

## Silicon NPN Power Transistors

## 2SC4517 2SC4517A

## DESCRIPTION

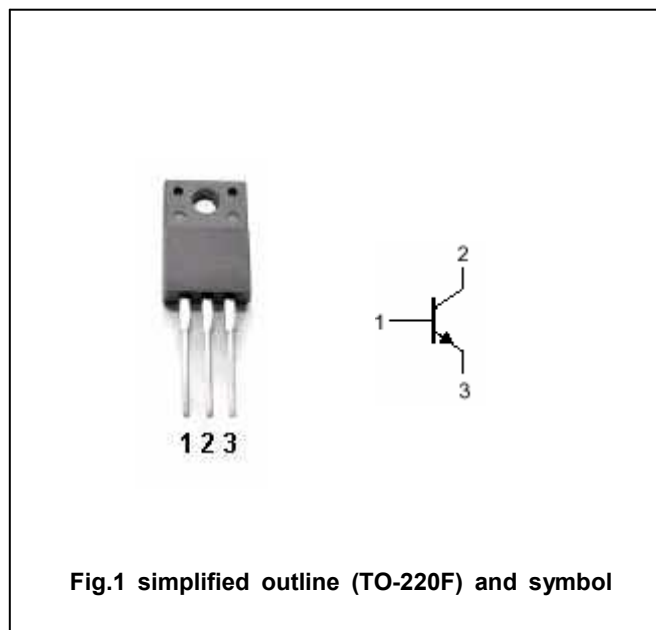
- With TO-220F package
- High voltage switching transistor

## APPLICATIONS

- For switching regulator and general purpose applications

## PINNING

| PIN | DESCRIPTION |
|-----|-------------|
| 1   | Base        |
| 2   | Collector   |
| 3   | Emitter     |



## Absolute maximum ratings (Ta=25℃)

| SYMBOL           | PARAMETER                   |          | CONDITIONS          | VALUE   | UNIT |
|------------------|-----------------------------|----------|---------------------|---------|------|
| V <sub>CBO</sub> | Collector-base voltage      | 2SC4517  | Open emitter        | 900     | V    |
|                  |                             | 2SC4517A |                     | 1000    |      |
| V <sub>CEO</sub> | Collector-emitter voltage   |          | Open base           | 550     | V    |
| V <sub>EBO</sub> | Emitter-base voltage        |          | Open collector      | 7       | V    |
| I <sub>C</sub>   | Collector current           |          |                     | 3       | A    |
| I <sub>CM</sub>  | Collector current-pulse     |          |                     | 6       | A    |
| I <sub>B</sub>   | Base current                |          |                     | 1.5     | A    |
| P <sub>C</sub>   | Collector power dissipation |          | T <sub>C</sub> =25℃ | 30      | W    |
| T <sub>j</sub>   | Junction temperature        |          |                     | 150     | ℃    |
| T <sub>stg</sub> | Storage temperature         |          |                     | -55~150 | ℃    |

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## CHARACTERISTICS

Tj=25°C unless otherwise specified

| SYMBOL        | PARAMETER                            | CONDITIONS                        | MIN | TYP. | MAX | UNIT    |
|---------------|--------------------------------------|-----------------------------------|-----|------|-----|---------|
| $V_{(BR)CEO}$ | Collector-emitter breakdown voltage  | $I_C=10mA$ ; $I_B=0$              | 550 |      |     | V       |
| $V_{CEsat}$   | Collector-emitter saturation voltage | $I_C=1A$ ; $I_B=0.2A$             |     |      | 0.5 | V       |
| $V_{BEsat}$   | Base-emitter saturation voltage      | $I_C=1A$ ; $I_B=0.2A$             |     |      | 1.2 | V       |
| $I_{CBO}$     | Collector cut-off current            | $V_{CB}=800V$ ; $I_E=0$           |     |      | 100 | $\mu A$ |
| $I_{EBO}$     | Emitter cut-off current              | $V_{EB}=7V$ ; $I_C=0$             |     |      | 100 | $\mu A$ |
| $h_{FE}$      | DC current gain                      | $I_C=1A$ ; $V_{CE}=4V$            | 10  |      | 30  |         |
| $C_{OB}$      | Output capacitance                   | $I_E=0$ ; $V_{CB}=10V$ ; $f=1MHz$ |     | 35   |     | pF      |
| $f_T$         | Transition frequency                 | $I_E=-0.25A$ ; $V_{CE}=12V$       |     | 6    |     | MHz     |

