



TO-92L Plastic-Encapsulate Transistors

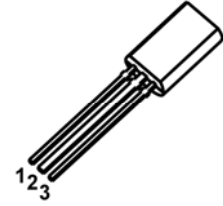
2SD468 TRANSISTOR (NPN)

FEATURES

- Low Frequency Power Amplifier
- Complementary Pair with 2SB562

TO - 92L

1. EMITTER
2. COLLECTOR
3. BASE



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

| Symbol | Parameter | Value | Unit |
|-----------------|---|----------|--------------------|
| V_{CB0} | Collector-Base Voltage | 25 | V |
| V_{CEO} | Collector-Emitter Voltage | 20 | V |
| V_{EBO} | Emitter-Base Voltage | 5 | V |
| I_C | Collector Current | 1 | A |
| P_C | Collector Power Dissipation | 750 | mW |
| $R_{\theta JA}$ | Thermal Resistance From Junction To Ambient | 167 | $^\circ\text{C/W}$ |
| 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)

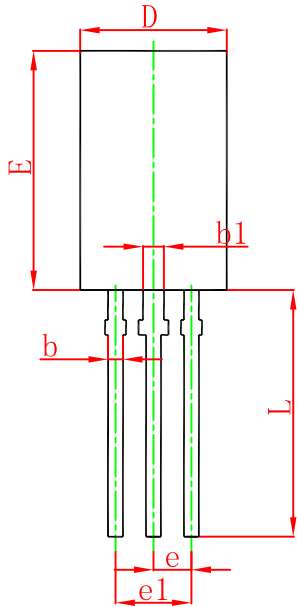
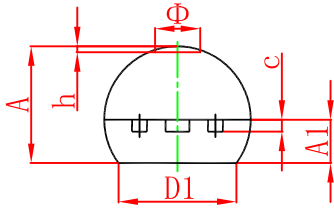
| Parameter | Symbol | Test conditions | Min | Typ | Max | Unit |
|--------------------------------------|-----------------|---|-----|-----|-----|---------------|
| Collector-base breakdown voltage | $V_{(BR)CBO}$ | $I_C=10\mu\text{A}, I_E=0$ | 25 | | | V |
| Collector-emitter breakdown voltage | $V_{(BR)CEO}$ | $I_C=1\text{mA}, I_B=0$ | 20 | | | V |
| Emitter-base breakdown voltage | $V_{(BR)EBO}$ | $I_E=10\mu\text{A}, I_C=0$ | 5 | | | V |
| Collector cut-off current | I_{CBO} | $V_{CB}=20\text{V}, I_E=0$ | | | 1 | μA |
| Emitter cut-off current | I_{EBO} | $V_{EB}=4\text{V}, I_C=0$ | | | 1 | μA |
| DC current gain | h_{FE}^* | $V_{CE}=2\text{V}, I_C=0.5\text{A}$ | 85 | | 240 | |
| Collector-emitter saturation voltage | $V_{CE(sat)}^*$ | $I_C=0.8\text{A}, I_B=0.08\text{A}$ | | | 0.5 | V |
| Base-emitter voltage | V_{BE}^* | $V_{CE}=2\text{V}, I_C=0.5\text{A}$ | | | 1 | V |
| Collector output capacitance | C_{ob} | $V_{CB}=10\text{V}, I_E=0, f=1\text{MHz}$ | | 22 | | pF |
| Transition frequency | f_T^* | $V_{CE}=2\text{V}, I_C=0.5\text{A}$ | | 190 | | MHz |

*Pulse test

CLASSIFICATION OF h_{FE}

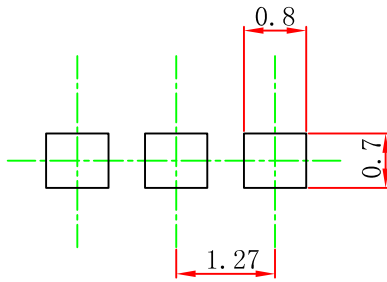
| RANK | B | C |
|-------|--------|---------|
| RANGE | 85-170 | 120-240 |

TO-92L Package Outline Dimensions



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|--------|----------------------|-------|
| | Min. | Max. | Min. | Max. |
| A | 3.750 | 4.050 | 0.148 | 0.159 |
| A1 | 1.280 | 1.580 | 0.050 | 0.062 |
| b | 0.380 | 0.550 | 0.015 | 0.022 |
| b1 | 0.620 | 0.780 | 0.024 | 0.031 |
| c | 0.350 | 0.450 | 0.014 | 0.018 |
| D | 4.750 | 5.050 | 0.187 | 0.199 |
| D1 | 4.000 | | 0.157 | |
| E | 7.850 | 8.150 | 0.309 | 0.321 |
| e | 1.270 TYP. | | 0.050 TYP. | |
| e1 | 2.440 | 2.640 | 0.096 | 0.104 |
| L | 13.800 | 14.200 | 0.543 | 0.559 |
| Φ | | 1.600 | | 0.063 |
| h | 0.000 | 0.300 | 0.000 | 0.012 |

