

Plastic-Encapsulate Transistors

TRANSISTOR (NPN)

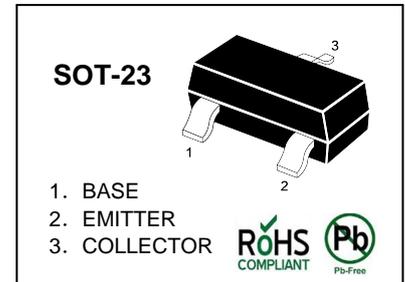
FEATURES

- Compliment to 2N3906
- Low current
- Low voltage

MARKING: 1AM

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

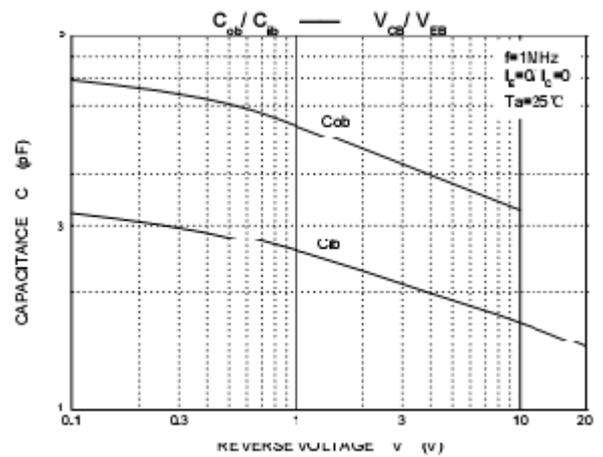
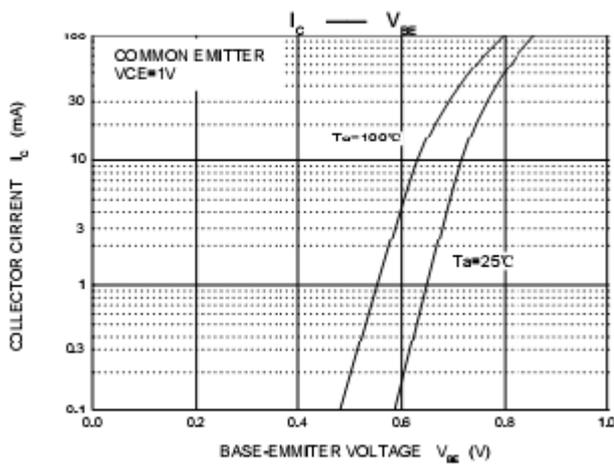
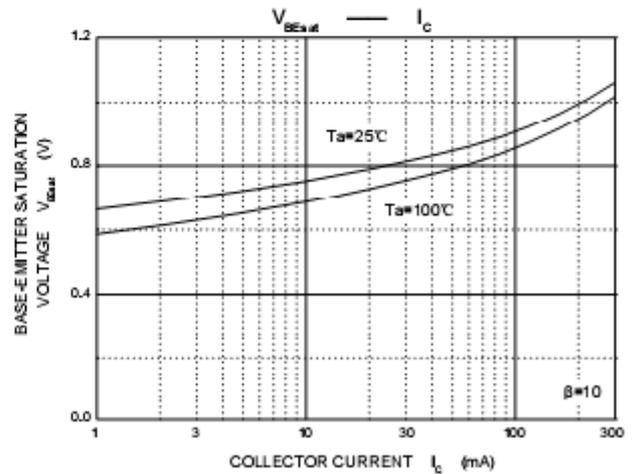
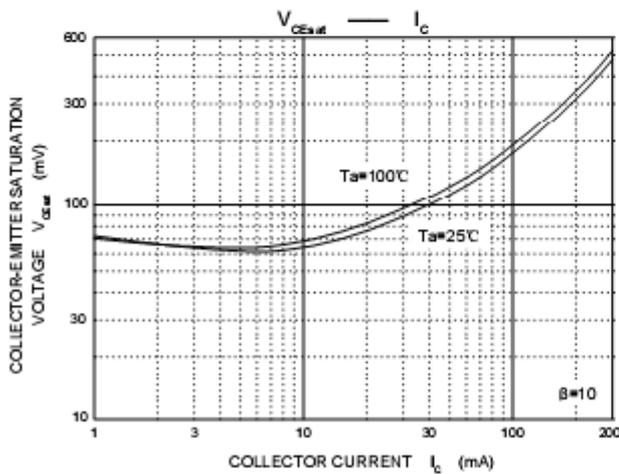
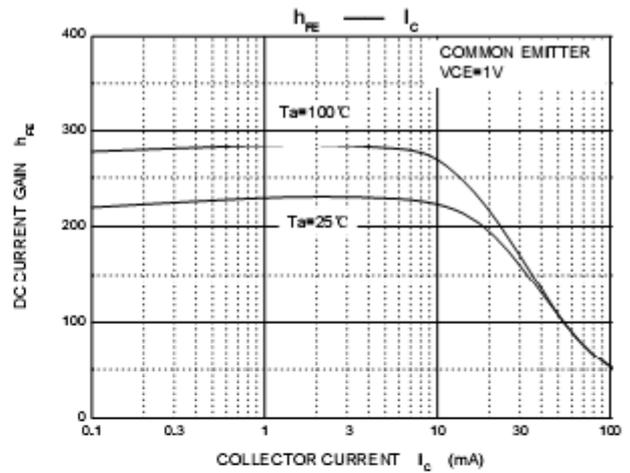
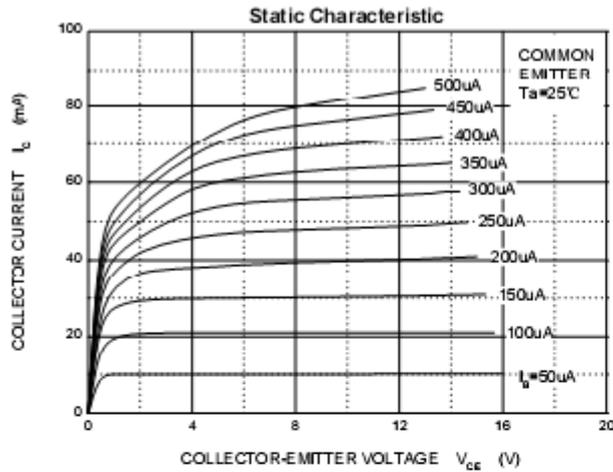
| Symbol | Parameter | Value | Unit |
|-----------|-------------------------------|---------|--------------------|
| V_{CBO} | Collector-Base Voltage | 60 | V |
| V_{CEO} | Collector-Emitter Voltage | 40 | V |
| V_{EBO} | Emitter-Base Voltage | 6 | V |
| I_C | Collector Current -Continuous | 0.2 | A |
| P_C | Collector Power Dissipation | 0.2 | W |
| T_J | Junction Temperature | 150 | $^{\circ}\text{C}$ |
| T_{stg} | Storage Temperature | -55~150 | $^{\circ}\text{C}$ |



