# Silicon NPN Power Transistors 2SC5239

## DESCRIPTION

- With TO-220C package
- High voltage,high speed switching

## APPLICATIONS

- For switching regulator and general purpose applications

**PINNING**

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

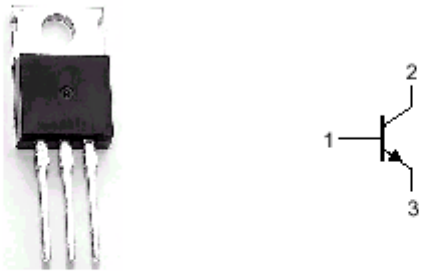


Fig.1 simplified outline (TO-220C) and symbol

**Absolute maximum ratings(Ta=25℃)**

| SYMBOL | PARAMETER | CONDITIONS | VALUE | UNIT |
|---|---|---|---|---|
| $V_{CBO}$ | Collector-base voltage | Open emitter | 900 | V |
| $V_{CEO}$ | Collector-emitter voltage | Open base | 550 | V |
| $V_{EBO}$ | Emitter-base voltage | Open collector | 7 | V |
| $I_C$ | Collector current | | 3 | A |
| $I_{CM}$ | Collector current-Peak | | 6 | A |
| $I_B$ | Base current | | 1.5 | A |
| $P_C$ | Collector dissipation | $T_C$=25℃ | 50 | 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 | 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 | μA |
| $I_{EBO}$ | Emitter cut-off current | $V_{EB}$=7V; $I_C$=0 | | | 100 | μA |
| $h_{FE}$ | DC current gain | $I_C$=1A ; $V_{CE}$=4V | 10 | | 30 | |
| $f_T$ | Transition frequency | $I_E$=-0.25A ; $V_{CE}$=12V | | 6 | | MHz |
| $C_{ob}$ | Collector output capacitance | f=1MHz ; $V_{CB}$=10V | | 35 | | pF |
| Switching times | | | | | | |
| $t_{on}$ | Turn-on time | $I_C$=1A; $I_{B1}$=0.15A ;$I_{B2}$=-0.45A<br>$V_{CC}$=250V; $R_L$=250Ω | | | 0.7 | μs |
| $t_s$ | Storage time | | | | 4.0 | μs |
| $t_f$ | Fall time | | | | 0.5 | μs |

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**PACKAGE OUTLINE**

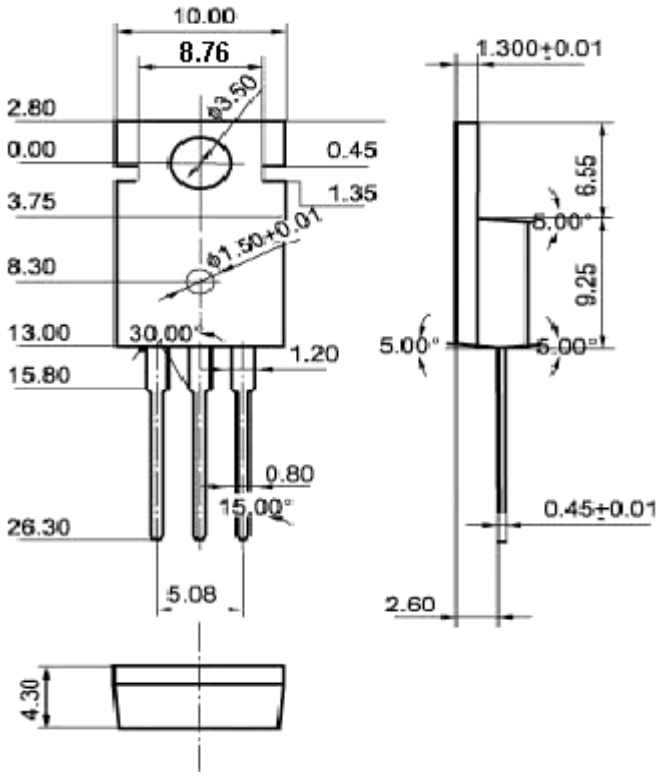


**Fig.2 Outline dimensions (unindicated tolerance:±0.10 mm)**

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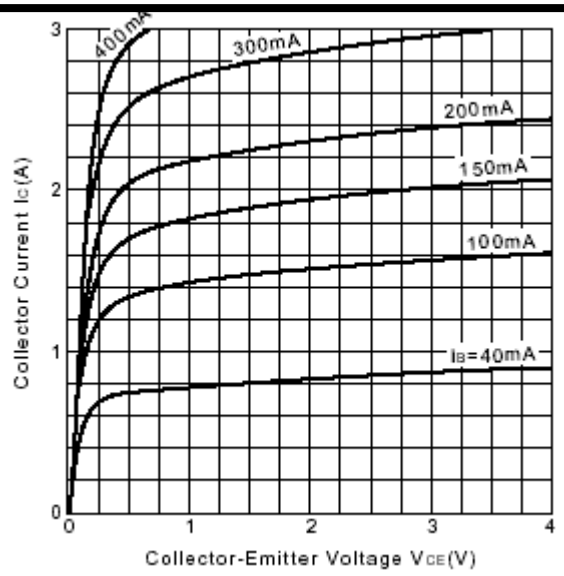