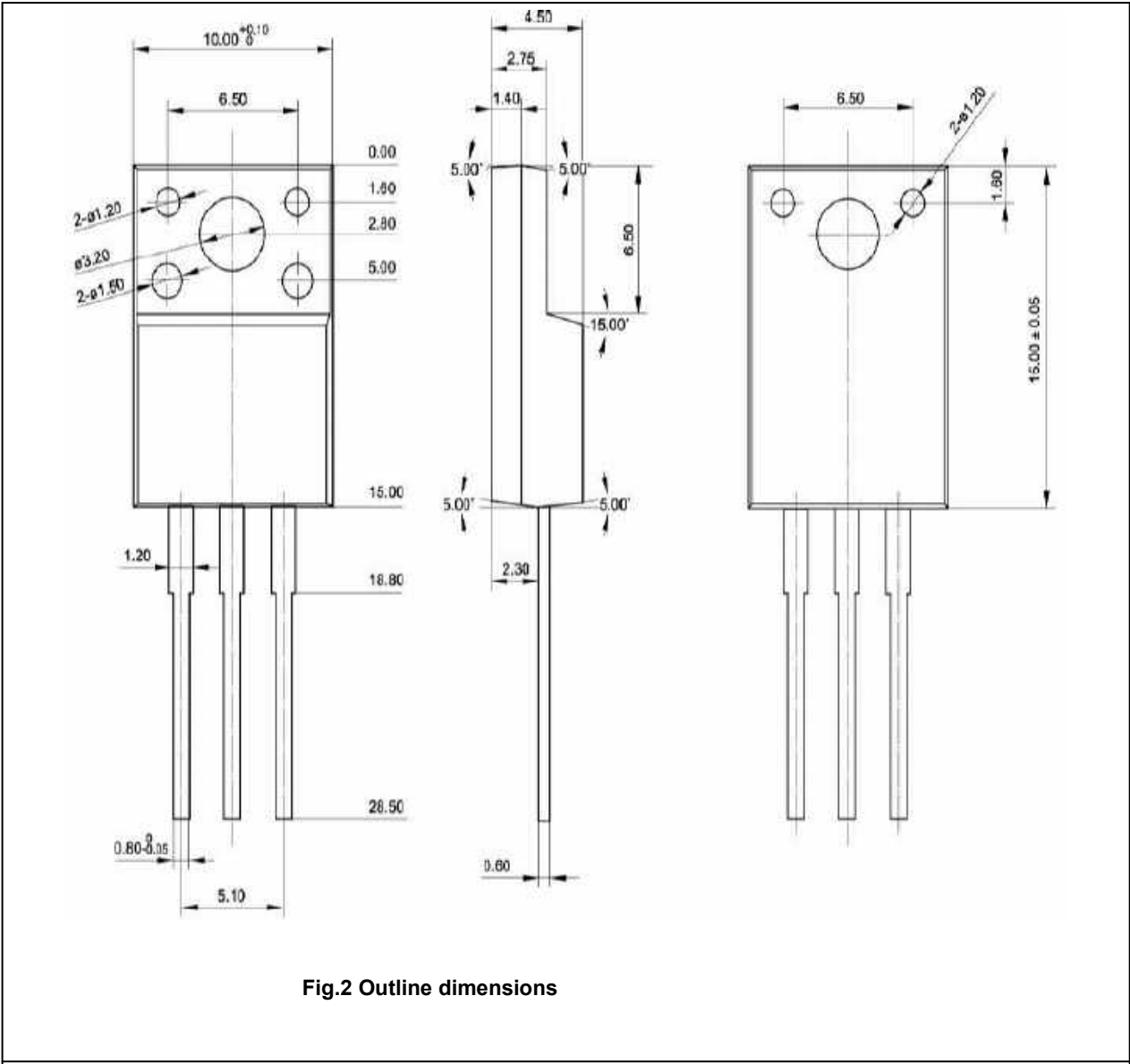
## Switching times

|          |              |                                                                                 |  |  |     |         |
|----------|--------------|---------------------------------------------------------------------------------|--|--|-----|---------|
| $t_{on}$ | Turn-on time | $I_C=1.0A$ $I_{B1}=0.15A$<br>$I_{B2}=-0.45A$<br>$V_{CC}=250V$ , $R_L=250\Omega$ |  |  | 0.7 | $\mu s$ |
| $t_s$    | Storage time |                                                                                 |  |  | 4.0 | $\mu s$ |