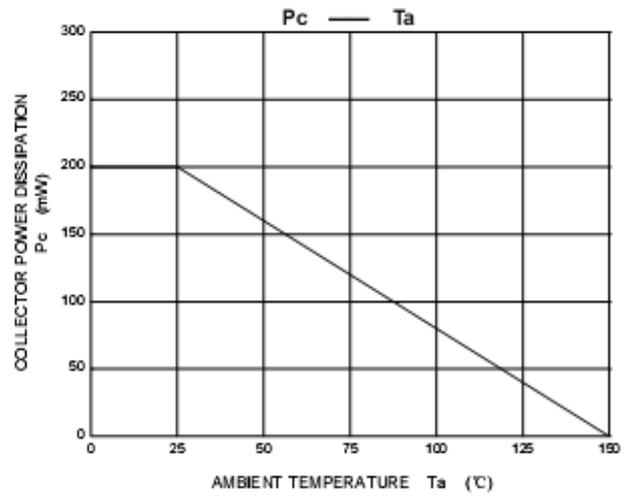
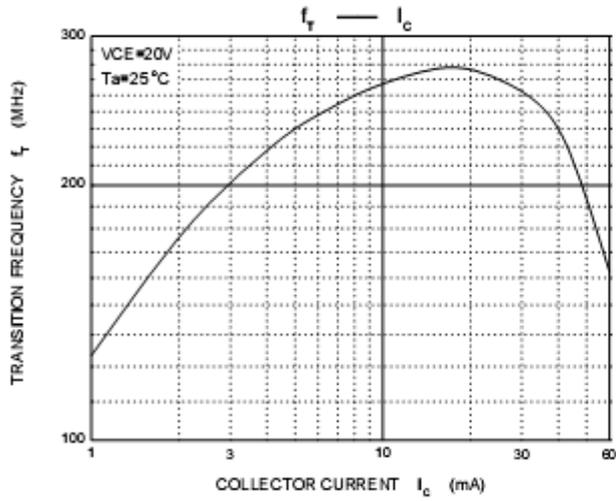
ELECTRICAL CHARACTERISTICS ($T_a=25^{\circ}\text{C}$ unless otherwise specified)

