

Transistor(NPN)

Features

- Lead free in comply with EU RoHS 2011/65/EU directives

Mechanical Data

- Case: SOT-23
- Approx. Weight: 8.1mg

Ordering Information

| Part Number | Marking | Shipping | Reel |
|-------------|---------|--------------------|-----------|
| LT3904-TR3 | 1AM | 3000PCS Tape&Reel | 7 inches |
| LT3904-TR12 | 1AM | 12000PCS Tape&Reel | 13 inches |



Maximum Ratings (Ta=25 unless otherwise noted)

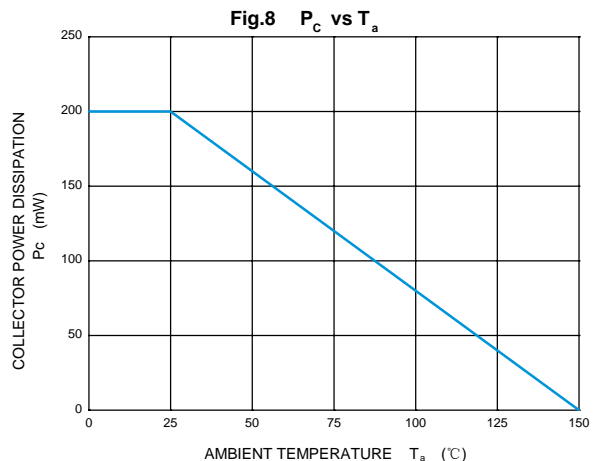
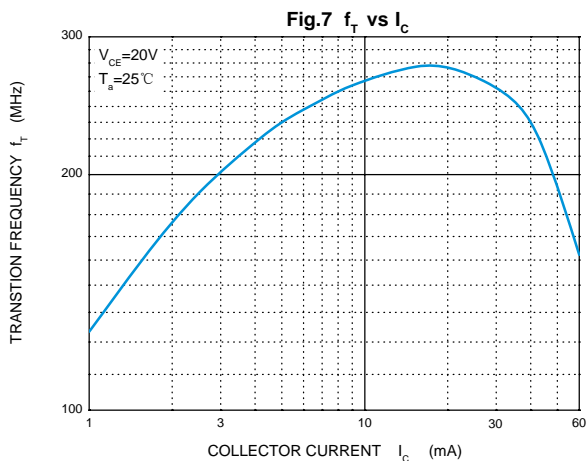
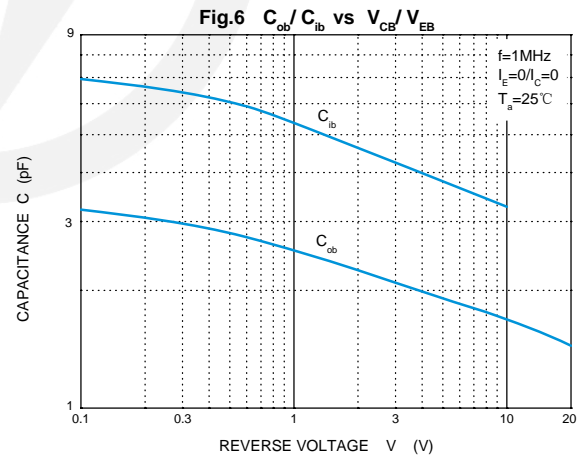
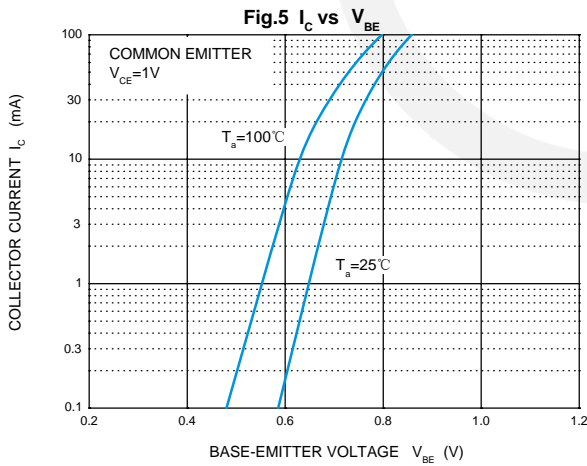
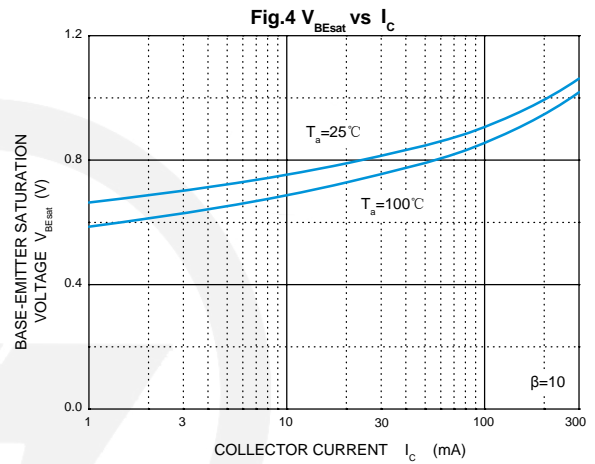