TO-92L Suggested Pad Layout



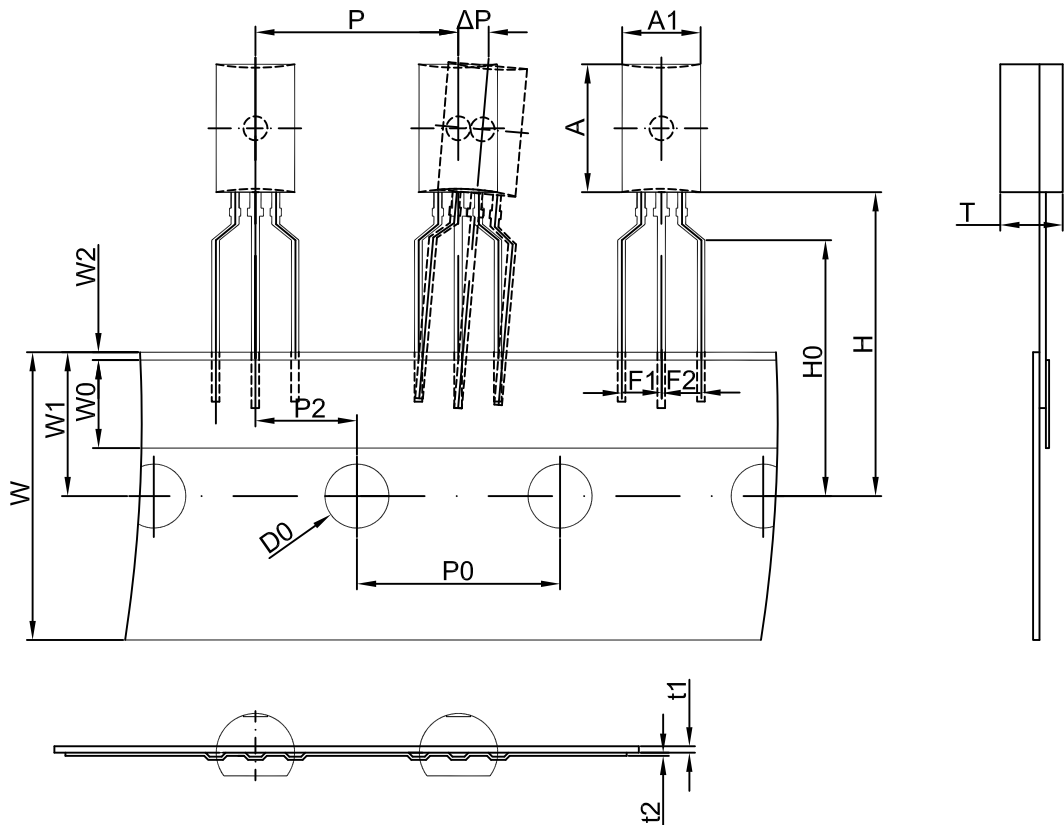
Note:

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

NOTICE

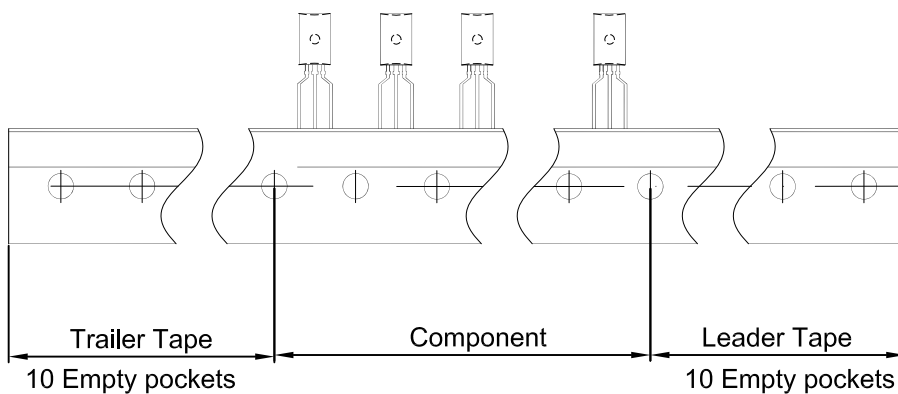
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TO-92L PACKAGE TAPING DIMENSION



Dimensions are in millimeter

| A1 | A | T | P | P0 | P2 | F1 | F2 | W |
|-----|-----|-----|------|------|------|-----|-----|------|
| 4.9 | 8.0 | 3.9 | 12.7 | 12.7 | 6.35 | 2.5 | 2.5 | 18.0 |
| W0 | W1 | W2 | H | H0 | D0 | t1 | t2 | ΔP |
| 6.0 | 9.0 | 1.0 | 19.0 | 16.0 | 4.0 | 0.4 | 0.2 | 0 |



| Package | Box | Box Size(mm) | Carton | Carton Size(mm) |
|---------|----------|--------------|------------|-----------------|
| TO-92L | 2000 pcs | 333×203×42 | 20,000 pcs | 493×400×264 |

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