



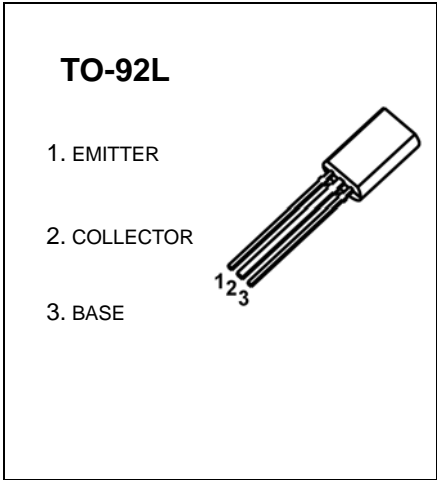
TO-92L Plastic-Encapsulate Transistors

2SD667, 2SD667A TRANSISTOR (NPN)

FEATURES

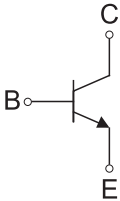
- Low Frequency Power Amplifier
- Complementary Pair with 2SB647/A

MARKING



B D667=Device code
 C Solid dot= Green molding compound device,
 E if none, the normal device
 XXX=Code

Equivalent Circuit



B D667A=Device code
 C Solid dot= Green molding compound device,
 E if none, the normal device
 XXX=Code

ORDERING INFORMATION

| Part Number | Package | Packing Method | Pack Quantity |
|-------------|---------|----------------|---------------|
| 2SD667 | TO-92L | Bulk | 500pcs/Bag |
| 2SD667-TA | TO-92L | Tape | 2000pcs/Box |
| 2SD667A | TO-92L | Bulk | 500pcs/Bag |
| 2SD667A-TA | TO-92L | Tape | 2000pcs/Box |

MAXIMUM RATINGS (T_a=25°C unless otherwise noted)

| Symbol | Parameter | Value | Unit |
|-----------------------------------|---|---------|------|
| V _{CB0} | Collector- Base Voltage | 120 | V |
| V _{CE0} | Collector-Emitter Voltage | 2SD667 | 80 |
| | | 2SD667A | 100 |
| V _{EBO} | Emitter-Base Voltage | 5 | V |
| I _c | Collector Current -Continuous | 1 | A |
| P _c | Collector Power Dissipation | 900 | mW |
| R _{θJA} | Thermal Resistance Junction to Ambient | 139 | °C/W |
| T _J , T _{stg} | JOperation Junction and Storage Temperature Range | -55-150 | °C |

