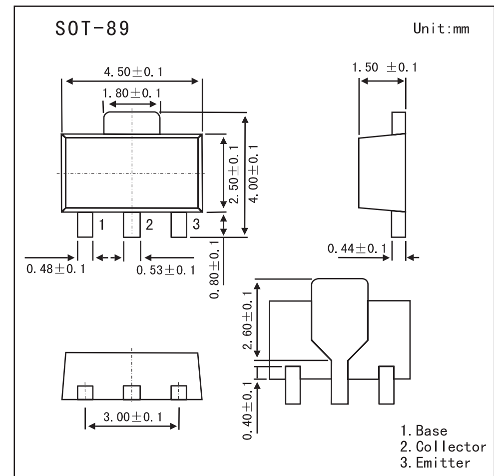
# NPN Epitaxial Planar Silicon Transistor

# 2SC4390




## Features

- Adoption of MBIT process.
- High DC current gain ($h_{FE}$=800 to 3200).
- Large current capacity ($I_C$=2A).
- Low collector-to-emitter saturation voltage ($V_{CE(sat)} \leqslant 0.3V$).
- High $V_{EBO}$ ($V_{EBO} \geqslant 15V$).

## Absolute Maximum Ratings Ta = 25℃

| Parameter | Symbol | Rating | Unit |
|---|---|---|---|
| Collector-base voltage | $V_{CBO}$ | 20 | V |
| Collector-emitter voltage | $V_{CEO}$ | 10 | V |
| Emitter-base voltage | $V_{EBO}$ | 15 | V |
| Collector current | $I_C$ | 2 | A |
| Collector current (pulse) | $I_{CP}$ | 4 | A |
| Base current | $I_B$ | 0.4 | A |
| Collector dissipation | $P_C$ | 500 | mW |
| Junction temperature | $T_j$ | 150 | ℃ |
| Storage temperature | $T_{stg}$ | -55 to +150 | ℃ |

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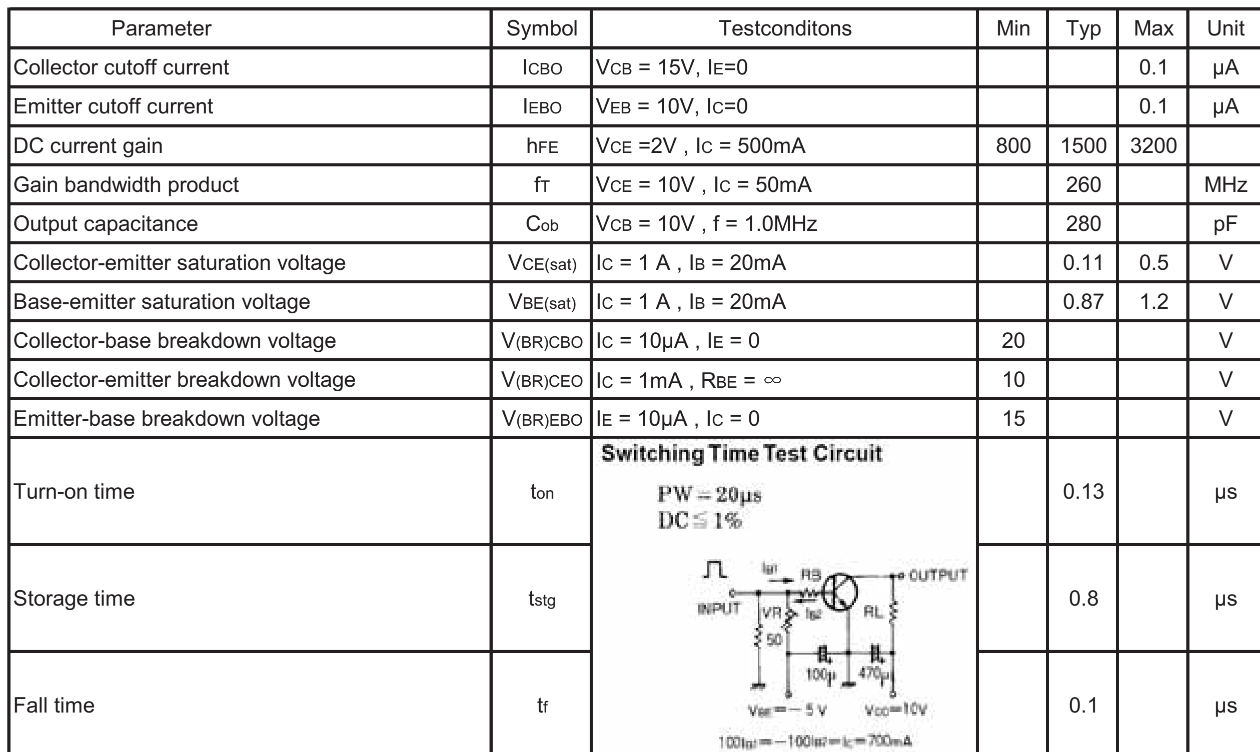
■ Electrical Characteristics Ta = 25℃



| Parameter | Symbol | Testconditons | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Collector cutoff current | $I_{CBO}$ | $V_{CB}$ = 15V, $I_E$=0 | | | 0.1 | μA |
| Emitter cutoff current | $I_{EBO}$ | $V_{EB}$ = 10V, $I_C$=0 | | | 0.1 | μA |
| DC current gain | $h_{FE}$ | $V_{CE}$ =2V , $I_C$ = 500mA | 800 | 1500 | 3200 | |
| Gain bandwidth product | $f_T$ | $V_{CE}$ = 10V , $I_C$ = 50mA | | 260 | | MHz |
| Output capacitance | $C_{ob}$ | $V_{CB}$ = 10V , f = 1.0MHz | | 280 | | pF |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C$ = 1 A , $I_B$ = 20mA | | 0.11 | 0.5 | V |
| Base-emitter saturation voltage | $V_{BE(sat)}$ | $I_C$ = 1 A , $I_B$ = 20mA | | 0.87 | 1.2 | V |
| Collector-base breakdown voltage | $V_{(BR)CBO}$ | $I_C$ = 10μA , $I_E$ = 0 | 20 | | | V |
| Collector-emitter breakdown voltage | $V_{(BR)CEO}$ | $I_C$ = 1mA , $R_{BE}$ = ∞ | 10 | | | V |
| Emitter-base breakdown voltage | $V_{(BR)EBO}$ | $I_E$ = 10μA , $I_C$ = 0 | 15 | | | V |
| Turn-on time | $t_{on}$ | Switching Time Test Circuit<br>PW = 20μs<br>DC ≦ 1%<br>INPUT, VR, 50, RB, $I_{B1}$, $I_{B2}$, RL, OUTPUT, 100μ, 470μ<br>$V_{BE}$ = −5 V, $V_{CC}$ = 10V<br>$10I_{B1}$ = $-10I_{B2}$ = $I_C$ = 700mA | | 0.13 | | μs |
| Storage time | $t_{stg}$ | | | 0.8 | | μs |
| Fall time | $t_f$ | | | 0.1 | | μs |