# Low $V_{CE(sat)}$ Transistor (Strobe flash) (−20V, −10A)

## 2SA1834

### ●Features

1) Low saturation voltage, typically $V_{CE(sat)}$ = −0.16V at $I_C$ / $I_B$ = −4A / −50mA.
2) High current capacity, typically $I_C$ = −10A for DC operation and −15A for 10ms pulse.
3) Complements the 2SC5001.

### ●Packaging specifications and $h_{FE}$

| Type | 2SA1834 |
|---|---|
| Package | CPT3 |
| $h_{FE}$ | RS |
| Code | TL |
| Basic ordering unit (pieces) | 2500 |

### ●Absolute maximum ratings (Ta=25℃)

| Parameter | Symbol | Limits | Unit | |
|---|---|---|---|---|
| Collector-base voltage | $V_{CBO}$ | −30 | V | |
| Collector-emitter voltage | $V_{CEO}$ | −20 | V | |
| Emitter-base voltage | $V_{EBO}$ | −6 | V | |
| Collector current | $I_C$ | −10 | A | |
| | $I_{CP}$ | −15 | A | ✻ |
| Base current | $I_B$ | −2 | A | |
| Collector power dissipation | $P_C$ | 1 | W | |
| | | 10 | W (Tc=25℃) | |
| Junction temperature | Tj | 150 | ℃ | |
| Storage temperature | Tstg | −55～+150 | ℃ | |

✻ Single pulse Pw=10ms

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### ●Electrical characteristics (Ta=25℃)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions | |
|---|---|---|---|---|---|---|---|
| Collector-base breakdown voltage | $BV_{CBO}$ | −30 | — | — | V | $I_C$=−50 μA | |
| Collector-emitter breakdown voltage | $BV_{CEO}$ | −20 | — | — | V | $I_C$=−1mA | |
| Emitter-base breakdown voltage | $BV_{EBO}$ | −6 | — | — | V | $I_E$=−50 μA | |
| Collector cutoff current | $I_{CBO}$ | — | — | −1 | μA | $V_{CB}$=−20V | |
| Emitter cutoff current | $I_{EBO}$ | — | — | −1 | μA | $V_{EB}$=−5V | |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | — | −0.16 | −0.25 | V | $I_C$/$I_B$=−4A/−0.05A | ✻ |
| Base-emitter saturation voltage | $V_{BE(sat)}$ | — | −0.9 | −1.2 | V | $I_C$/$I_B$=−4A/−0.05A | ✻ |
| DC current transfer ratio | $h_{FE1}$ | 120 | — | 560 | — | $V_{CE}$=−2V , $I_C$=−0.5A | ✻ |
| | $h_{FE2}$ | 82 | — | — | — | $V_{CE}$=−2V , $I_C$=−4A | ✻ |
| Transition frequency | $f_T$ | — | 150 | — | MHz | $V_{CE}$=−5V , $I_E$=1.5A , f=50MHz | |
| Output capacitance | Cob | — | 220 | — | pF | $V_{CB}$=−10V , $I_E$=0A , f=1MHz | |

✻ Measured using pulse current.

(96-106-B217)

# Low $V_{CE(sat)}$ Transistor (Strobe flash) (20V, 10A)

## 2SC5001

### ●Features

1) Low saturation voltage, typically $V_{CE(sat)}$ =0.13V at $I_C$ / $I_B$ =4A / 50mA.
2) High current capacity, typically $I_C$=10A for DC operation 15A for 10ms pulse.
3) Complements the 2SA1834.

### ●Packaging specifications and $h_{FE}$

| Type | 2SC5001 |
|---|---|
| Package | CPT3 |
| $h_{FE}$ | QR |
| Code | TL |
| Basic ordering unit (pieces) | 2500 |

### ●Absolute maximum ratings (Ta=25℃)

| Parameter | Symbol | Limits | Unit | |
|---|---|---|---|---|
| Collector-base voltage | $V_{CBO}$ | 30 | V | |
| Collector-emitter voltage | $V_{CEO}$ | 20 | V | |
| Emitter-base voltage | $V_{EBO}$ | 6 | V | |
| Collector current | $I_C$ | 10 | A | |
| | $I_{CP}$ | 15 | A | ✻ |
| Base current | $I_B$ | 2 | A | |
| Collector power dissipation | $P_C$ | 1 | W | |
| | | 10 | W (Tc=25℃) | |
| Junction temperature | Tj | 150 | ℃ | |
| Storage temperature | Tstg | −55～+150 | ℃ | |

