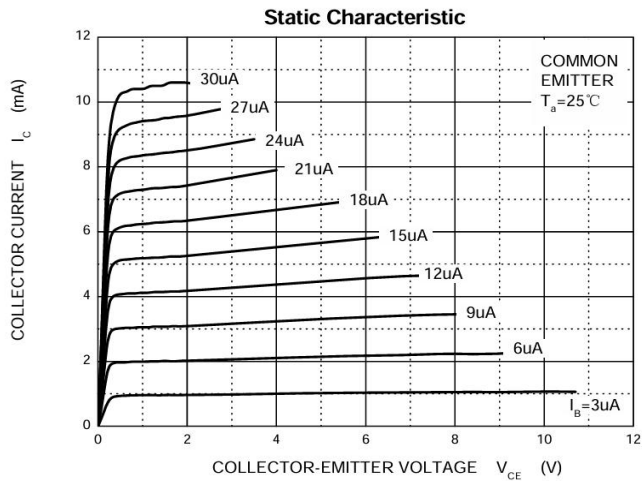


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| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|------------------------------|--------|---|-----|-----|-----|------|
| Collector output capacitance | Cob | V _{CB} =10V, I _E =0, f=1MHZ | | | 3 | pF |
| Noise figure | NF | V _{CE} =6V, I _C =0.1mA, R _g =10kΩ, f=1kMHZ | | 4 | 10 | dB |

TYPICAL CHARACTERISTICS





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NPN SILICON TRANSISTOR

SOT23 PACKAGE OUTLINE DIMENSIONS

| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min | Max | Min | Max |
| A | 0.900 | 1.150 | 0.035 | 0.045 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 0.900 | 1.050 | 0.035 | 0.041 |
| b | 0.300 | 0.500 | 0.012 | 0.020 |
| c | 0.080 | 0.150 | 0.003 | 0.006 |
| D | 2.800 | 3.000 | 0.110 | 0.118 |
| E | 1.200 | 1.400 | 0.047 | 0.055 |
| E1 | 2.250 | 2.550 | 0.089 | 0.100 |
| e | 0.950 TYP | | 0.037 TYP | |
| e1 | 1.800 | 2.000 | 0.071 | 0.079 |
| L | 0.550 REF | | 0.022 REF | |
| L1 | 0.300 | 0.500 | 0.012 | 0.020 |
| θ | 0° | | 8° | |

Note:
1. Controlling dimension: in millimeters.
2. General tolerance: ±0.05mm.
3. The pad layout is for reference purposes only.

REEL PACKING

Top cover tape thickness 0.10 mm (0.004") max. thick

Embossed carrier tape

Trailer Tape 50±2 Empty Pockets

Components

Leader Tape 100±2 Empty Pockets

Dimensions: P0, P1, P, A, W, W1, W2, D, H, D1, D2, C, B, A-A

| Dimensions are in millimeter | | | | | | | | | | |
|------------------------------|--------|-------|-------|--------|--------|-------|------|-------|---------------|------|
| PKG TYPE | A | B | C | d | E | F | Po | P | P1 | W |
| SOT-23 | 3.15 | 2.77 | 1.22 | Φ1.50 | 1.75 | 3.50 | 4.00 | 4.00 | 2.00 | 8.00 |
| Reel Option | D | D1 | D2 | G | H | I | W1 | W2 | Q.TY PER REEL | |
| 7" Dia | Φ178.0 | 54.40 | 13.00 | R78.00 | R25.60 | R6.50 | 9.50 | 12.30 | 3000PCS | |
| 13" Dia | Φ330.0 | / | 13.00 | / | / | R6.50 | 9.50 | 12.30 | 10000PCS | |