

Silicon NPN Power Transistors

2SC4706

DESCRIPTION

- With TO-3PN package
- High voltage switching transistor

APPLICATIONS

- For switching regulator and general purpose applications

PINNING

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

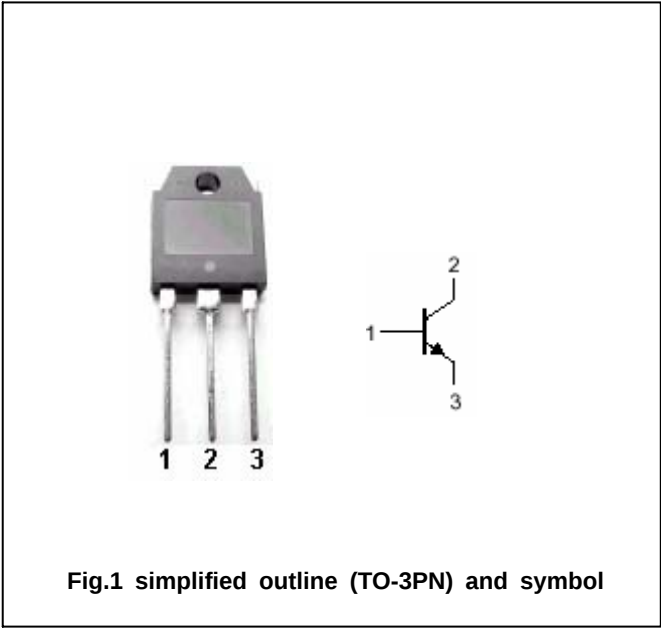


Fig.1 simplified outline (TO-3PN) and symbol

Absolute maximum ratings(Ta= )

| SYMBOL    | PARAMETER                   | CONDITIONS     | VALUE   | UNIT |
|-----------|-----------------------------|----------------|---------|------|
| $V_{CBO}$ | Collector-base voltage      | Open emitter   | 900     | V    |
| $V_{CEO}$ | Collector-emitter voltage   | Open base      | 600     | V    |
| $V_{EBO}$ | Emitter-base voltage        | Open collector | 7       | V    |
| $I_C$     | Collector current           |                | 14      | A    |
| $I_{CM}$  | Collector current-peak      |                | 28      | A    |
| $I_B$     | Base current                |                | 7       | A    |
| $P_C$     | Collector power dissipation | $T_C=25$       | 130     | 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  | $I_C=10mA$ ; $I_B=0$       | 600 |      |     | V    |
| $I_{CBO}$     | Collector cut-off current            | $V_{CB}=800V$ ; $I_E=0$    |     |      | 0.1 | mA   |
| $I_{EBO}$     | Emitter cut-off current              | $V_{EB}=7V$ ; $I_C=0$      |     |      | 0.1 | mA   |
| $h_{FE}$      | DC current gain                      | $I_C=7A$ ; $V_{CE}=4V$     | 10  |      | 25  |      |
| $V_{CE(sat)}$ | Collector-emitter saturation voltage | $I_C=7A$ ; $I_B=1.4A$      |     |      | 0.5 | V    |
| $V_{BE(sat)}$ | Base-emitter saturation voltage      | $I_C=7A$ ; $I_B=1.4A$      |     |      | 1.2 | V    |
| $f_T$         | Transition frequency                 | $V_{CE}=12V$ ; $I_E=-1.5A$ |     | 6    |     | MHz  |
| $C_{OB}$      | Collector output capacitance         | $V_{CB}=10V$ ; $f=1MHz$    |     | 160  |     | pF   |

## Switching times

|          |              |                                                                                 |  |  |     |         |
|----------|--------------|---------------------------------------------------------------------------------|--|--|-----|---------|
| $t_{on}$ | Turn-on time | $I_C=7A$ ; $R_L=35.7\Omega$<br>$I_{B1}=1.05A$ ; $I_{B2}=-3.5A$<br>$V_{CC}=250V$ |  |  | 1.0 | $\mu s$ |
| $t_s$    | Storage time |                                                                                 |  |  | 5.0 | $\mu s$ |
| $t_f$    | Fall time    |                                                                                 |  |  | 0.7 | $\mu s$ |

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Fig.2 outline dimensions (unindicated tolerance:  $\pm 0.1\text{mm}$ )

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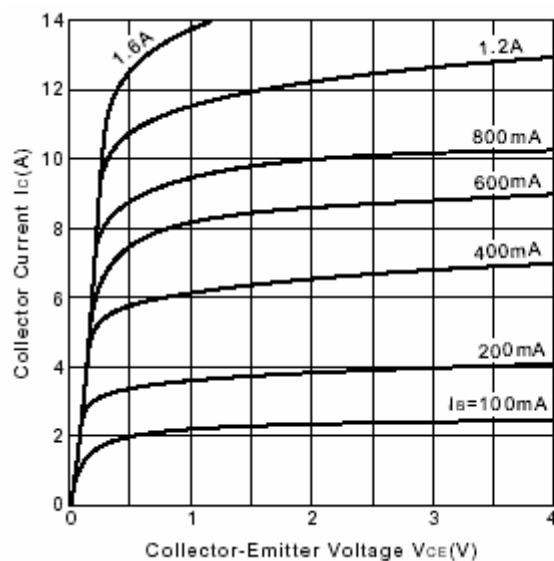


