

2SA1812 / 2SA1727 / 2SA1776

Transistors

High-voltage Switching Transistor (-400V, -0.5A)

2SA1812 / 2SA1727 / 2SA1776

●Features

- 1) High breakdown voltage, $BV_{CEO} = -400V$.
- 2) Low saturation voltage, typically $V_{CE(sat)} = -0.3V$ at $I_C / I_B = -100mA / -10mA$.
- 3) High switching speed, typically $t_f : 1\mu s$ at $I_C = -100mA$.
- 4) Wide SOA (safe operating area).

●Absolute maximum ratings (Ta=25°C)

| 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 | -0.5 | A (DC) |
| | | -1.0 | A (Pulse) *1 |
| Collector power dissipation | Pc | 0.5 | W |
| | | 2 | W *2 |
| | | 1 | W |
| | | 10 | W (Tc=25°C) |
| | | 1 | W *3 |
| Junction temperature | T_J | 150 | °C |
| Storage temperature | T_{stg} | -55 to +150 | °C |

*1 Single pulse *2 When mounted on a 40×40×0.7mm ceramic board.

*3 When t = 1.7mm and the foil collector area on the PC board is 1cm² or greater.

●Packaging specifications and hFE

| Type | 2SA1812 | 2SA1727 | 2SA1776 |
|------------------------------|---------|---------|---------|
| Package | MPT3 | CPT3 | ATV |
| hFE | PQ | PQ | PQ |
| Marking | AJ* | — | — |
| Code | T100 | TL | TV2 |
| Basic ordering unit (pieces) | 3000 | 3000 | 2500 |

* Denotes hFE

●Electrical characteristics (Ta=25°C)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|--------------------------------------|------------------|------|------|------|---------|---|
| Collector-base breakdown voltage | BV_{CBO} | -400 | — | — | V | $I_C = -50\mu A$ |
| Collector-emitter breakdown voltage | BV_{CEO} | -400 | — | — | V | $I_C = -1mA$ |
| Emitter-base breakdown voltage | BV_{EBO} | -7 | — | — | V | $I_E = -50\mu A$ |
| Collector cutoff current | I_{CBO} | — | — | -10 | μA | $V_{CB} = -400V$ |
| Emitter cutoff current | I_{EBO} | — | — | -10 | μA | $V_{EB} = -6V$ |
| DC current transfer ratio | hFE | 82 | 150 | 270 | — | $V_{CE} = -5V, I_C = 50mA$ |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | — | — | -1 | V | $I_C / I_B = -100mA / -10mA$ |
| Base-emitter saturation voltage | $V_{BE(sat)}$ | — | — | -1.2 | V | $I_C / I_B = -100mA / -10mA$ |
| Transition frequency | f _t | — | 12 | — | MHz | $V_{CB} = -5V, I_E = 50mA, f = 5MHz$ |
| Output capacitance | C _{ob} | — | 18 | — | pF | $V_{CE} = -10V, I_E = 0A, f = 1MHz$ |
| Turn-on time | t _{on} | — | 0.6 | — | μs | $I_C = -100mA, R_L = 1.5k\Omega$ $I_{B1} = -I_{B2} = -10mA$ $V_{CC} to -150V$ |
| Storage time | t _{stg} | — | 2.7 | — | μs | |
| Fall time | t _f | — | 1 | — | μs | |



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