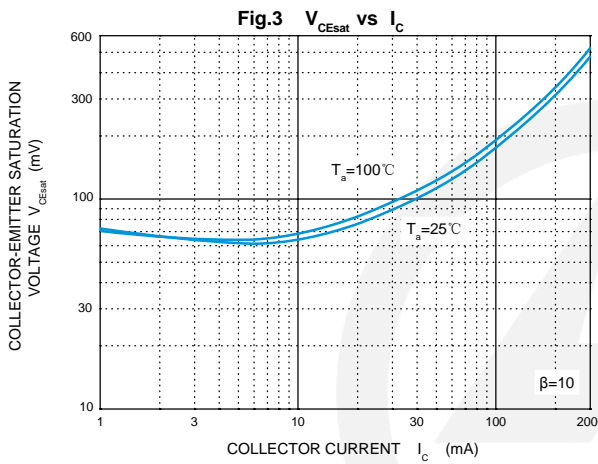
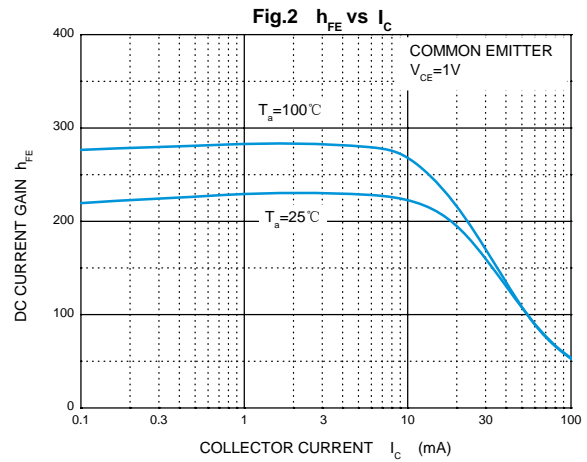
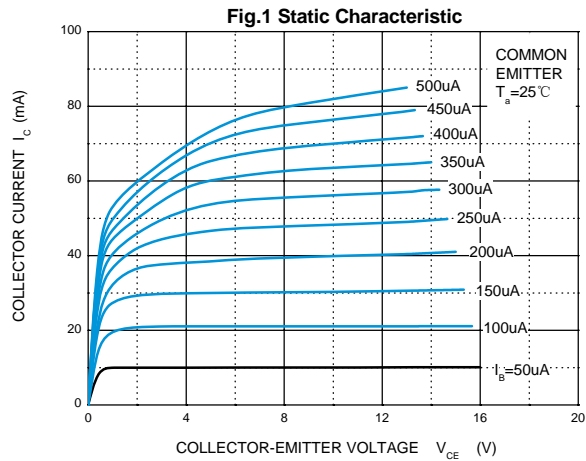
| Symbol | Parameter | Value | Unit |
|-----------------|---|----------|------|
| V_{CBO} | Collector-Base Voltage | 60 | V |
| V_{CEO} | Collector-Emitter Voltage | 40 | V |
| V_{EBO} | Emitter-Base Voltage | 6 | V |
| I_C | Collector Current | 200 | mA |
| P_C | Collector Power Dissipation | 200 | mW |
| $R_{\theta JA}$ | Thermal Resistance From Junction To Ambient | 625 | °C/W |
| T_j | Junction Temperature | 150 | °C |
| T_{stg} | Storage Temperature | -55~+150 | °C |

