# Silicon NPN Epitaxial Planer
# Low Frequency Power Amplifier

## Features

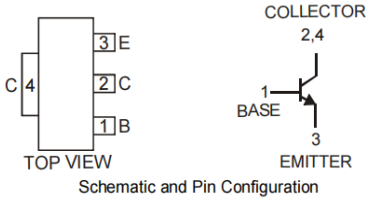
- Small size package: SOT89-3L
- Large Maximum current: $I_C$ = 3A
- Low collector to emitter saturation voltage: $V_{CE(sat)}$ = 0.15V max.(at $I_C/I_B$ = 0.5 A/0.05 A)
- High power dissipation: $P_C$ = 2W
- Complementary pair with 2SB1561

## Outline

(Package name: SOT89-3L



SOT89-3L




Schematic and Pin Configuration

Note: Marking is “DT“.

## Absolute Maximum Ratings

(Ta = 25°C)

| Item | Symbol | Ratings | Unit |
|---|---|---|---|
| Collector to Base Voltage | $V_{CBO}$ | 80 | V |
| Collector to emitter voltage | $V_{CEO}$ | 60 | V |
| Emitter to base voltage | $V_{EBO}$ | 5 | V |
| Collector current | $I_C$ | 3 | A |
| Collector peak current | ic(peak) | 6 | A |
| Collector power dissipation | $P_C$ | 2 | W |
| Junction temperature | Tj | 150 | °C |
| Storage temperature | Tstg | –55 to +150 | °C |

Note: *When using alumina ceramic board (25 x 60 x 0.7 mm)

## Electrical Characteristics

(Ta = 25°C)

| Item | Symbol | Min | Typ | Max | Unit | Test Condition |
|---|---|---|---|---|---|---|
| Collector to base breakdown voltage | $V_{(BR)CBO}$ | 80 | — | — | V | $I_C$ = 100 μA, $I_E$ = 0 |
| Collector to emitter breakdown voltage | $V_{(BR)CEO}$ | 60 | — | — | V | $I_C$ = 10 mA, $R_{BE}$ = ∞ |
| Emitter to base breakdown voltage | $V_{(BR)EBO}$ | 5 | — | — | V | $I_E$ = 100 μA, $I_C$ = 0 |
| Collector cutoff current | $I_{CBO}$ | — | — | 100 | nA | $V_{CB}$ = 60 V, $I_E$ = 0 |
| Emitter cutoff current | $I_{EBO}$ | — | — | 100 | nA | $V_{EB}$ = 4 V, $I_C$ = 0 |
| DC current transfer ratio | $h_{FE}$ | | — | 300 | — | $V_{CE}$ = 2 V, $I_C$ = 0.1 A |
| Collector to emitter saturation voltage | $V_{CE(sat)}$ | — | 0.15 | 0.3 | V | IC = 1A, IB = 100mA |
| Base to emitter saturation voltage | $V_{BE(sat)}$ | — | 0.91 | 1.2 | V | IC = 1A, IB = 100mA |
| Gain bandwidth product | $f_T$ | 100 | 145 | — | MHz | VCE = 10V, IC = -50mA, f = 100MHz |
| Collector output capacitance | Cob | — | | 30 | pF | VCC = 10V. IC = 500mA, |

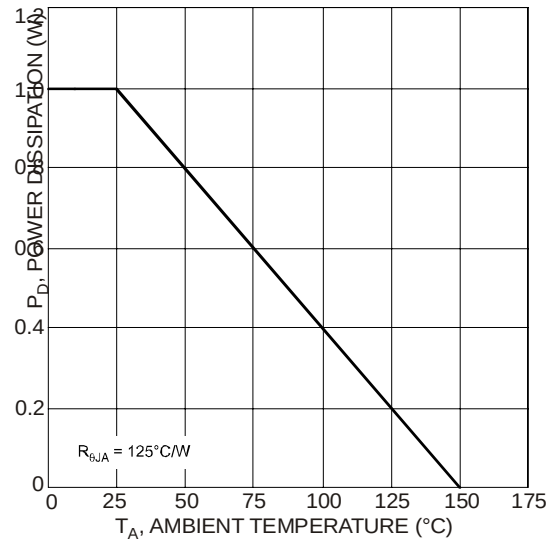



Fig. 1 Power Dissipation vs. Ambient Temperature (Note 3)

