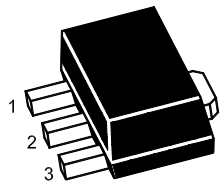
迈拓电子
MAITUO ELECTRONIC

# 2SB1561U **Silicon Epitaxial Planar Transistor**

Medium Power Transistor

Marking : 1561




1.Base 2.Collector 3.Emitter

SOT-89-3L

**Absolute Maximum Ratings ($T_a$ = 25 °C)**

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Collector Base Voltage | $-V_{CBO}$ | 60 | V |
| Collector Emitter Voltage | $-V_{CEO}$ | 60 | V |
| Emitter Base Voltage | $-V_{EBO}$ | 6 | V |
| Collector Current - DC<br>Collector Current - Pulse [1] | $-I_C$<br>$-I_{CP}$ | 2<br>6 | A |
| Total Power Dissipation | $P_{tot}$ | 0.5<br>2 [2] | W |
| Junction Temperature | $T_J$ | 150 | °C |
| Storage Temperature Range | $T_{Stg}$ | - 55 to + 150 | °C |

[1] Single pulse, PW = 10 ms [2] When mounted on a 40 X 40 X 0.7 mm cermic board

**Characteristics at $T_a$ = 25 °C**

| Parameter | Symbol | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| DC Current Gain<br>at $-V_{CE}$ = 2 V, $-I_C$ = 0.5 A<br>at $-V_{CE}$ = 2 V, $-I_C$ = 1.5 A | <br>$h_{FE}$<br>$h_{FE}$ | <br>120<br>45 | <br>-<br>- | <br>270<br>- | <br>-<br>- |
| Collector Base Breakdown Voltage<br>at $-I_C$ = 50 µA | $-V_{(BR)CBO}$ | 60 | - | - | V |
| Collector Emitter Breakdown Voltage<br>at $-I_C$ = 1 mA | $-V_{(BR)CEO}$ | 60 | - | - | V |
| Emitter Base Breakdown Voltage<br>at $-I_E$ = 50 µA | $-V_{(BR)EBO}$ | 6 | - | - | V |
| Collector Base Cutoff Current<br>at $-V_{CB}$ = 50 V | $-I_{CBO}$ | - | - | 0.1 | µA |
| Emitter Base Cutoff Current<br>at $-V_{EB}$ = 5 V | $-I_{EBO}$ | - | - | 0.1 | µA |
| Collector Emitter Saturation Voltage<br>at $-I_C$ = 1 A, $-I_B$ = 50 mA | $-V_{CE(sat)}$ | - | - | 0.35 | V |
| Transition Frequency<br>at $-V_{CE}$ = 2 V, $-I_E$ = 0.5 A, f = 100 MHz | $f_T$ | - | 200 | - | MHz |
| Output Capacitance<br>at $-V_{CB}$ = 10 V, f = 1 MHz | $C_{ob}$ | - | 23 | - | pF |

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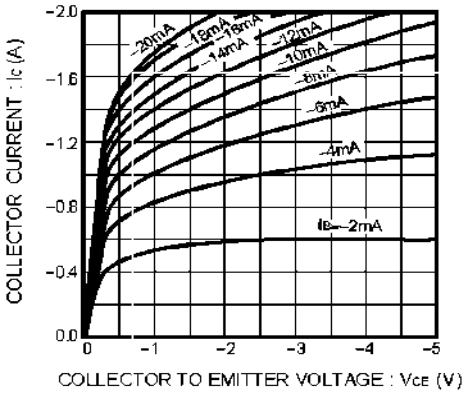