**Fig.3 Static Characteristic**

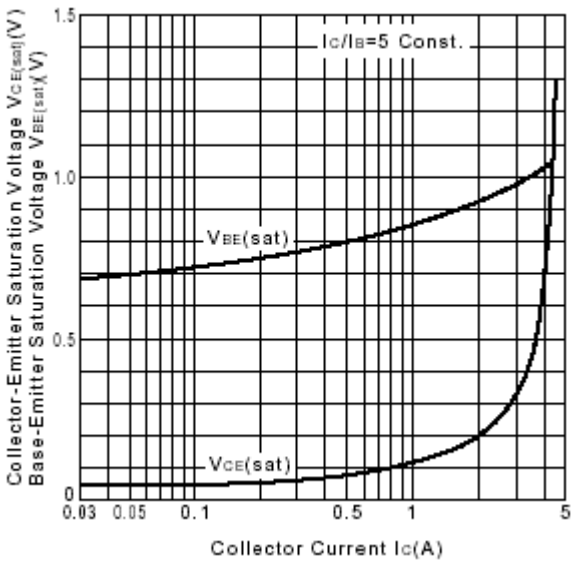


**Fig.4 Base-Emitter Saturation Voltage Collector-Emitter Saturation Voltage**

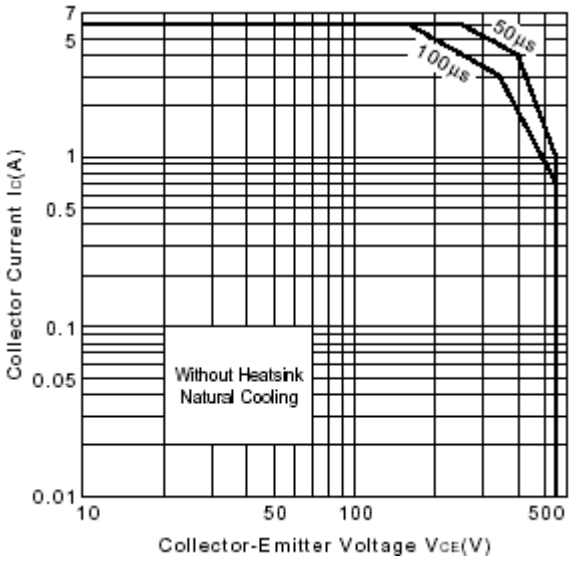


**Fig.5 Safe Operating Area**

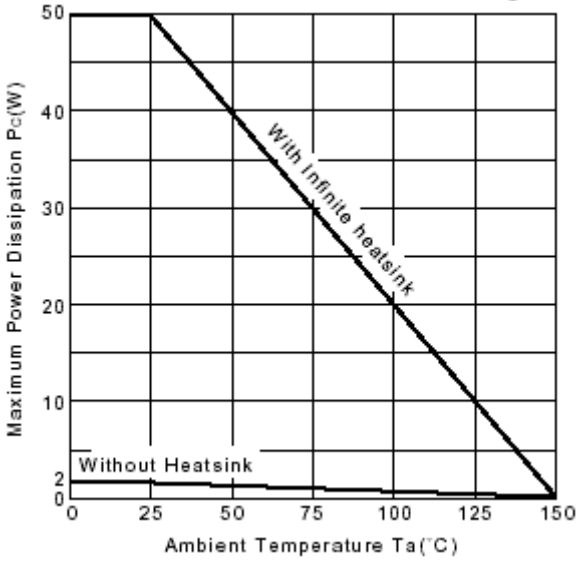


**Fig.6 Pc-Ta Derating**

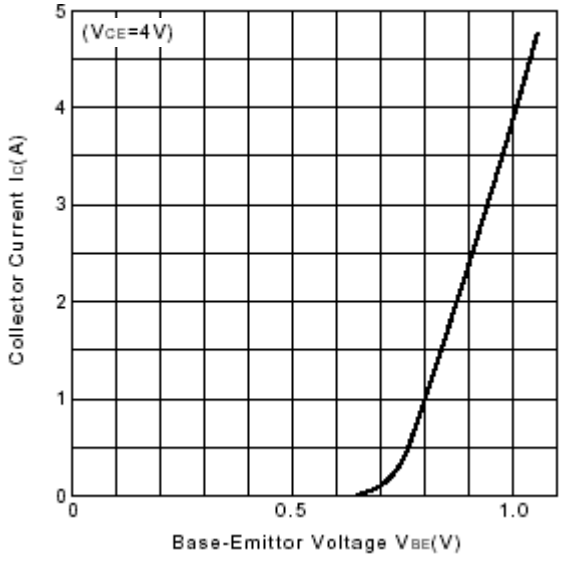


**Fig.7 IC-VBE**

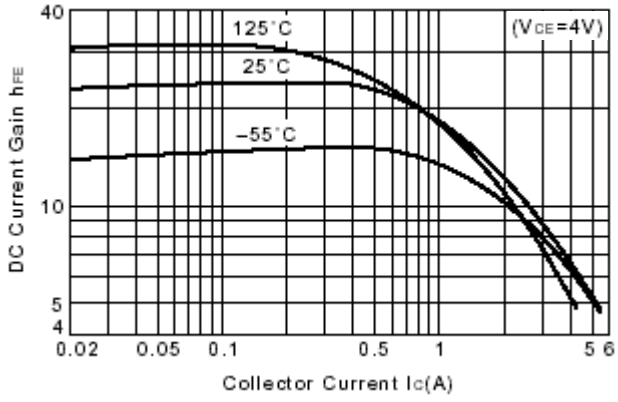


**Fig.8 DC current Gain**