Electrical characteristics (Ta=25 unless otherwise specified)

| Parameter | Symbol | Test condition | Min | Typ | Max | Unit |
|--------------------------------------|---------------|--|-----|-----|------|------|
| Collector-base breakdown voltage | $V_{(BR)CBO}$ | $I_C=10\mu A, I_E=0$ | 60 | | | V |
| Collector-emitter breakdown voltage | $V_{(BR)CEO}$ | $I_C=1mA, I_B=0$ | 40 | | | V |
| Emitter-base breakdown voltage | $V_{(BR)EBO}$ | $I_E=10\mu A, I_C=0$ | 6 | | | V |
| Collector cut-off current | I_{CEX} | $V_{CE}=30V, V_{EB(off)}=3V$ | | | 50 | nA |
| Collector cut-off current | I_{CBO} | $V_{CB}=60V, I_E=0$ | | | 100 | nA |
| Emitter cut-off current | I_{EBO} | $V_{EB}=5V, I_C=0$ | | | 100 | nA |
| DC current gain | $h_{FE(1)}$ | $V_{CE}=1V, I_C=10mA$ | 100 | | 300 | |
| | $h_{FE(2)}$ | $V_{CE}=1V, I_C=50mA$ | 60 | | | |
| | $h_{FE(3)}$ | $V_{CE}=1V, I_C=100mA$ | 30 | | | |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C=50mA, I_B=5mA$ | | | 0.3 | V |
| Base-emitter saturation voltage | $V_{BE(sat)}$ | $I_C=50mA, I_B=5mA$ | | | 0.95 | V |
| Transition frequency | f_T | $V_{CE}=20V, I_C=10mA, f=100MHz$ | 300 | | | MHz |
| Delay time | t_d | $V_{CC}=3V, V_{BE(off)}=-0.5V, I_C=10mA, I_{B1}=1mA$ | | | 35 | ns |
| Rise time | t_r | $V_{CC}=3V, V_{BE(off)}=-0.5V, I_C=10mA, I_{B1}=1mA$ | | | 35 | ns |
| Storage time | t_s | $V_{CC}=3V, I_C=10mA, I_{B1}=I_{B2}=1mA$ | | | 200 | ns |
| Fall time | t_f | $V_{CC}=3V, I_C=10mA, I_{B1}=I_{B2}=1mA$ | | | 50 | ns |



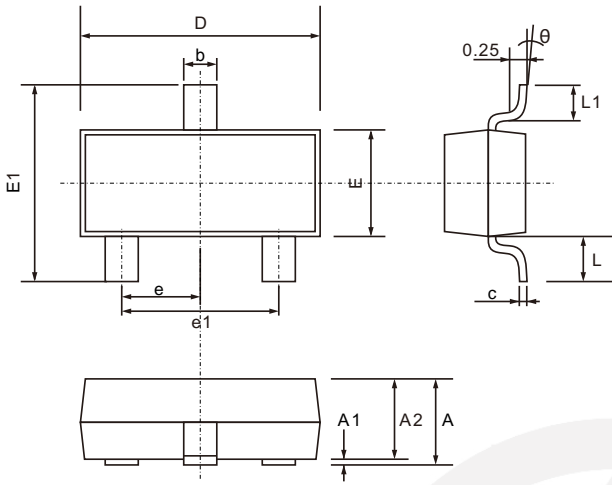
Characteristics Curves





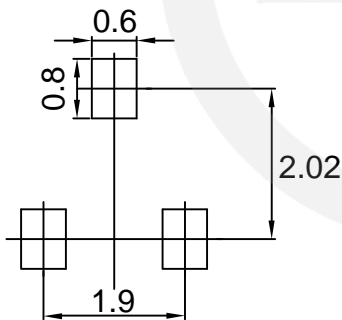
SOT-23 Package Outline

Unit: mm



| SYMBOL | DIMENSIONS | |
|--------|------------|-------|
| | MIN. | MAX. |
| A | 0.900 | 1.200 |
| A1 | 0.000 | 0.100 |
| A2 | 0.900 | 1.050 |
| b | 0.300 | 0.500 |
| c | 0.080 | 0.200 |
| D | 2.700 | 3.100 |
| E | 1.200 | 1.400 |
| E1 | 2.200 | 2.600 |
| e | 0.950 TYP. | |
| e1 | 1.750 | 2.050 |
| L | 0.550 TYP. | |
| L1 | 0.300 | 0.500 |
| θ | 0° | 8° |