ELECTRICAL CHARACTERISTICS

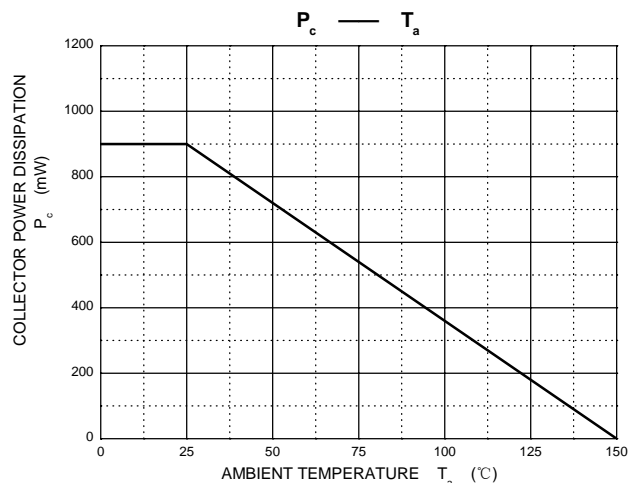
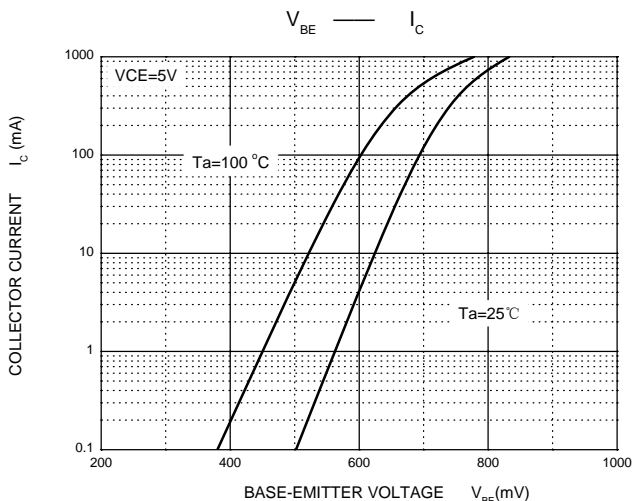
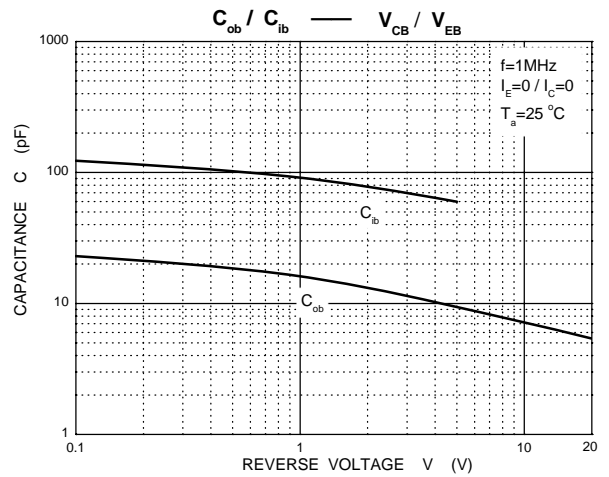
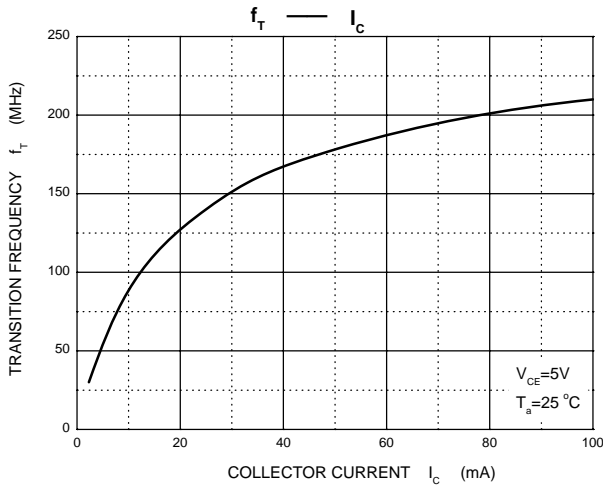
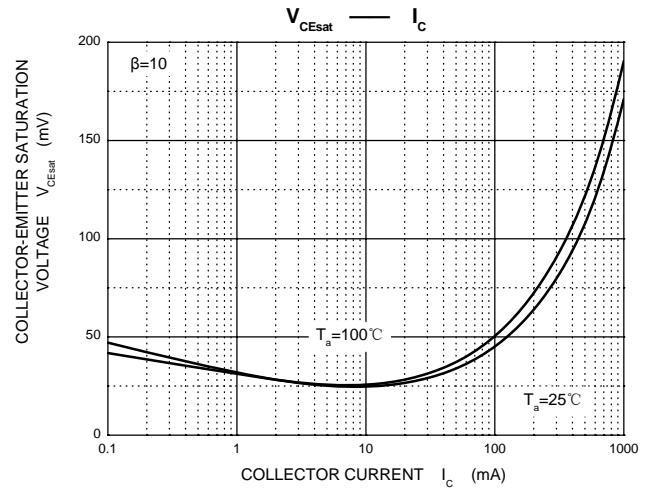
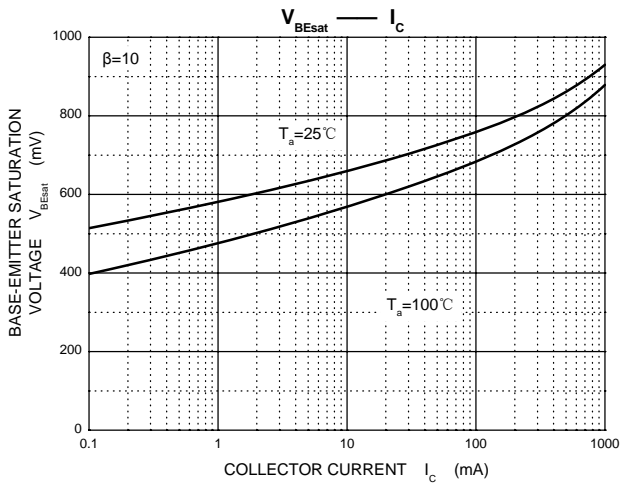
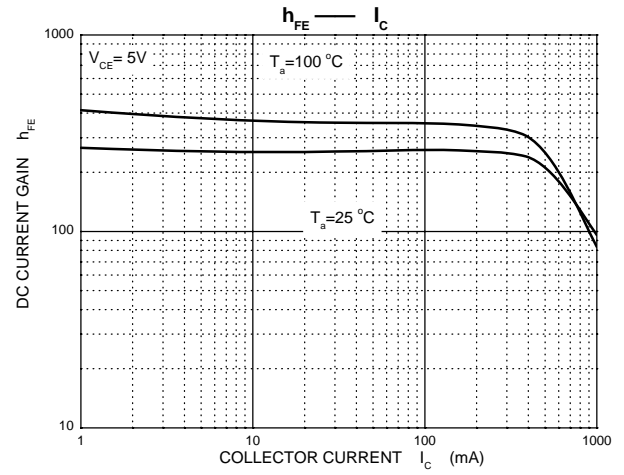
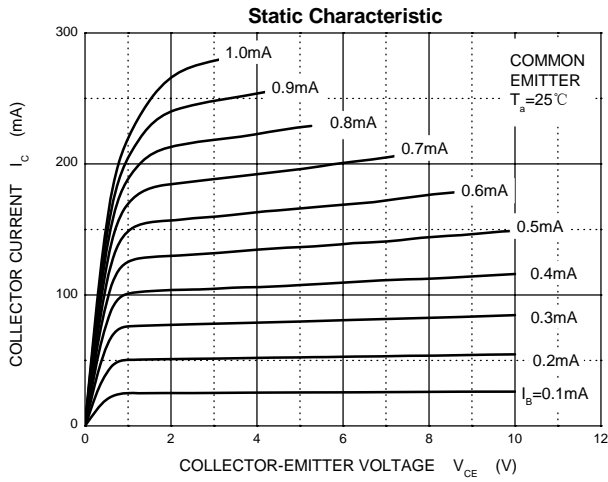
$T_a=25^\circ\text{C}$ unless otherwise specified