Fig.1 Grounded emitter output characteristics

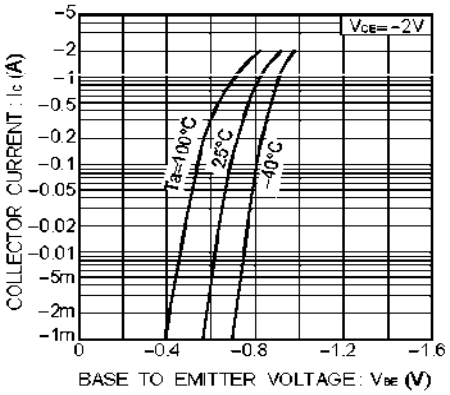


Fig.2 Grounded emitter propagation characteristics

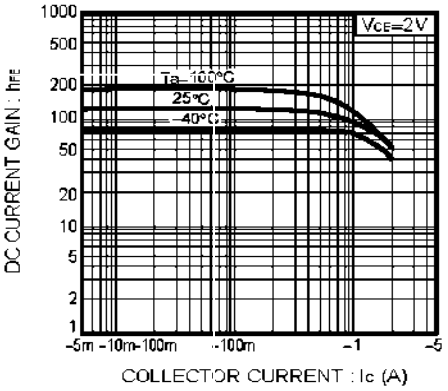


Fig.3 DC current gain vs. collector current ( I )

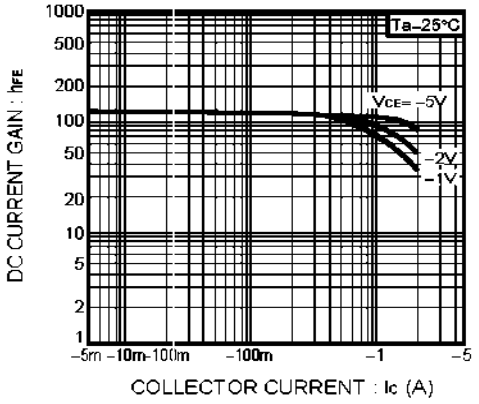


Fig.4 DC current gain vs. collector current ( II )

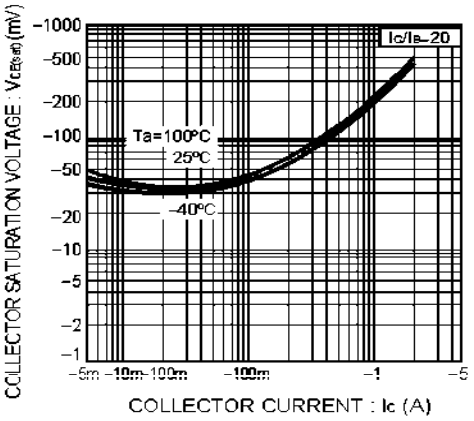


Fig.5 Collector-emitter saturation voltage vs. collector current ( I )

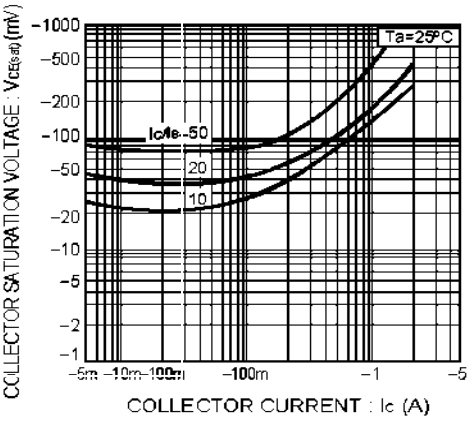


Fig.6 Collector-emitter saturation voltage vs. collector current ( II )

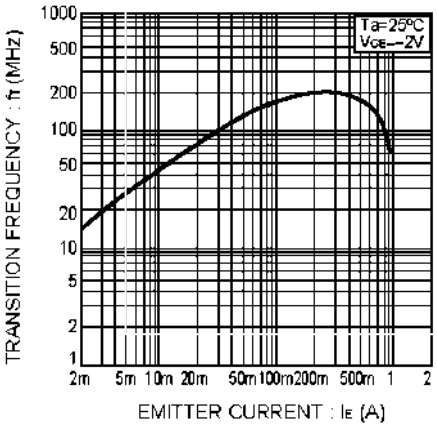


Fig.7 Gain bandwidth product vs. emitter current

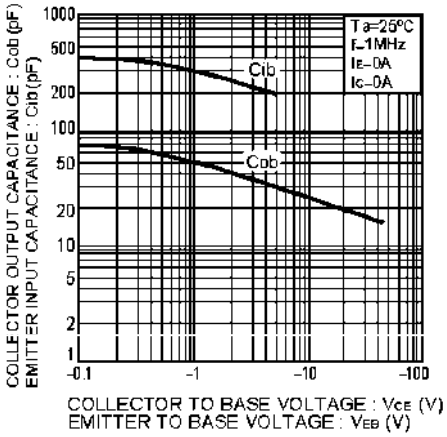


Fig.8 Collector output capacitance vs. collector-base voltage
Emitter input capacitance vs. emitter-base voltage