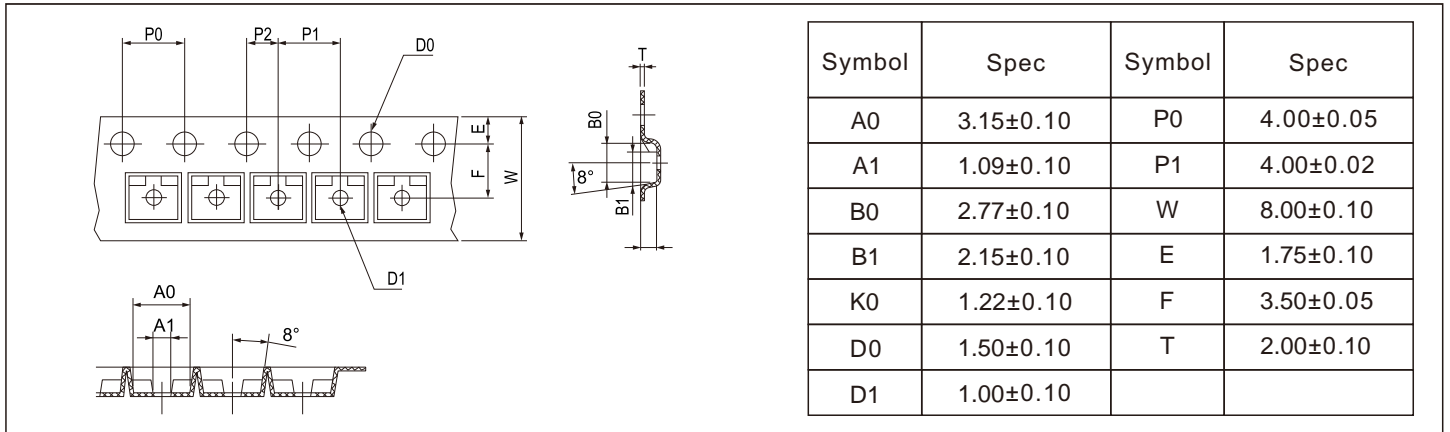
SOT-23 Suggested Pad Layout



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

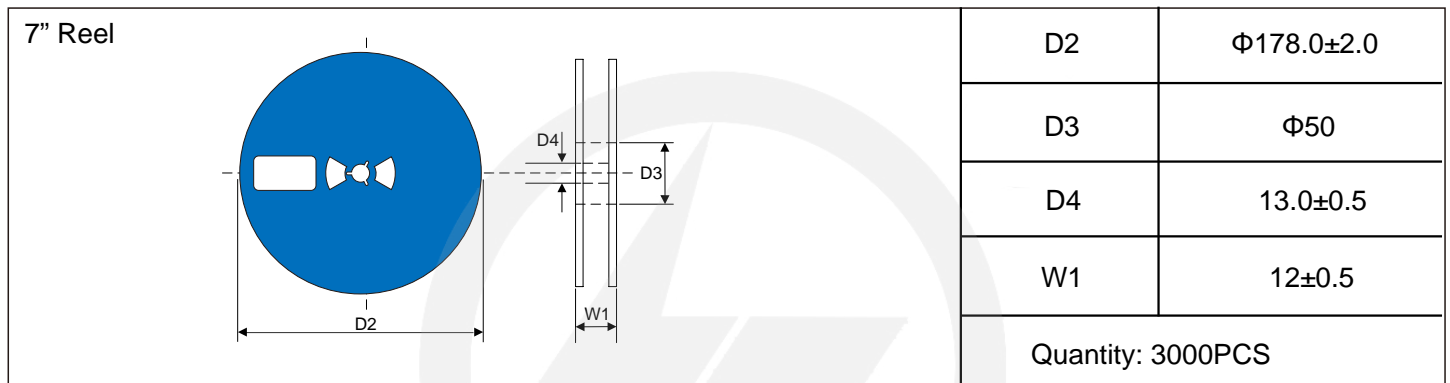
Carrier Tape Dimensions

Unit : mm



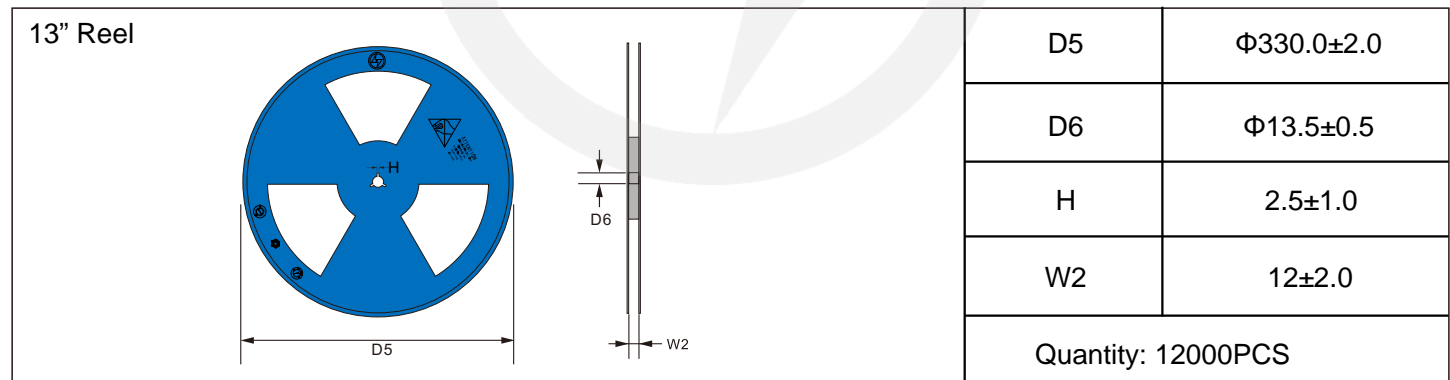
Reel Dimensions

Unit : mm

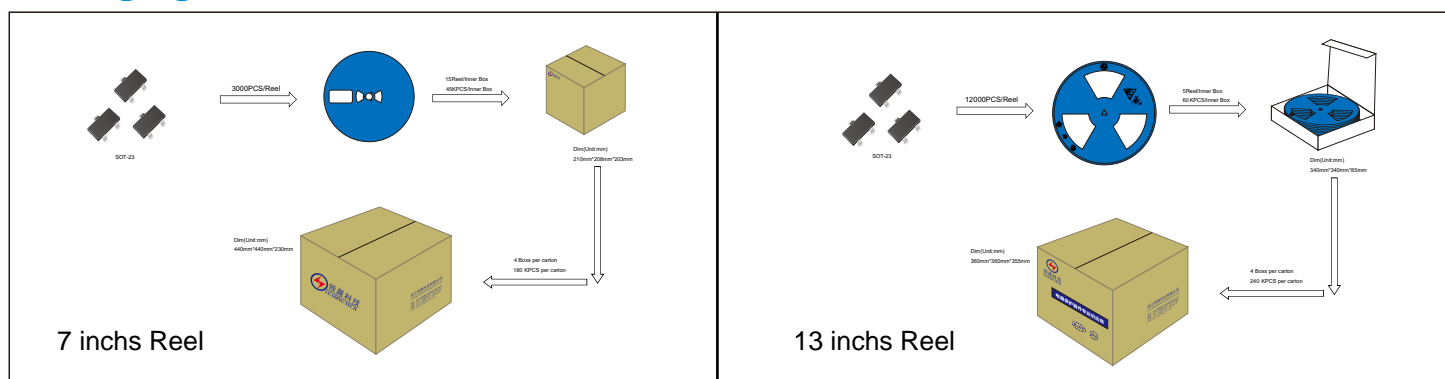


Reel Dimensions

Unit : mm



Packaging





Recommended Soldering Conditions



Recommended Conditions

| Profile Feature | Pb-Free Assembly |
|--|------------------|
| Average ramp-up rate (T _L to T _P) | 3°C/second max. |
| Preheat | |
| -Temperature Min (T _{S min}) | 150°C |
| -Temperature Max (T _{S max}) | 200°C |
| -Time (min to max) (t _s) | 60-180 seconds |
| T _{S max} to T _L | |
| -Ramp-up Rate | 3°C/second max. |
| Time maintained above: | |
| -Temperature (T _L) | 217°C |
| -Time (t _L) | 60-150 seconds |
| Peak Temperature (T _P) | 260°C |
| Time within 5°C of actual Peak Temperature (t _p) | 20-40 seconds |
| Ramp-down Rate | 6°C/second max. |
| Time 25°C to Peak Temperature | 8 minutes max. |

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Version Update Information

| Series NO. | Enactment/Revision Date | Effective Date | Version | Revision Content | Revision Reason | Revision Person | Note |
|------------|-------------------------|----------------|---------|-------------------------------|-----------------|-----------------|------|
| 01 | 2024.03.12 | 2024.03.12 | 3.0 | New file | / | Ding | |
| 02 | 2025.06.17 | 2025.06.17 | 3.1 | Update packaging information | / | Ding | |
| 03 | 2026.03.06 | 2026.03.06 | 3.2 | Package outline E1(max)=2.6mm | / | Ding | |