| Parameter | Symbol | Test conditions | Min | Typ | Max | Unit |
|--------------------------------------|---------------|---|---------|-----|-----|---------------|
| Collector-base breakdown voltage | $V_{(BR)CBO}$ | $I_C=10\mu\text{A}, I_E=0$ | 120 | | | V |
| Collector-emitter breakdown voltage | $V_{(BR)CEO}$ | $I_C=1\text{mA}, I_B=0$ | 2SD667 | 80 | | V |
| | | | 2SD667A | 100 | | 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} | $V_{CB}=100\text{V}, I_E=0$ | | | 10 | μA |
| Emitter cut-off current | I_{EBO} | $V_{EB}=4\text{V}, I_C=0$ | | | 10 | μA |
| DC current gain | $h_{FE(1)}$ | $V_{CE}=5\text{V}, I_C=150\text{mA}$ | 2SD667 | 60 | | 320 |
| | | | 2SD667A | 60 | | 320 |
| | $h_{FE(2)}$ | $V_{CE}=5\text{V}, I_C=500\text{mA}$ | 30 | | | |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C=500\text{mA}, I_B=50\text{mA}$ | | | 1 | V |
| Base-emitter voltage | V_{BE} | $V_{CE}=5\text{V}, I_C=150\text{mA}$ | | | 1.5 | V |
| Transition frequency | f_T | $V_{CE}=5\text{V}, I_C=150\text{mA}$ | | 140 | | MHz |
| Collector output capacitance | C_{ob} | $V_{CB}=10\text{V}, I_E=0, f=1\text{MHz}$ | | 12 | | pF |

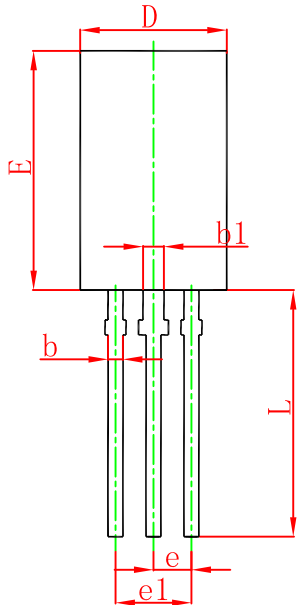
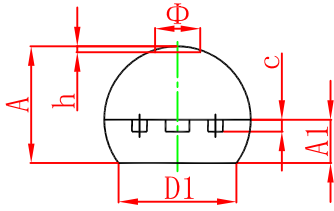
CLASSIFICATION OF $h_{FE(1)}$

| Rank | | B | C | D |
|-------|---------|--------|---------|---------|
| Range | 2SD667 | 60-120 | 100-200 | 160-320 |
| | 2SD667A | 60-120 | 100-200 | 160-320 |

