



MMBTA45

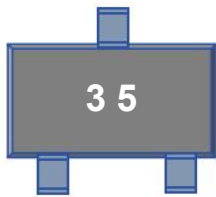
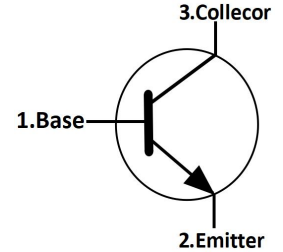
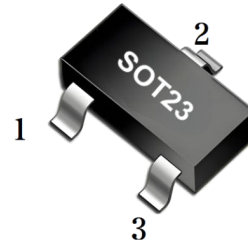
NPN SILICON TRANSISTOR

FEATURES

- * Collector-Emitter voltage: $V_{CE0}=350V$
- *Collector current up to 300mA
- *Complement to MMBTA94
- *Power Dissipation: $PD(max)=350mW$

MARKING

Type Code: Marking: 3 5



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

| SYMBOL | PARAMETER | | VALUE | UNIT |
|------------------|---|----------|---------|------|
| V _{CB0} | Collector-base voltage | | 400 | V |
| V _{CE0} | Collector-emitter voltage | | 350 | V |
| V _{EB0} | Emitter-base voltage | | 6 | V |
| I _c | Collector Continuous | | 300 | mA |
| P _D | Power Dissipation | TA=25° C | 350 | mW |
| | | TC=25° C | 1.5 | W |
| T _j | Junction Temperature | | 150 | °C |
| T _{stg} | Storage Temperature | | -55~150 | °C |
| ROJA | Thermal Resistance From Junction To Ambient | | 357 | °C/W |

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

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

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | MAX | UNIT |
|-------------------------------------|----------------------|---|-----|-----|------|
| Collector-base breakdown voltage | V _{(BR)CBO} | I _C =100μA, I _E =0 | 400 | | V |
| Collector-emitter breakdown voltage | V _{(BR)CEO} | I _C =1mA, I _B =0 | 350 | | V |
| Emitter-base breakdown voltage | V _{(BR)EBO} | I _E =100μA, I _C =0 | 6 | | V |
| Collector cutoff current | I _{CB0} | V _{CB} =320V, I _E =0 | | 0.1 | μA |
| Collector Cut-off Current | I _{CES} | V _{CE} =320V, I _B =0 | | 0.5 | μA |
| Emitter cut-off current | I _{EBO} | V _{EB} =4V, I _C =0 | | 0.1 | μA |
| DC Current Gain | h _{FE1} | V _{CE} =10V, I _C =1mA | 40 | | |
| | h _{FE2} | V _{CE} =10V, I _C =10mA | 50 | 240 | |
| | h _{FE3} | V _{CE} =10V, I _C =50mA | 45 | | |
| | H _{FE4} | V _{CE} =10V, I _C =100mA | 40 | | |