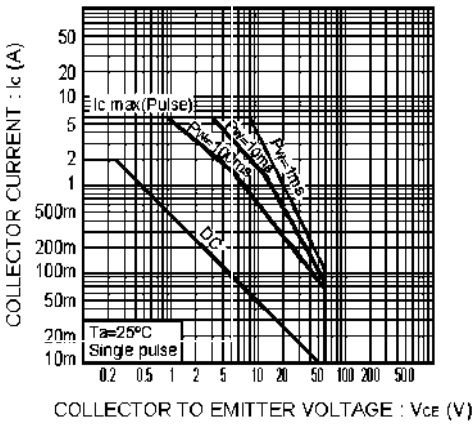


Fig.9 Safe operating area

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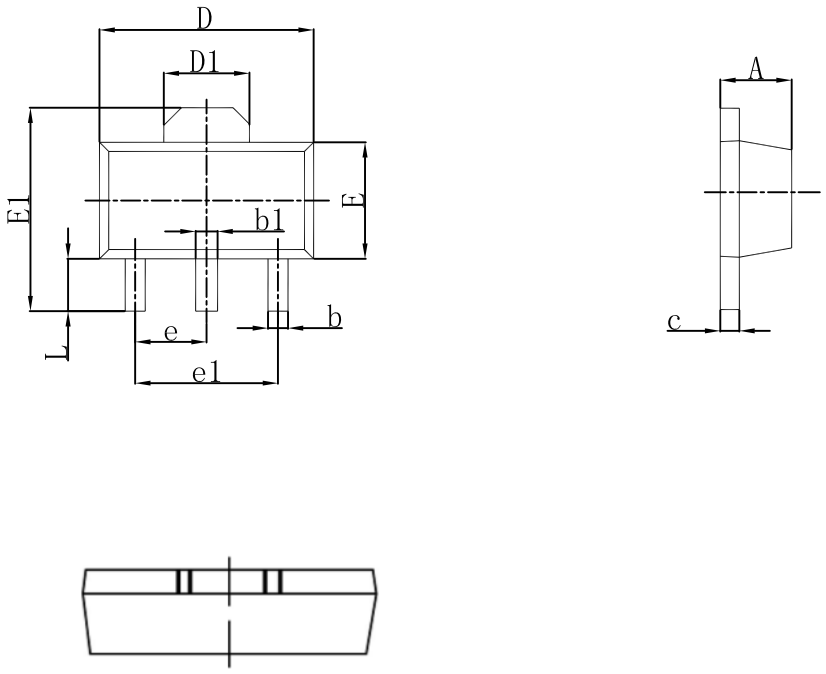
**SOT-89-3L Outlines Dimensions**




| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min | Max | Min | Max |
| A | 1.400 | 1.600 | 0.055 | 0.063 |
| b | 0.320 | 0.520 | 0.013 | 0.020 |
| b1 | 0.400 | 0.580 | 0.016 | 0.023 |
| c | 0.350 | 0.440 | 0.014 | 0.017 |
| D | 4.400 | 4.600 | 0.173 | 0.181 |
| D1 | 1.550 REF. | | 0.061 REF. | |
| E | 2.300 | 2.600 | 0.091 | 0.102 |
| E1 | 3.940 | 4.250 | 0.155 | 0.167 |
| e | 1.500 TYP. | | 0.060 TYP. | |
| e1 | 3.000 TYP. | | 0.118 TYP. | |
| L | 0.900 | 1.200 | 0.035 | 0.047 |