| $t_f$    | Fall time    |                                                                                 |  |  | 0.5 | $\mu s$ |

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PACKAGE OUTLINE



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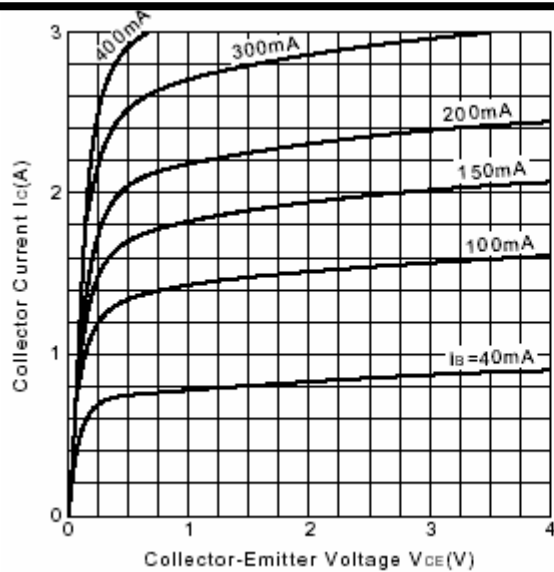


Fig.3 Static Characteristic

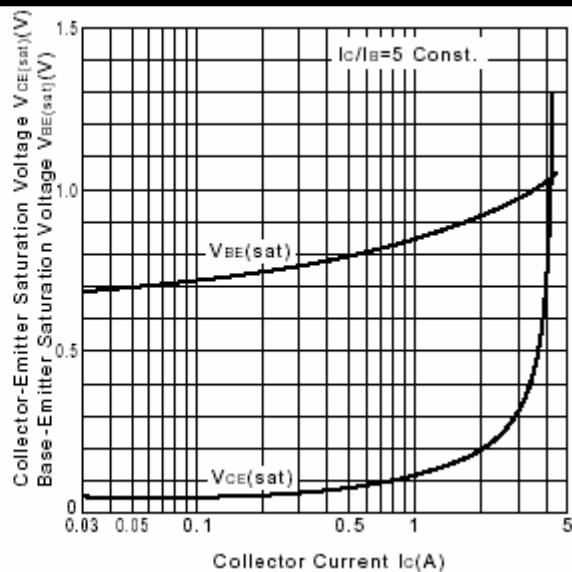
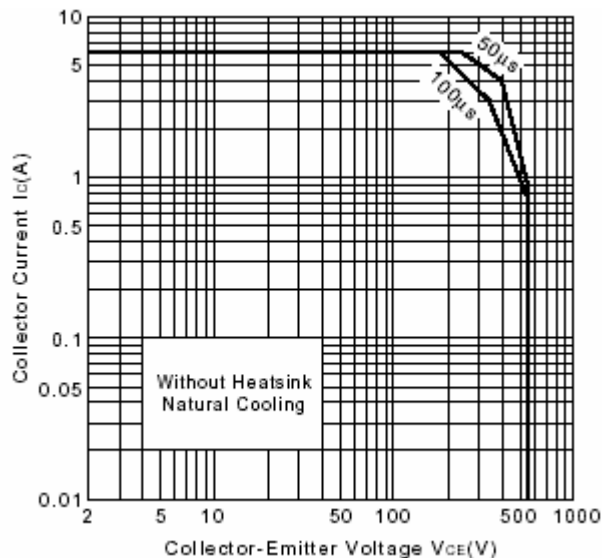
Fig.4 Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage

Fig.5 Safe Operating Area

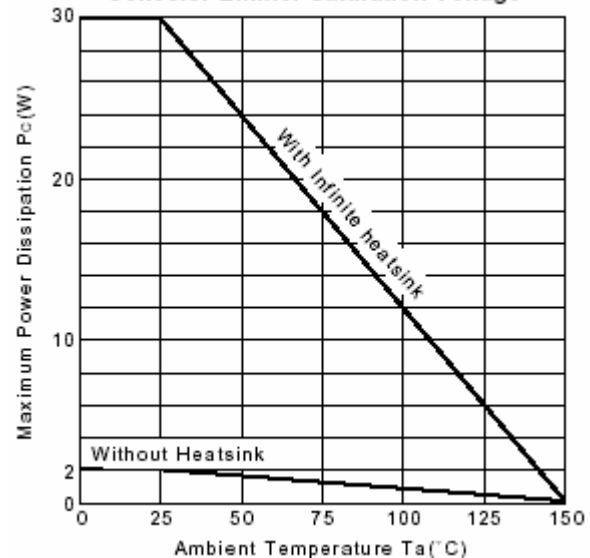
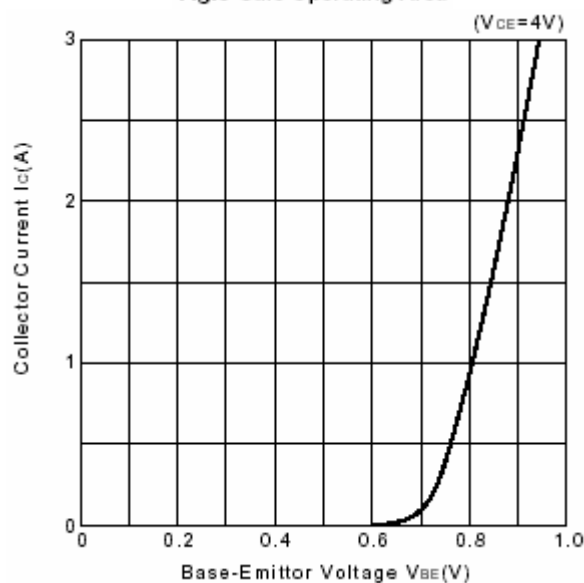
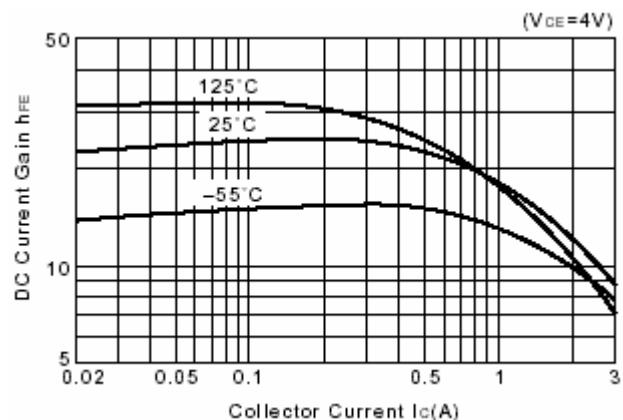
Fig.6  $P_C$ - $T_a$  DeratingFig.7  $I_C$ - $V_{BE}$ 

Fig.8 DC current Gain