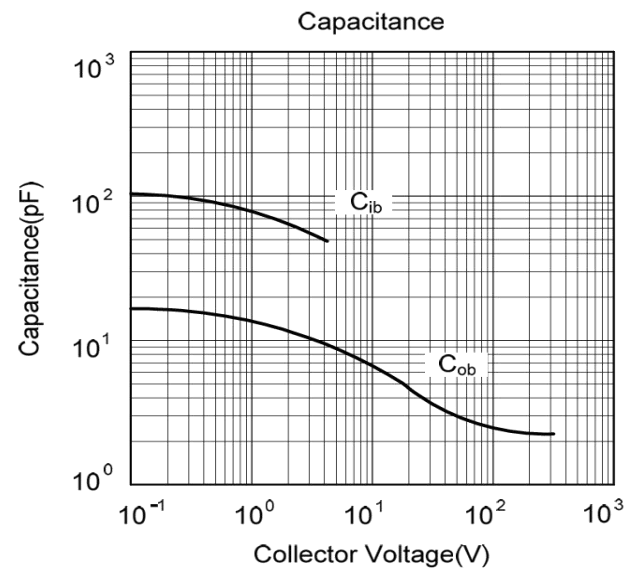
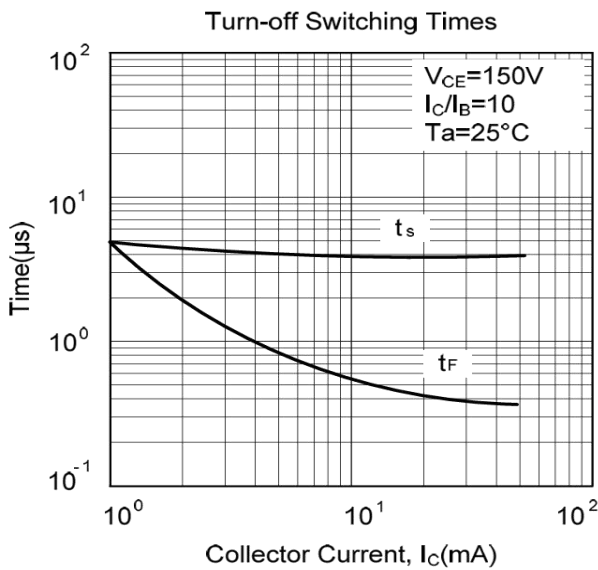
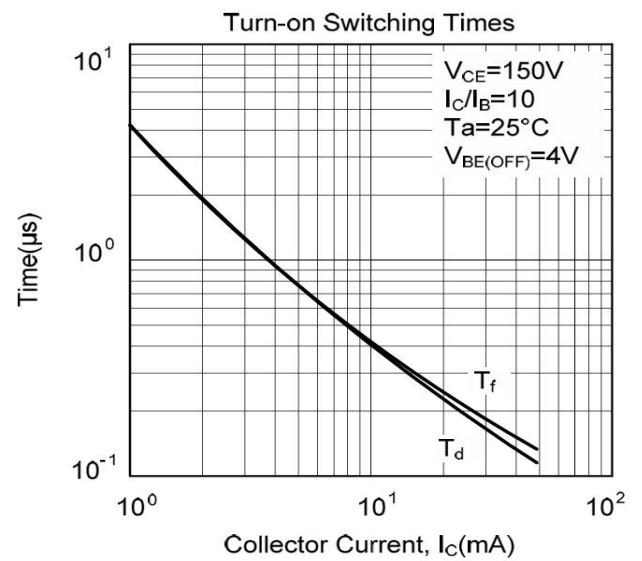
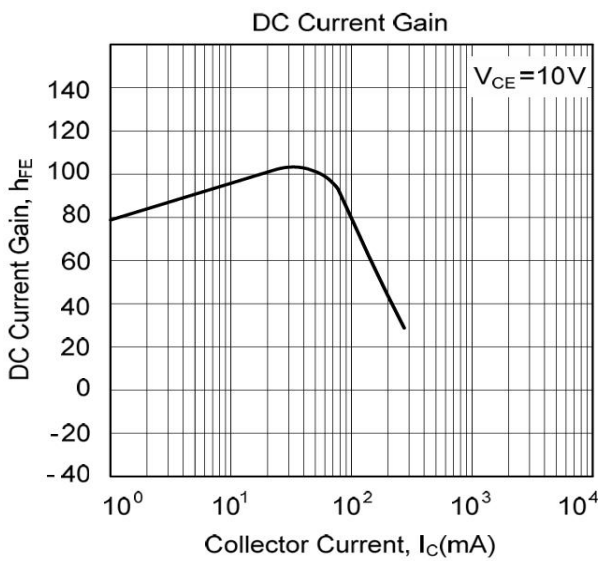
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NPN SILICON TRANSISTOR

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | MAX | UNIT |
|--------------------------------------|---------------|----------------------------------|-----|------|------|
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=1mA, I_B=0.1mA$ | | 0.4 | V |
| | $V_{CE(sat)}$ | $I_C=10mA, I_B=1mA$ | | 0.5 | V |
| | $V_{CE(sat)}$ | $I_C=50mA, I_B=5mA$ | | 0.75 | V |
| Base-Emitter Saturation Voltage | $V_{BE(sat)}$ | $I_C=10mA, I_B=1mA$ | | 0.75 | V |
| Collector output capacitance | C_{ob} | $V_{CB}=20V, I_E=0, f=1MHz$ | | 7 | pF |
| Transition frequency | f_T | $V_{CE}=20V, I_C=10mA, f=100MHz$ | 50 | | MHz |

*Pulse test: pulse width $\leq 300\mu s$, duty cycle $\leq 2.0\%$.

