

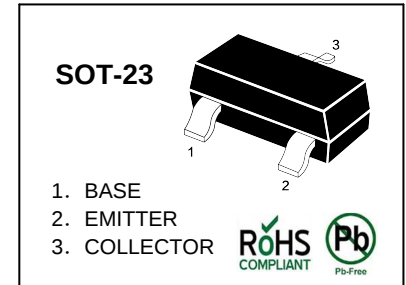
### Plastic-Encapsulate Transistors

TRANSISTOR (NPN)

#### FEATURES

- Audio frequency power amplifier
- Medium speed switching

MARKING:16



#### 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                   | 50       | V                           |
| $V_{EBO}$       | Emitter-Base Voltage                        | 6        | V                           |
| $I_C$           | Collector Current                           | 1        | A                           |
| $P_C$           | Collector Power Dissipation                 | 350      | mW                          |
| $R_{\theta JA}$ | Thermal Resistance From Junction To Ambient | 357      | $^{\circ}\text{C}/\text{W}$ |
| $T_j$           | Junction Temperature                        | 150      | $^{\circ}\text{C}$          |
| $T_{stg}$       | Storage Temperature                         | -55~+150 | $^{\circ}\text{C}$          |

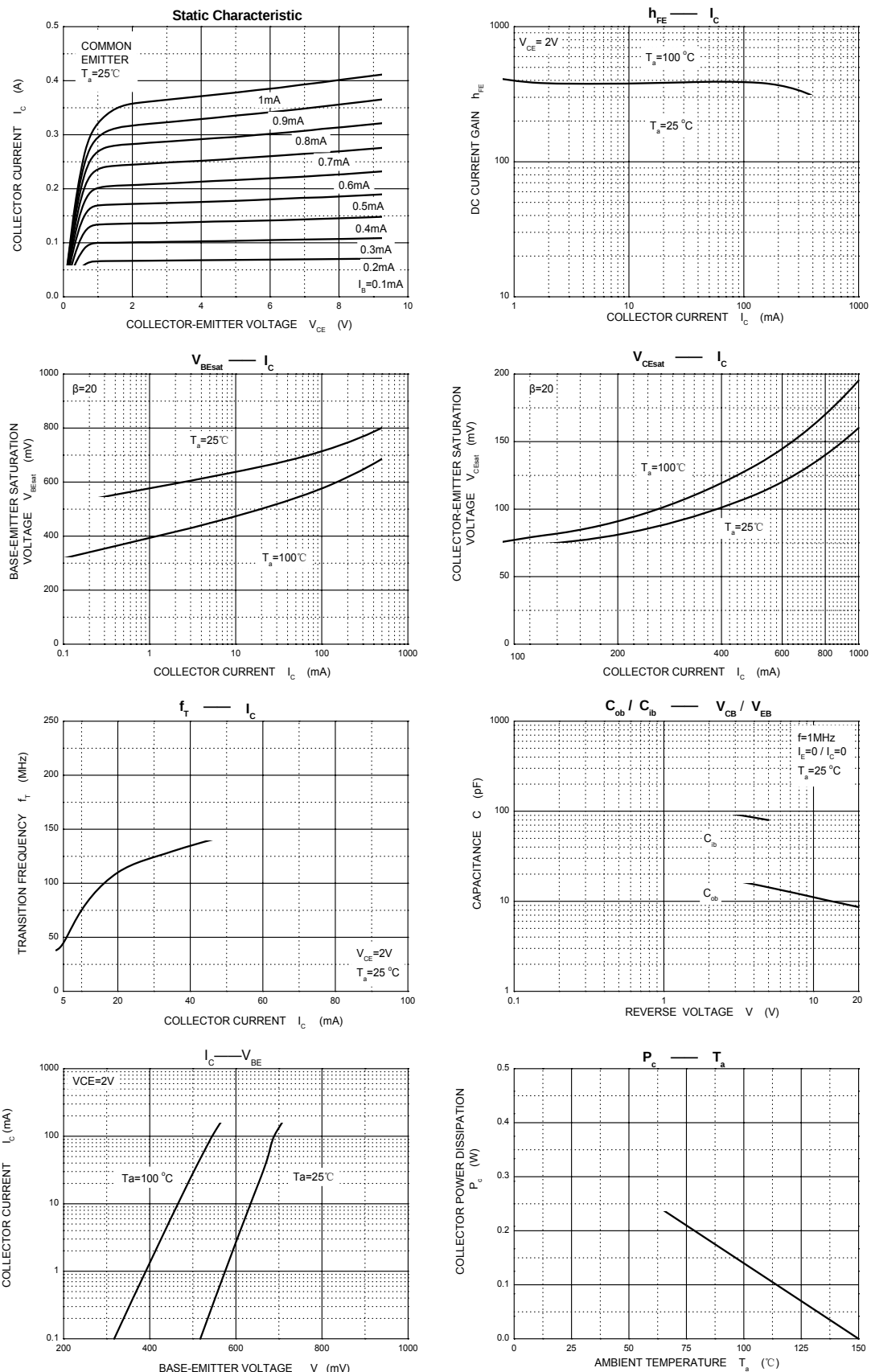
#### ELECTRICAL CHARACTERISTICS ( $T_a=25^{\circ}\text{C}$ unless otherwise specified)