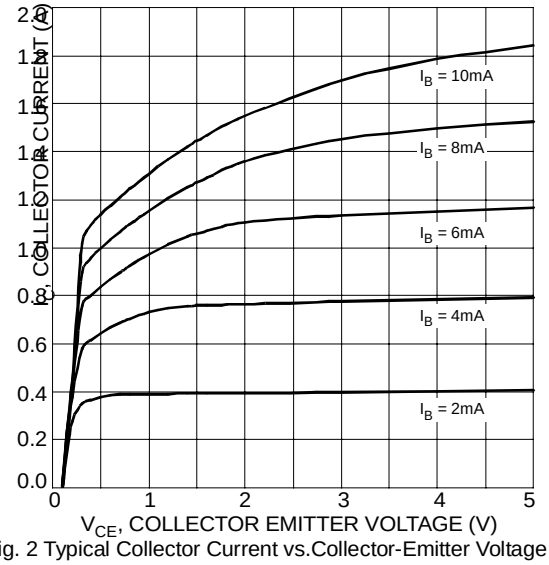



Fig. 2 Typical Collector Current vs.Collector-Emitter Voltage

## Electrical Characteristics

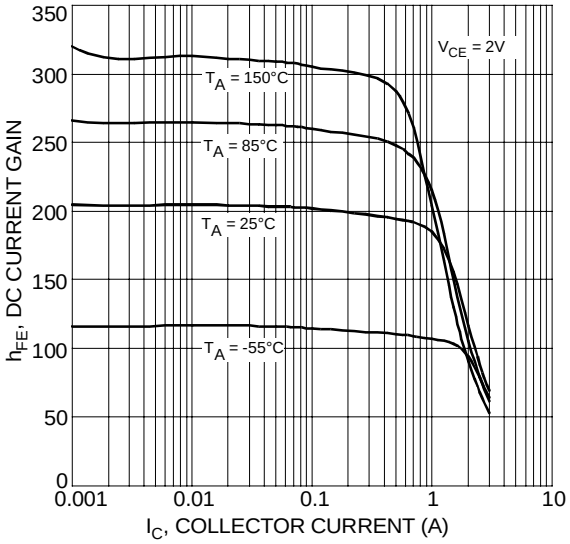



Fig. 3 Typical DC Current Gain vs. Collector Current

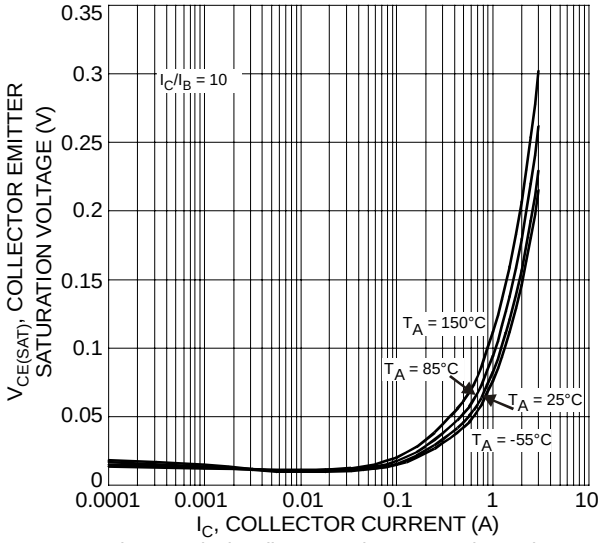



Fig. 4 Typical Collector-Emitter Saturation Voltage vs. Collector Current

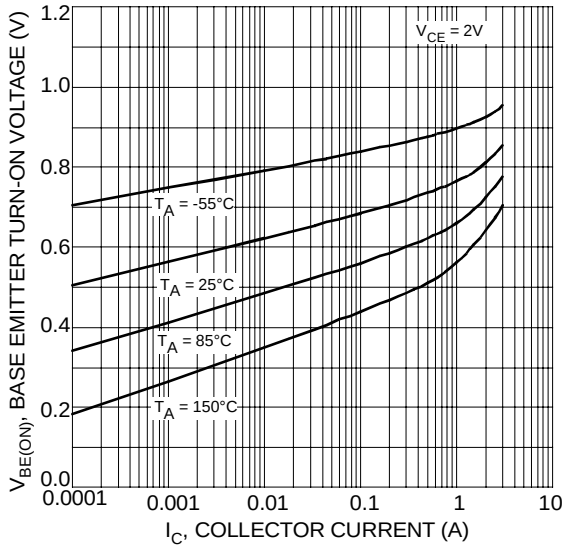



Fig. 5 Typical Base-Emitter Turn-On Voltage vs. Collector Current

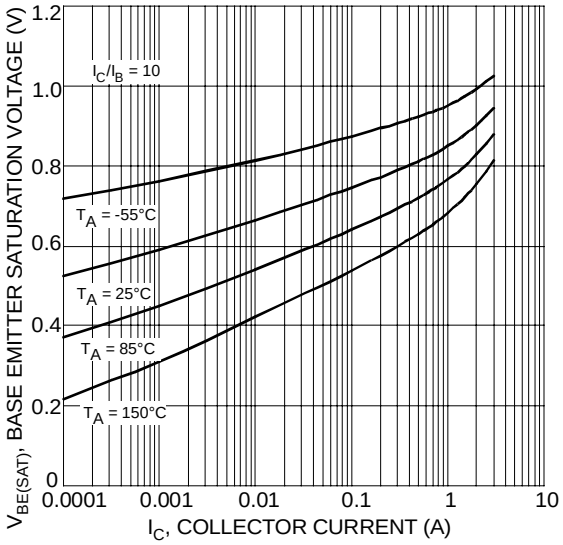



Fig. 6 Typical Base-Emitter Saturation Voltage vs. Collector Current

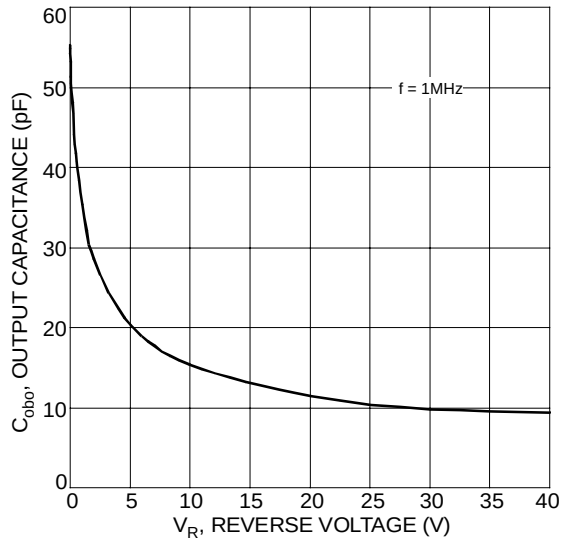



Fig. 7 Typical Output Capacitance Characteristics

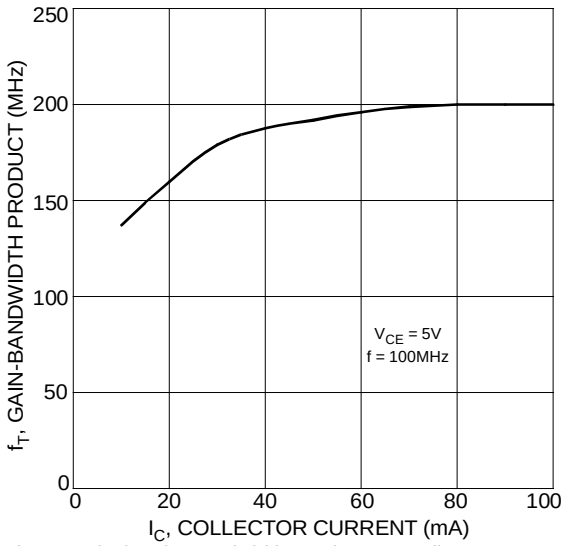