TYPICAL CHARACTERISTICS

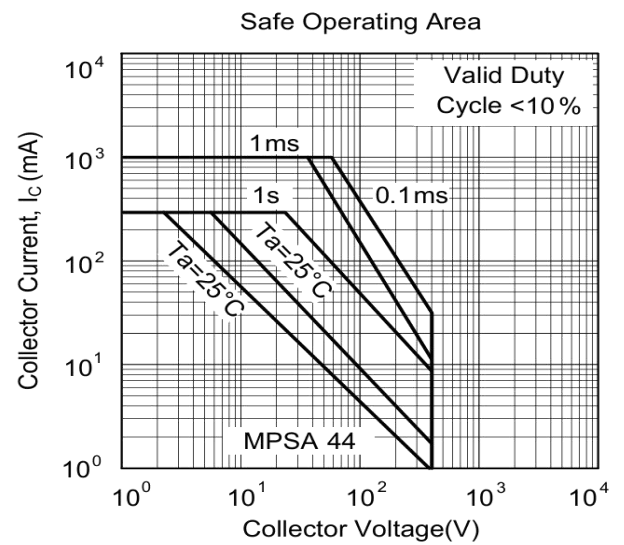
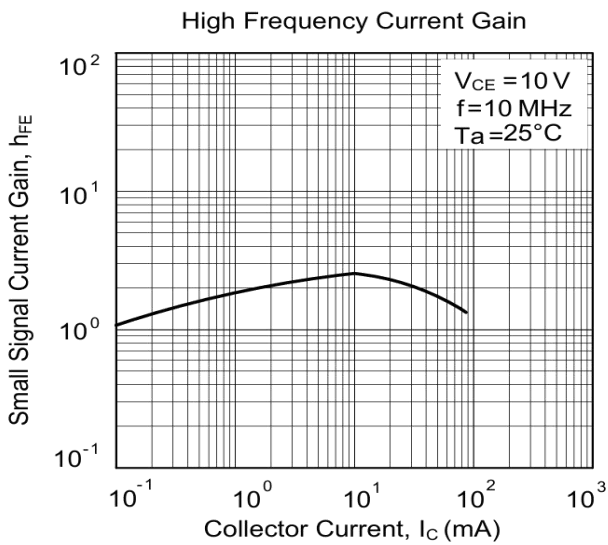
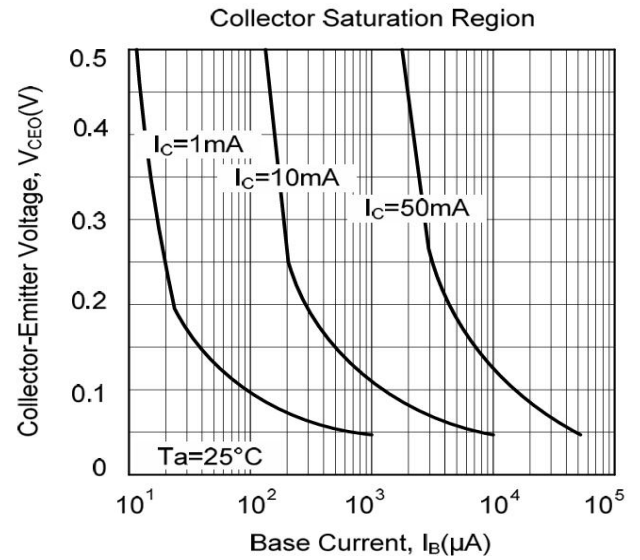
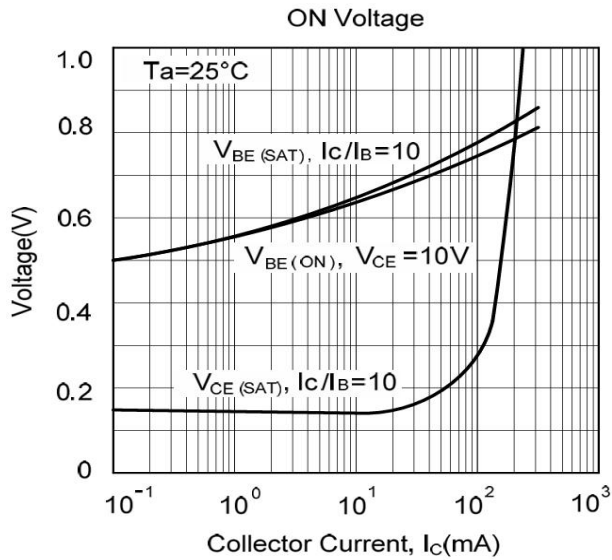




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NPN SILICON TRANSISTOR

TYPICAL CHARACTERISTICS(Con.t)





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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° | 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, A, B, C, D, E, F, W, W1, W2, H, L, G, D1, D2

| 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 Optiom | 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 | |