# SPTECH Silicon NPN Power Transistors

## DESCRIPTION

- With TO-3PN package
- Complement to type 2SA1694

## APPLICATIONS

- Audio and general purpose

**PINNING**

| PIN | DESCRIPTION |
|---|---|
| 1 | Base |
| 2 | Collector;connected to mounting base |
| 3 | Emitter |

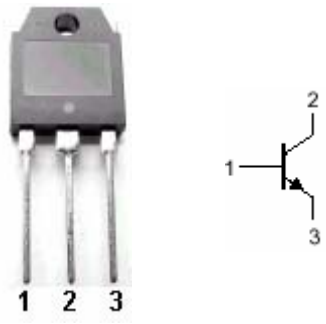



**Fig.1 simplified outline (TO-3PN) and symbol**

## Absolute maximum ratings(Ta=℃)

| SYMBOL | PARAMETER | CONDITIONS | VALUE | UNIT |
|---|---|---|---|---|
| $V_{CBO}$ | Collector-base voltage | Open emitter | 160 | V |
| $V_{CEO}$ | Collector-emitter voltage | Open base | 120 | V |
| $V_{EBO}$ | Emitter-base voltage | Open collector | 6 | V |
| $I_C$ | Collector current | | 8 | A |
| $I_B$ | Base current | | 3 | A |
| $P_C$ | Collector power dissipation | $T_C$=25℃ | 80 | W |
| $T_j$ | Junction temperature | | 150 | ℃ |
| $T_{stg}$ | Storage temperature | | -55~150 | ℃ |

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## CHARACTERISTICS

**Tj=25℃ unless otherwise specified**

| SYMBOL | PARAMETER | CONDITIONS | MIN | TYP. | MAX | UNIT |
|---|---|---|---|---|---|---|
| $V_{(BR)CEO}$ | Collector-emitter breakdown voltage | $I_C$=50mA ;$I_B$=0 | 120 | | | V |
| $V_{CEsat}$ | Collector-emitter saturation voltage | $I_C$=3A ;$I_B$=0.3A | | | 1.5 | V |
| $I_{CBO}$ | Collector cut-off current | $V_{CB}$=160V; $I_E$=0 | | | 10 | μA |
| $I_{EBO}$ | Emitter cut-off current | $V_{EB}$=6V; $I_C$=0 | | | 10 | μA |
| $h_{FE}$ | DC current gain | $I_C$=3A ; $V_{CE}$=4V | 50 | | 180 | |
| $C_{OB}$ | Output capacitance | $I_E$=0 ; $V_{CB}$=10V,f=1MHz | | 200 | | pF |
| $f_T$ | Transition frequency | $I_C$=0.5A ; $V_{CE}$=12V | | 20 | | MHz |

Switching times

| | | | | | | |
|---|---|---|---|---|---|---|
| $t_{on}$ | Turn-on time | $I_C$=4A;$R_L$=10Ω<br>$I_{B1}$=- $I_{B2}$=0.4A<br>$V_{CC}$=40V | | 0.13 | | Ms |
| $t_s$ | Storage time | | | 3.50 | | Ms |
| $t_f$ | Fall time | | | 0.32 | | Ms |

