# High-voltage Switching Transistor (Camera strobes and Telephone, Power supply) (−400V, −0.1A)

## 2SA1759

### ● Features

1 ) High breakdown voltage. ($BV_{CEO}$=−400V)
2 ) Low saturation voltage, typically $V_{CE(sat)}$ =−0.2V at $I_C$ / $I_B$=−20mA / −2mA.
3 ) High switching speed, typically tf=1 μs at $I_C$=100mA.
4 ) Wide SOA (safe operating area).
5 ) Complements the 2SA4505.

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

| Type | 2SA1759 |
|---|---|
| Package | MPT3 |
| $h_{FE}$ | P |
| Marking | AH✻ |
| Code | T100 |
| Basic ordering unit (pieces) | 3000 |

✻ Denotes $h_{FE}$

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

| Parameter | Symbol | Limits | Unit |
|---|---|---|---|
| Collector-base voltage | $V_{CBO}$ | −400 | V |
| Collector-emitter voltage | $V_{CEO}$ | −400 | V |
| Emitter-base voltage | $V_{EBO}$ | −7 | V |
| Collector current | $I_C$ | −0.1 | A(DC) |
| | | −0.2 | A(Pulse) ✻1 |
| Collector power dissipation | $P_C$ | 0.5 | W |
| | | 2 ✻2 | |
| Junction temperature | Tj | 150 | ℃ |
| Storage temperature | Tstg | −55~+150 | ℃ |

✻1 Single pulse, Pw=100ms
✻2 When mounted on a 40×40×0.7 mm ceramic board.

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

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|---|---|---|---|---|---|---|
| Collector-base breakdown voltage | $BV_{CBO}$ | −400 | — | — | V | $I_C$=−50 μA |
| Collector-emitter breakdown voltage | $BV_{CEO}$ | −400 | — | — | V | $I_C$=−1mA |
| Emitter-base breakdown voltage | $BV_{EBO}$ | −7 | — | — | V | $I_E$=−50 μA |
| Collector cutoff current | $I_{CBO}$ | — | — | −10 | μA | $V_{CB}$=−400V |
| Emitter cutoff current | $I_{EBO}$ | — | — | −10 | μA | $V_{EB}$=−6V |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | — | −0.2 | −0.5 | V | $I_C$/$I_B$=−20mA/−2mA |
| Base-emitter saturation voltage | $V_{BE(sat)}$ | — | — | −1.2 | V | $I_C$/$I_B$=−20mA/−2mA |
| DC current transfer ratio | $h_{FE}$ | 82 | — | 180 | — | $V_{CE}$=−10V , $I_C$=−10mA |
| Transition frequency | $f_T$ | — | 12 | — | MHz | $V_{CE}$=−10V , $I_E$=10mA , f=5MHz |
| Output capacitance | Cob | — | 13 | — | pF | $V_{CB}$=−10V , $I_E$=0A , f=1MHz |
| Turn-on time | $t_{on}$ | — | 0.7 | — | μs | $I_C$=−100mA $R_L$=1.5kΩ |
| Storage time | $t_{stg}$ | — | 1.8 | — | μs | $I_{B1}$=−$I_{B2}$=−10mA |
| Fall time | tf | — | 1 | — | μs | $V_{CC}$≃−150V |

(96-97-A324)

# Power Transistor (400V, 0.1A)

## 2SC4505 / 2SC4620

### ● Features

1 ) High breakdown voltage. ($BV_{CEO}$=400V)
2 ) Low saturation voltage, typically $V_{CE(sat)}$ =0.05V at $I_C$ / $I_B$=10mA / 1mA.
3 ) High switching speed, typically tf=1.7 μs at $I_C$=100mA
4 ) Complements the 2SC4505 and the 2SA1759.

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

| Type | 2SC4505 | 2SC4620 |
|---|---|---|
| Package | MPT3 | ATV |
| $h_{FE}$ | PQ | Q |
| Marking | CE✻ | — |
| Code | T100 | TV2 |
| Basic ordering unit (pieces) | 1000 | 2500 |

✻ Denotes $h_{FE}$

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

| Parameter | | Symbol | Limits | Unit |
|---|---|---|---|---|
| Collector-base voltage | | $V_{CBO}$ | 400 | V |
| Collector-emitter voltage | | $V_{CEO}$ | 400 | V |
| Emitter-base voltage | | $V_{EBO}$ | 7 | V |
| Collector current | | $I_C$ | 0.1 | A |
| | | $I_{CP}$ | 0.2 | A ✻ |
| Collector power dissipation | 2SC4505 | $P_C$ | 0.5 | W |
| | 2SC4620 | | 1 | |
| Junction temperature | | Tj | 150 | ℃ |
| Storage temperature | | Tstg | −55~+150 | ℃ |

✻ Single pulse Pw=20ms Duty=1 / 2

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

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|---|---|---|---|---|---|---|
| Collector-base breakdown voltage | $BV_{CBO}$ | 400 | — | — | V | $I_C$=50 μA |
| Collector-emitter breakdown voltage | $BV_{CEO}$ | 400 | — | — | V | $I_C$=1mA |
| Emitter-base breakdown voltage | $BV_{EBO}$ | 7 | — | — | V | $I_E$=50 μA |
| Collector cutoff current | $I_{CBO}$ | — | — | 10 | μA | $V_{CB}$=400V |
| Emitter cutoff current | $I_{EBO}$ | — | — | 10 | μA | $V_{EB}$=6V |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | — | 0.05 | 0.5 | V | $I_C$=10mA , $I_B$=1mA |
| Base-emitter saturation voltage | $V_{BE(sat)}$ | — | — | 1.5 | V | $I_C$=10mA , $I_B$=1mA |
| DC current transfer ratio | $h_{FE}$ | 82 | — | 270 | — | $V_{CE}$/$I_C$=10V/10mA |
| Transition frequency | $f_T$ | — | 20 | — | MHz | $V_{CE}$=10V , $I_E$=−10mA , f=10MHz |
| Output capacitance | Cob | — | 7 | — | pF | $V_{CB}$=10V , $I_E$=0A , f=1MHz |
| Turn-on time | $t_{on}$ | — | 1 | — | μs | $I_C$=100mA |
| Storage time | $t_{stg}$ | — | 5.5 | — | μs | $I_{B1}$=−$I_{B2}$=10mA |
| Fall time | tf | — | 1.7 | — | μs | $V_{CC}$≃−150V |

(96-178-C300)