| Parameter | Symbol | Test conditions | Min | Typ | Max | Unit |
|--------------------------------------|----------------|---|------|-----|------|---------------|
| Collector-base breakdown voltage | $V_{(BR)CBO}$ | $I_C=10\mu\text{A}, I_E=0$ | 60 | | | V |
| Collector-emitter breakdown voltage | $V_{(BR)CEO}$ | $I_C=1\text{mA}, I_B=0$ | 40 | | | V |
| Emitter-base breakdown voltage | $V_{(BR)EBO}$ | $I_E=10\mu\text{A}, I_C=0$ | 6 | | | V |
| Collector cut-off current | I_{CBO} | $V_{CB}=30\text{V}, I_E=0$ | | | 0.05 | μA |
| Emitter cut-off current | I_{EBO} | $V_{EB}=6\text{V}, I_C=0$ | | | 0.05 | μA |
| Collector ut-off current | I_{CEX} | $V_{CE}=30\text{V}, V_{BE(off)}=3\text{V}$ | | | 0.05 | μA |
| DC current gain | $h_{FE(1)}$ | $V_{CE}=1\text{V}, I_C=0.1\text{mA}$ | 60 | | | |
| | $h_{FE(2)}$ | $V_{CE}=1\text{V}, I_C=1\text{mA}$ | 80 | | | |
| | $h_{FE(3)}$ | $V_{CE}=1\text{V}, I_C=10\text{mA}$ | 100 | | 300 | |
| | $h_{FE(4)}$ | $V_{CE}=1\text{V}, I_C=50\text{mA}$ | 60 | | | |
| | $h_{FE(5)}$ | $V_{CE}=1\text{V}, I_C=100\text{mA}$ | 30 | | | |
| Collector-emitter saturation voltage | $V_{CE(sat)1}$ | $I_C=10\text{mA}, I_B=1\text{mA}$ | | | 0.2 | V |
| | $V_{CE(sat)2}$ | $I_C=50\text{mA}, I_B=5\text{mA}$ | | | 0.3 | V |
| Base-emitter saturation voltage | $V_{BE(sat)1}$ | $I_C=10\text{mA}, I_B=1\text{mA}$ | 0.65 | | 0.85 | V |
| | $V_{BE(sat)2}$ | $I_C=50\text{mA}, I_B=5\text{mA}$ | | | 0.95 | V |
| Transition frequency | f_T | $V_{CE}=20\text{V}, I_C=10\text{mA}, f=100\text{MHz}$ | 300 | | | MHz |
| Collector capacitance | C_c | $V_{CB}=5\text{V}, I_E=0, f=1\text{MHz}$ | | | 4 | pF |
| Emitter capacitance | C_e | $V_{EB}=0.5\text{V}, I_C=0, f=1\text{MHz}$ | | | 8 | pF |
| Noise figure | NF | $V_{CE}=5\text{V}, I_C=0.1\text{mA}, f=10\text{Hz}-15.7\text{kHz}, R_S=1\text{K}\Omega$ | | | 5 | dB |
| Delay time | t_d | $I_C=10\text{mA}, I_{B1}=-I_{B2}=1\text{mA}$ | | | 35 | ns |
| Rise time | t_r | | | | 35 | ns |
| Storage time | t_s | | | | 200 | ns |
| Fall time | t_f | | | | 50 | ns |