◆ **$h_{FE}$ Classifications**

| O | P | Y |
|---|---|---|
| 50-100 | 70-140 | 90-180 |

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**PACKAGE OUTLINE**

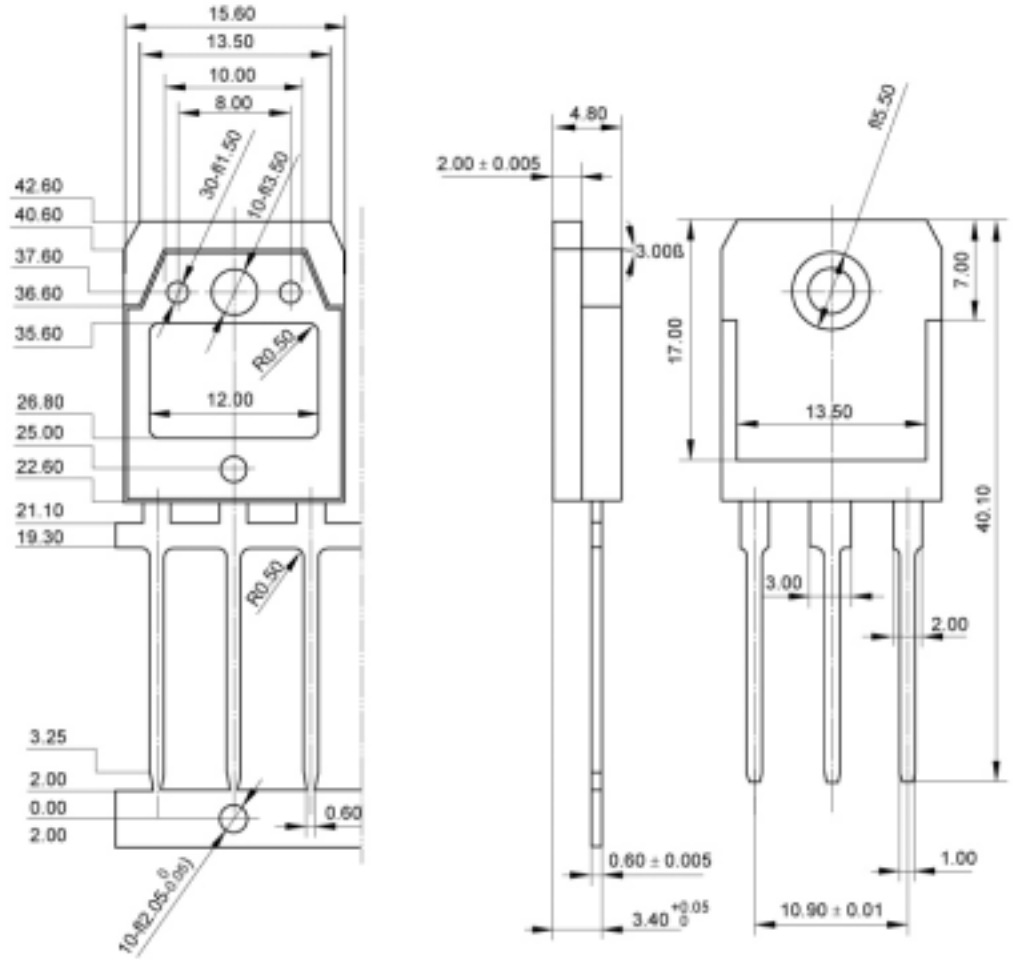



**Fig.2 outline dimensions (unindicated tolerance:±0.1mm)**

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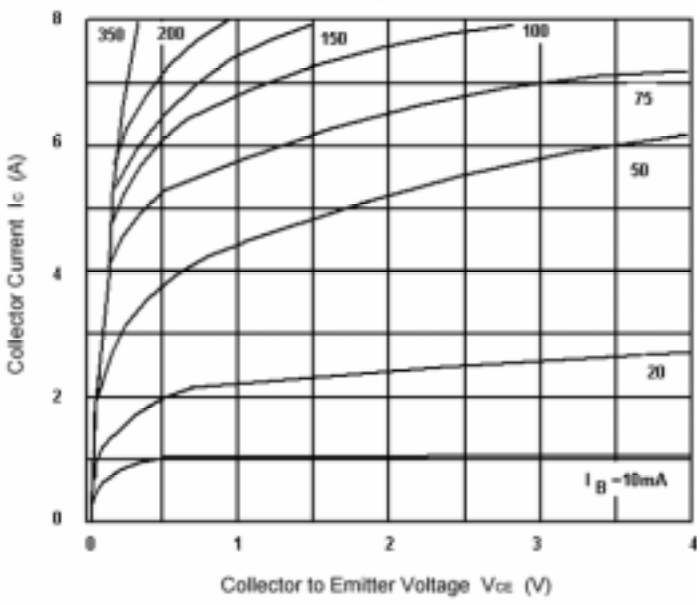



Fig.3 Static Characteristic

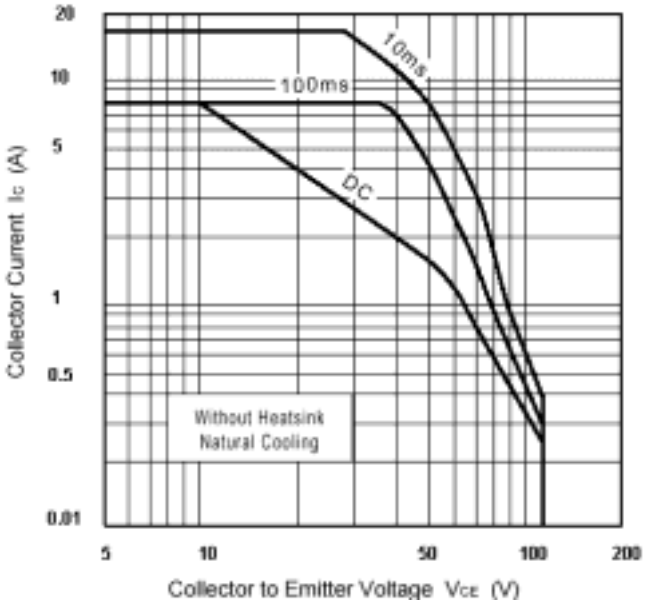



Fig.4 Safe Operating Area

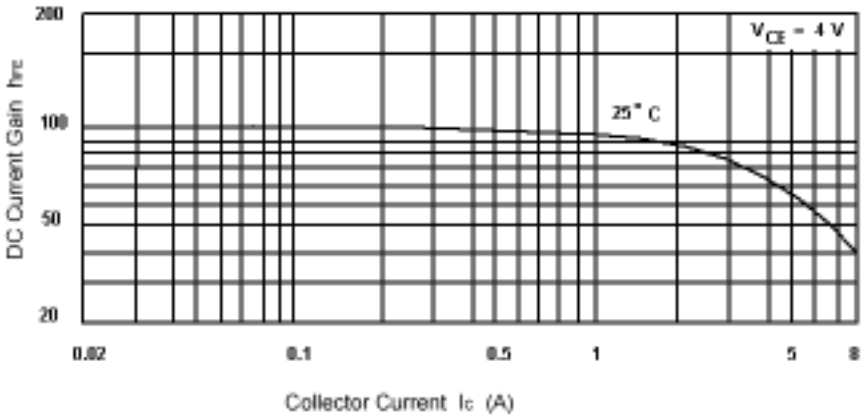



Fig.5 DC current Gain