✻ Single pulse Pw=10ms

### ●Electrical characteristics (Ta=25℃)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|---|---|---|---|---|---|---|
| Collector-base breakdown voltage | $BV_{CBO}$ | 30 | — | — | V | $I_C$=50 μA |
| Collector-emitter breakdown voltage | $BV_{CEO}$ | 20 | — | — | V | $I_C$=1mA |
| Emitter-base breakdown voltage | $BV_{EBO}$ | 6 | — | — | V | $I_E$=50 μA |
| Collector cutoff current | $I_{CBO}$ | — | — | 1 | μA | $V_{CB}$=20V |
| Emitter cutoff current | $I_{EBO}$ | — | — | 1 | μA | $V_{EB}$=5V |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | — | 0.13 | 0.25 | V | $I_C$/$I_B$=4A/0.05A |
| Base-emitter saturation voltage | $V_{BE(sat)}$ | — | — | 1.2 | V | $I_C$/$I_B$=4A/0.05A |
| DC current transfer ratio | $h_{FE1}$ | 120 | — | 390 | — | $V_{CE}$/$I_C$=5V/0.1A |
| DC current transfer ratio | $h_{FE2}$ | 82 | — | — | — | $V_{CE}$=2V , $I_C$=4A |
| Transition frequency | $f_T$ | — | 150 | — | MHz | $V_{CE}$=5V , $I_E$=−1.5A , f=50MHz |
| Output capacitance | Cob | — | 220 | — | pF | $V_{CB}$=10V , $I_E$=0A , f=1MHz |

(96-193-D217)

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# Low $V_{CE(sat)}$ Transistor (Strobe flash) (20V, 10A)

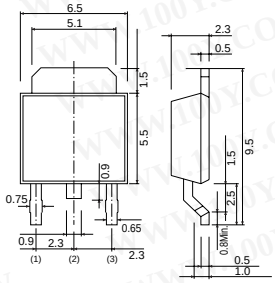
## 2SC5001

### ●Features

1) Low saturation voltage, typically $V_{CE(sat)}$ = 0.13V at $I_C$ / $I_B$= 4A / 50mA.
2) High current capacity, typically $I_C$ = 10A for DC operation and 15A for 10ms pulse.
3) Complements the 2SA1834.

### ●External dimentions (Unit : mm)

CPT3




(1)Base
(2)Collector
(3)Emitter

### ●Packaging specifications and $h_{FE}$

| Type | 2SC5001 |
|---|---|
| Package | CPT3 |
| $h_{FE}$ | QR |
| Code | TL |
| Basic ordering unit (pieces) | 2500 |

### ●Absolute maximum ratings (Ta=25°C)

| Parameter | Symbol | Limits | Unit | |
|---|---|---|---|---|
| Collector-base voltage | $V_{CBO}$ | 30 | V | |
| Collector-emitter voltage | $V_{CEO}$ | 20 | V | |
| Emitter-base voltage | $V_{EBO}$ | 6 | V | |
| Collector current | $I_C$ | 10 | A | |
| | $I_{CP}$ | 15 | A | * |
| Base current | $I_B$ | 2 | A | |
| Collector power dissipation | $P_C$ | 1 | W | |
| | | 10 | W(Tc=25°C) | |
| Junction temperature | $T_j$ | 150 | °C | |
| Storage temperature | Tstg | −55 to +150 | °C | |

* Single pulse Pw=10ms

### ●Electrical characteristics (Ta=25°C)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|---|---|---|---|---|---|---|
| Collector-base breakdown voltage | $BV_{CBO}$ | 30 | – | – | V | $I_C$=50μA |
| Collector-emitter breakdown voltage | $BV_{CEO}$ | 20 | – | – | V | $I_C$=1mA |
| Emitter-base breakdown voltage | $BV_{EBO}$ | 6 | – | – | V | $I_E$=50μA |
| Collector cutoff current | $I_{CBO}$ | – | – | 1 | μA | $V_{CB}$=20V |
| Emitter cutoff current | $I_{EBO}$ | – | – | 1 | μA | $V_{EB}$=5V |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | – | 0.13 | 0.25 | V | $I_C$/$I_B$=4A/0.05A |
| Base-emitter saturation voltage | $V_{BE(sat)}$ | – | 0.9 | 1.2 | V | $I_C$/$I_B$=4A/0.05A |
| DC current transfer ratio | $h_{FE1}$ | 120 | – | 390 | – | $V_{CE}$/$I_C$=2V/0.5A |
| DC current transfer ratio | $h_{FE2}$ | 82 | – | – | – | $V_{CE}$=2V , $I_C$=4A |
| Transition frequency | $f_T$ | – | 150 | – | MHz | $V_{CE}$=5V , $I_E$= −1.5A , f=50MHz |
| Output capacitance | Cob | – | 220 | – | pF | $V_{CB}$=10V , $I_E$=0A , f=1MHz |