Typical Characteristics

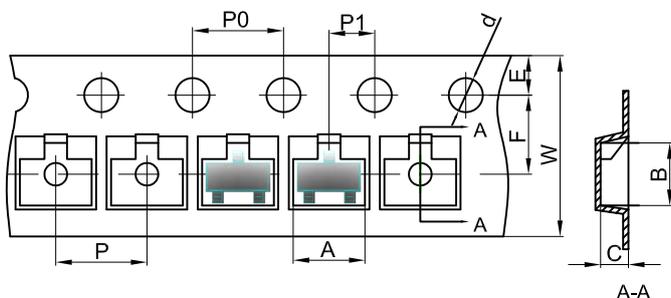


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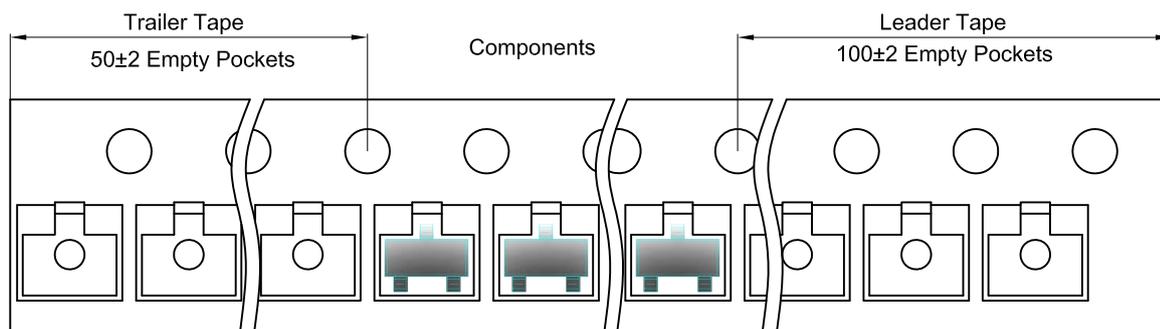
SOT-23 Tape and Reel

SOT-23 Embossed Carrier Tape

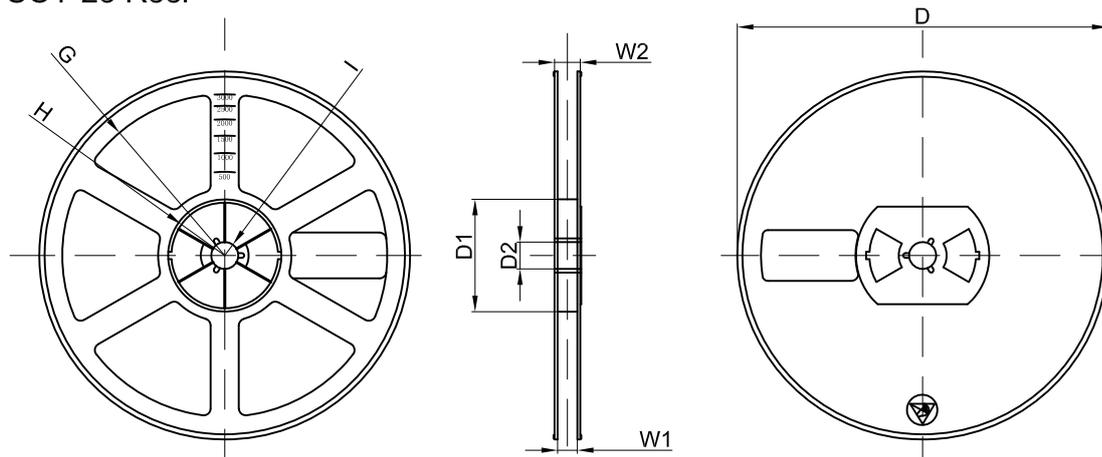


| Dimensions are in millimeter | | | | | | | | | | |
|------------------------------|------|------|------|-------|------|------|------|------|------|------|
| Pkg type | A | B | C | d | E | F | P0 | P | P1 | W |
| SOT-23 | 3.15 | 2.77 | 1.22 | Ø1.50 | 1.75 | 3.50 | 4.00 | 4.00 | 2.00 | 8.00 |