Typical Characteristics

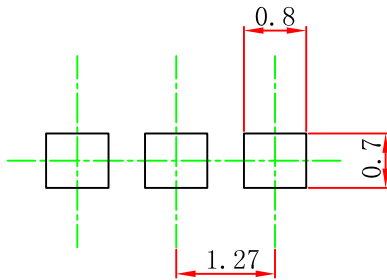


TO-92L Package Outline Dimensions



| 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



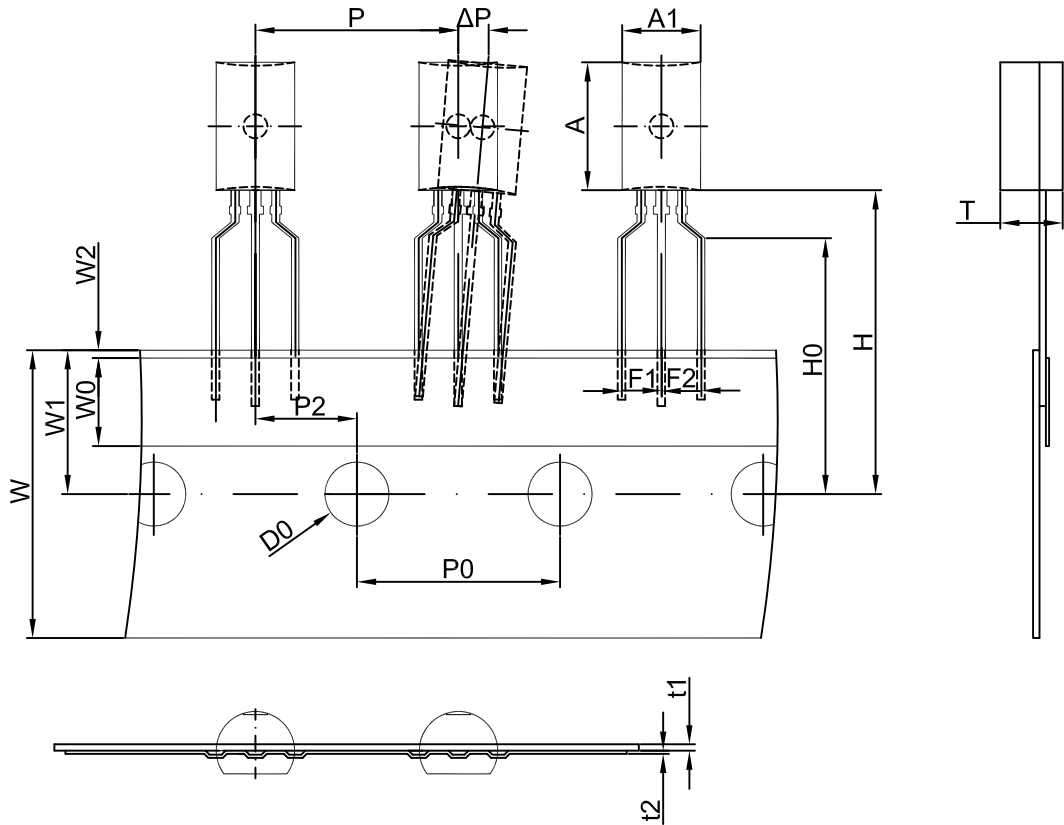
Note:

1. Controlling dimension: in millimeters.
2. General tolerance: $\pm 0.05\text{mm}$.
3. The pad layout is for reference purposes only.

NOTICE

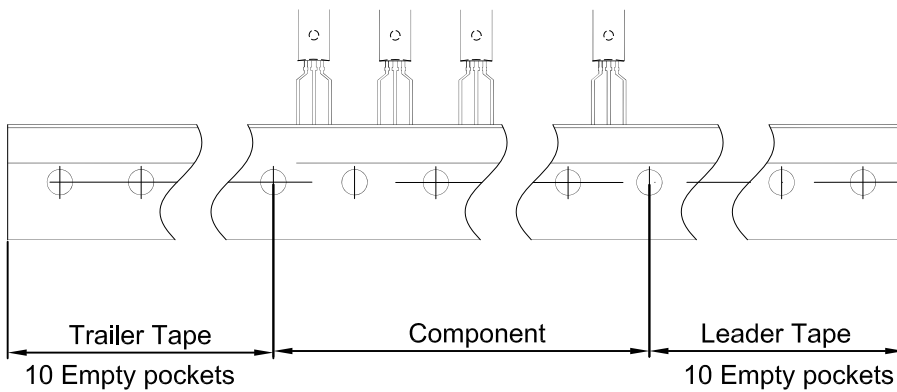
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TO-92L PACKAGE TAPING DIMENSION



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 |