| 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  | $V_{(BR)CEO}$ | $I_C=2\text{mA}$ , $I_B=0$                                  | 50  |     |     | V    |
| Emitter-base breakdown voltage       | $V_{(BR)EBO}$ | $I_E=10\mu\text{A}$ , $I_C=0$                               | 6   |     |     | V    |
| Collector cut-off current            | $I_{CBO}$     | $V_{CB}=60\text{V}$ , $I_E=0$                               |     |     | 100 | nA   |
| Emitter cut-off current              | $I_{EBO}$     | $V_{EB}=6\text{V}$ , $I_C=0$                                |     |     | 100 | nA   |
| DC current gain                      | $h_{FE(1)}$   | $V_{CE}=2\text{V}$ , $I_C=100\text{mA}$                     | 135 |     | 600 |      |
|                                      | $h_{FE(2)}$   | $V_{CE}=2\text{V}$ , $I_C=1\text{A}$                        | 81  |     |     |      |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C=1\text{A}$ , $I_B=50\text{mA}$                         |     |     | 0.3 | V    |
| Collector-emitter saturation voltage | $V_{BE(sat)}$ | $I_C=1\text{A}$ , $I_B=50\text{mA}$                         |     |     | 1.2 | V    |
| Base-emitter voltage                 | $V_{BE}$      | $V_{CE}=2\text{V}$ , $I_C=50\text{mA}$                      | 0.6 |     | 0.7 | V    |
| Transition frequency                 | $f_T$         | $V_{CE}=2\text{V}$ , $I_C=100\text{mA}$ , $f=100\text{MHz}$ | 100 |     |     | MHz  |
| Collector output capacitance         | $C_{ob}$      | $V_{CB}=10\text{V}$ , $I_E=0$ , $f=1\text{MHz}$             |     |     | 19  | pF   |

#### CLASSIFICATION OF $h_{FE(1)}$

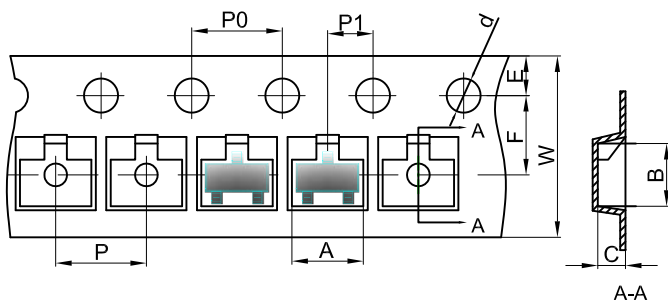
| RANK  | Y       | G       | L       |
|-------|---------|---------|---------|
| RANGE | 135~270 | 200~400 | 300~600 |