SOT-23 Tape Leader and Trailer

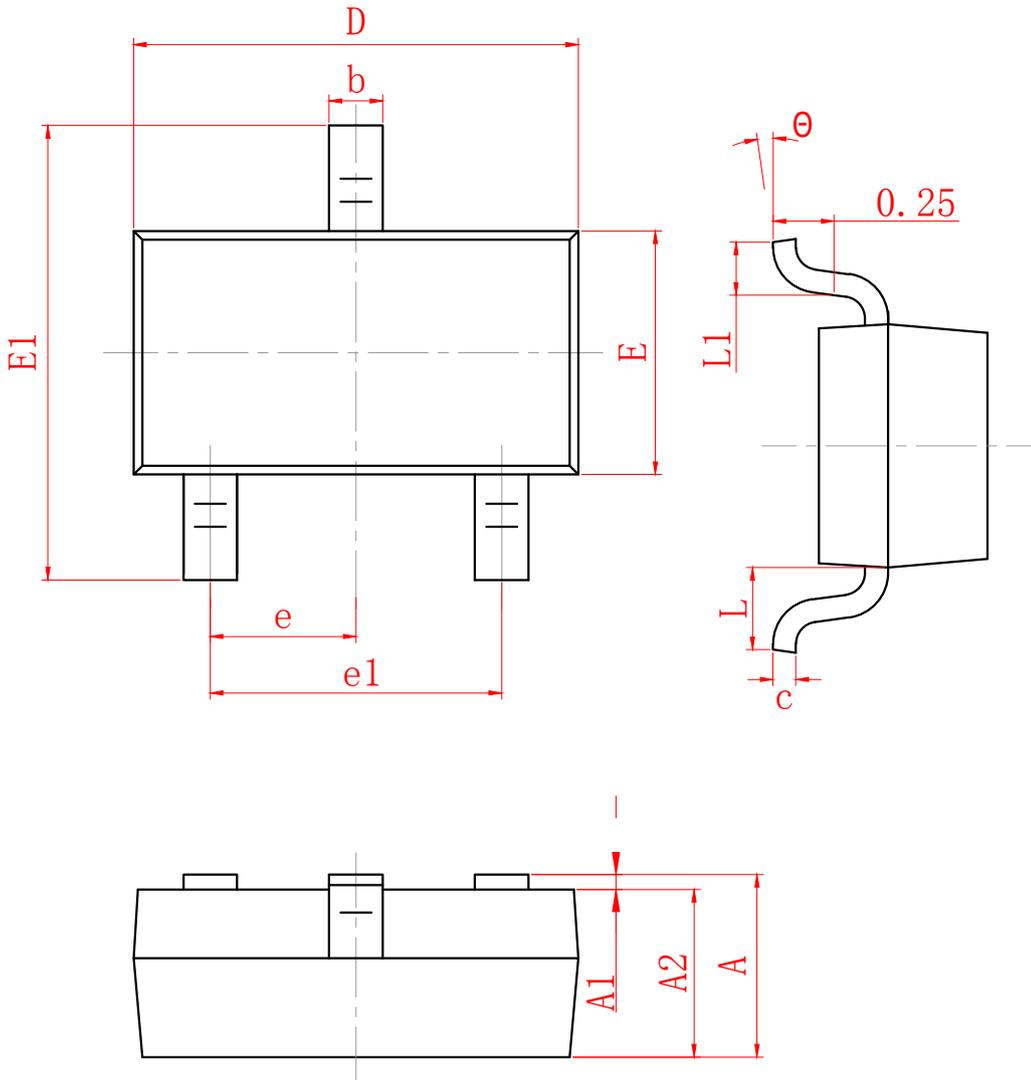


SOT-23 Reel



| Dimensions are in millimeter | | | | | | | | |
|------------------------------|---------|-------|-------|--------|--------|-------|------|-------|
| Reel Option | D | D1 | D2 | G | H | I | W1 | W2 |
| 7" Dia | Ø178.00 | 54.40 | 13.00 | R78.00 | R25.60 | R6.50 | 9.50 | 12.30 |

| REEL | Reel Size | Box | Box Size(mm) | Carton | Carton Size(mm) | G.W.(kg) |
|----------|-----------|------------|--------------|-------------|-----------------|----------|
| 3000 pcs | 7 inch | 45,000 pcs | 203×203×195 | 180,000 pcs | 438×438×220 | |



| SYMBOL | MILLIMETER | |
|--------|------------|-------|
| | MIN | MAX |
| A | 0.900 | 1.150 |
| A1 | 0.000 | 0.100 |
| A2 | 0.900 | 1.050 |
| b | 0.300 | 0.500 |
| c | 0.080 | 0.150 |
| D | 2.800 | 3.000 |
| E | 1.200 | 1.400 |
| E1 | 2.250 | 2.550 |
| e | 0.950 TYP | |
| e1 | 1.800 | 2.000 |
| L | 0.550 REF | |
| L1 | 0.300 | 0.500 |
| θ | 0° | 8° |

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