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●**Electrical characteristics** (Ta=25°C)

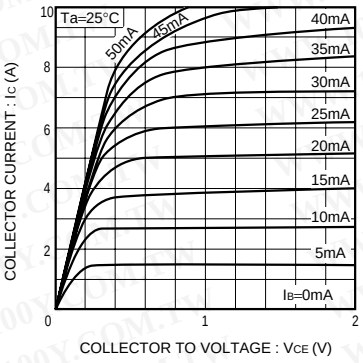


Fig.1 Ground emitter output characteristics

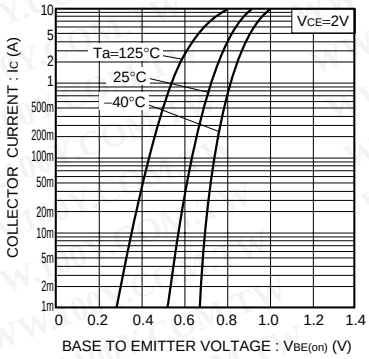


Fig.2 Ground emitter propagation characteristics

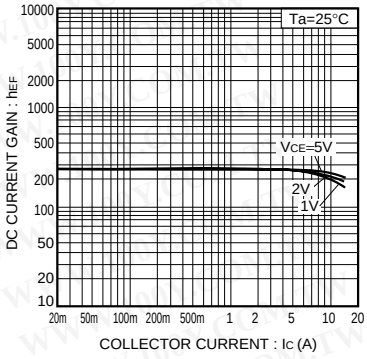


Fig.3 DC current gain vs. collector current

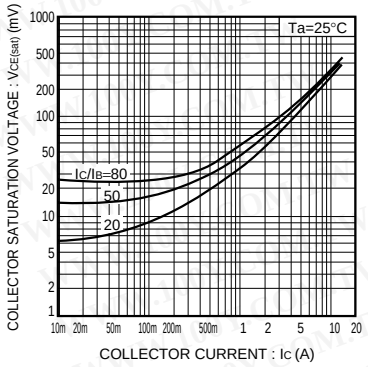


Fig.4 Collector-emitter saturation voltage vs. collector current

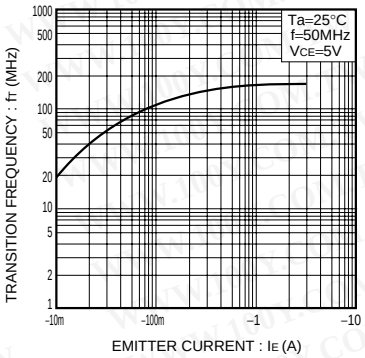


Fig.5 Gain bandwidth product vs. emitter current

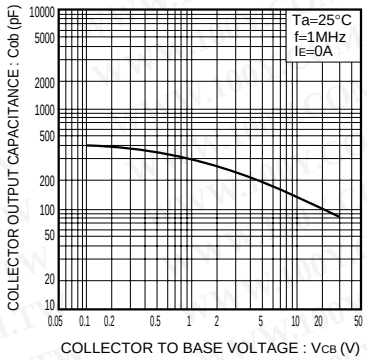


Fig.6 Collector output capacitance vs. collector-base voltage

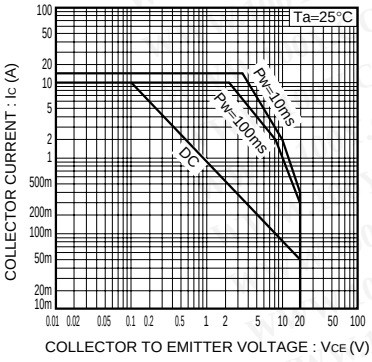


Fig.7 Safe operating area

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