Fig.3 Static Characteristic

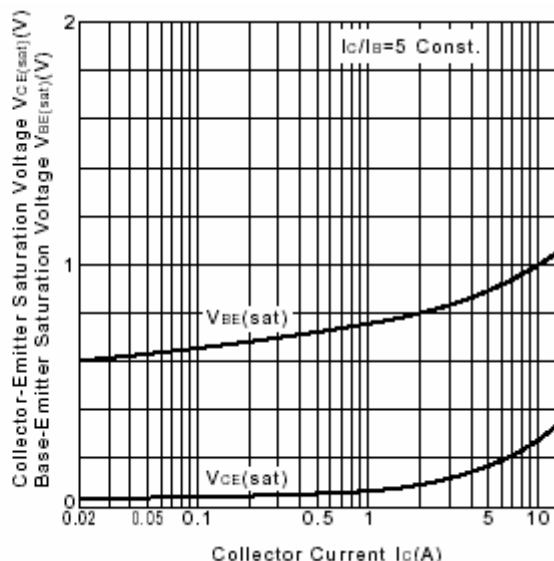
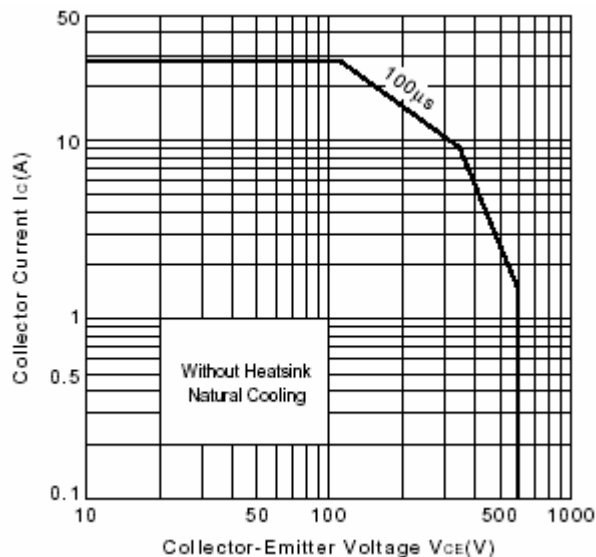
Fig.4 Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage

Fig.5 Safe Operating Area

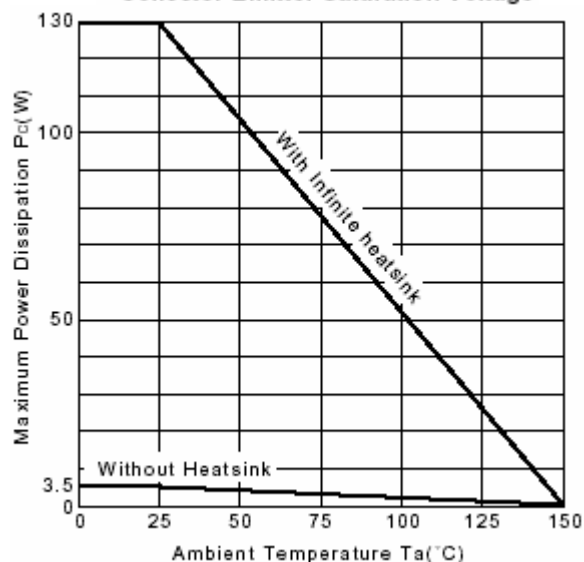


Fig.6 Pc-Ta Derating

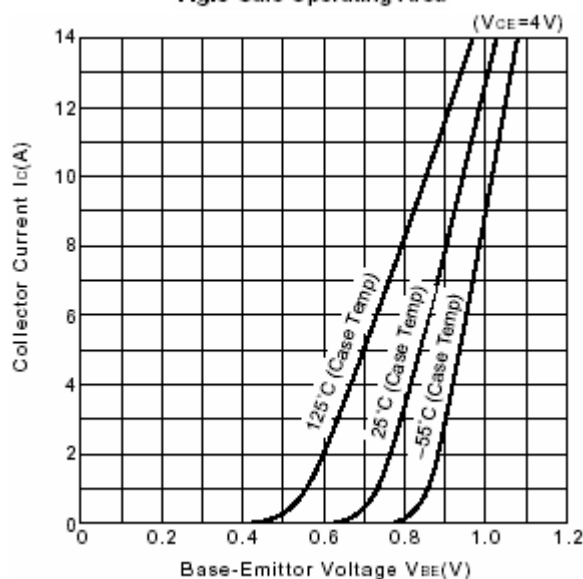
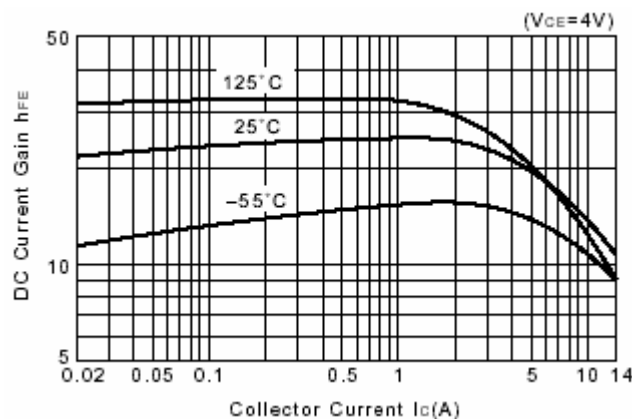
Fig.7  $I_C$ - $V_{BE}$ 

Fig.8 DC current Gain