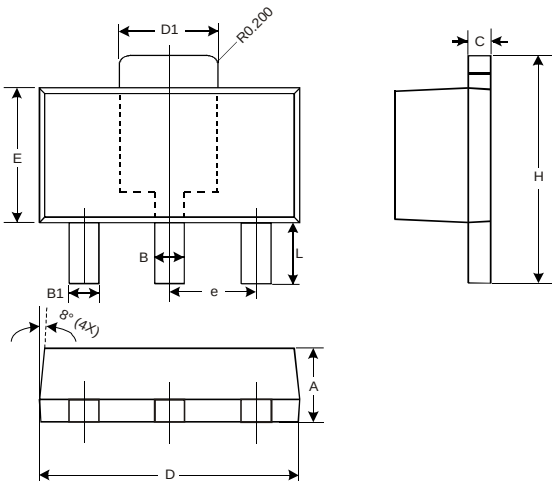

Fig. 8 Typical Gain-Bandwidth Product vs. Collector Current

## Electrical Characteristics

## Ordering Information (Note 5)

| Device | Packaging | Shipping |
|---|---|---|
| 2SD2391 | SOT89-3L | 1000/Tape & Reel |

## Package Outline Dimensions




| SOT89-3L | | | |
|---|---|---|---|
| **Dim** | **Min** | **Max** | **Typ** |
| **A** | 1.40 | 1.60 | 1.50 |
| **B** | 0.45 | 0.55 | 0.50 |
| **B1** | 0.37 | 0.47 | 0.42 |
| **C** | 0.35 | 0.43 | 0.38 |
| **D** | 4.40 | 4.60 | 4.50 |
| **D1** | 1.50 | 1.70 | 1.60 |
| **E** | 2.40 | 2.60 | 2.50 |
| **e** | — | — | 1.50 |
| **H** | 3.95 | 4.25 | 4.10 |
| **L** | 0.90 | 1.20 | 1.05 |
| **All Dimensions in mm** | | | |

## Suggested Pad Layout