### Typical Characteristics



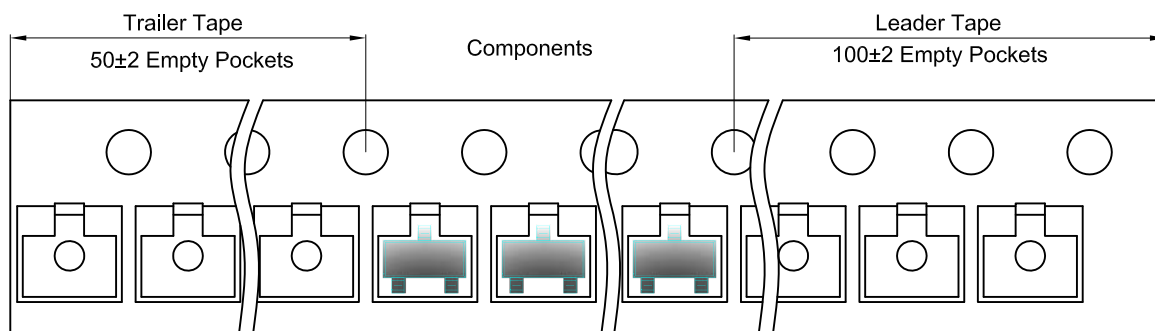
## SOT-23 Tape and Reel

### SOT-23 Embossed Carrier Tape

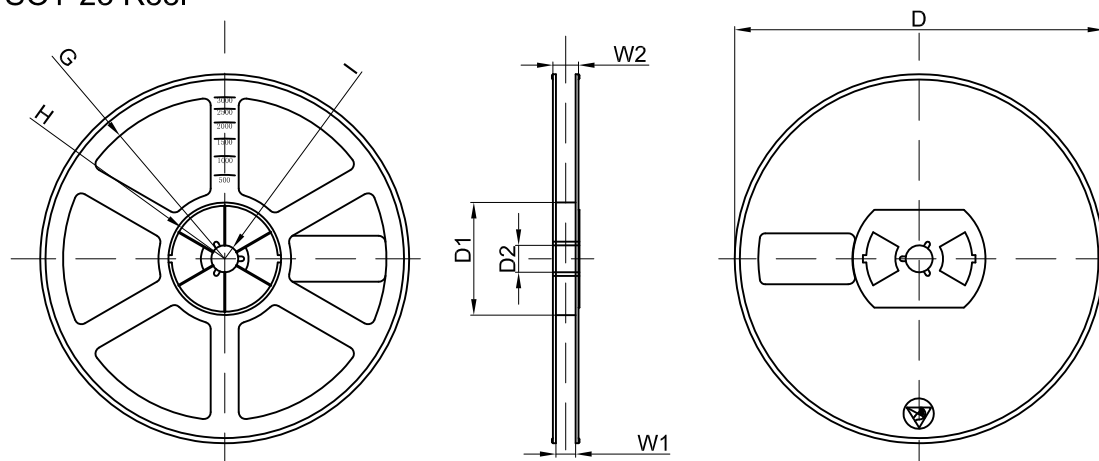


| Dimensions are in millimeter |      |      |      |       |      |      |      |      |      |      |
|------------------------------|------|------|------|-------|------|------|------|------|------|------|
| Pkg type                     | A    | B    | C    | d     | E    | F    | P0   | P    | P1   | 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

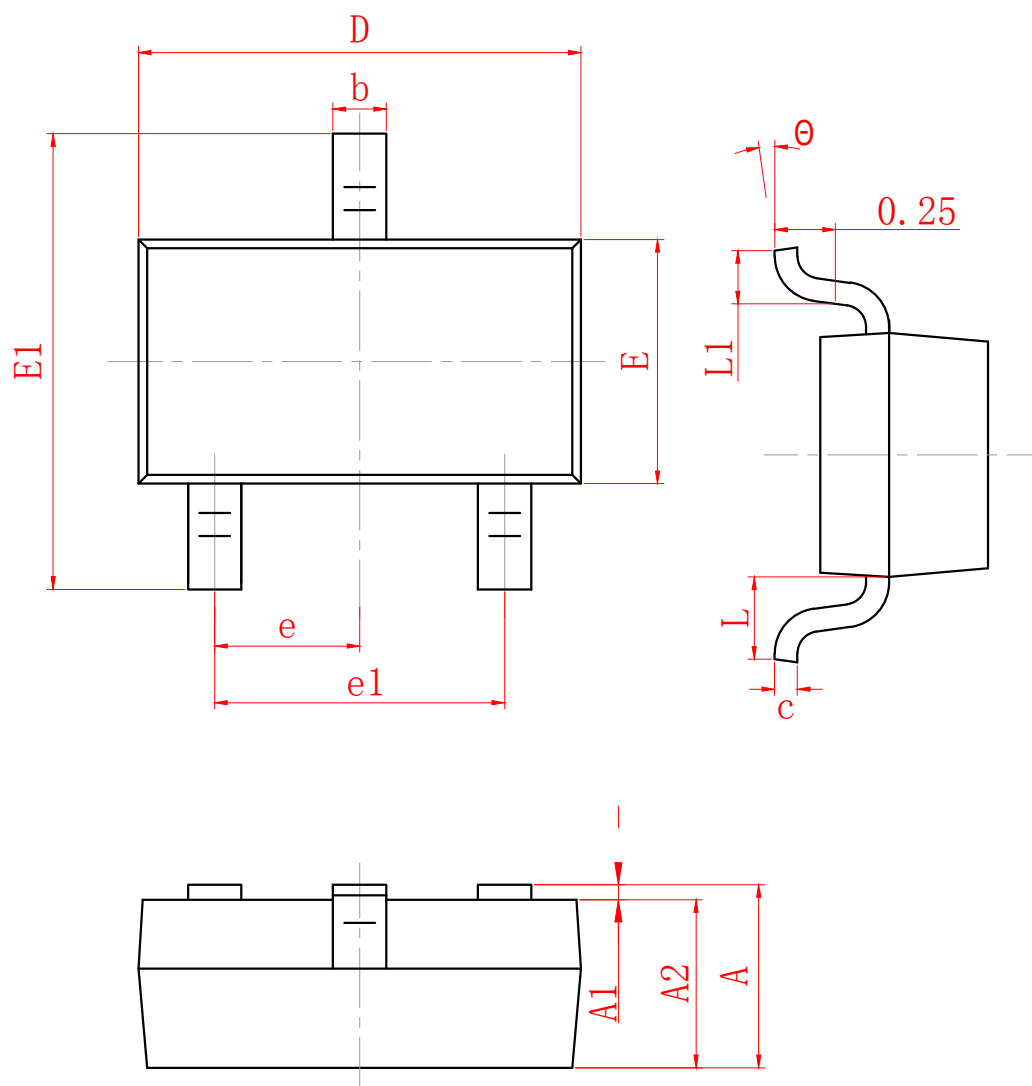


### SOT-23 Reel



| 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 |
| $\theta$ | 0°         | 8°    |

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