

Power Transistor (−160V, −1.5A)

2SB1275 / 2SB1236A / 2SB1569A / 2SB1186A

●Features

- 1) High breakdown voltage. ($BV_{CEO} = -160V$)
- 2) Low collector output capacitance. (Typ. 30pF at $V_{CB} = 10V$)
- 3) High transition frequency. ($f_T = 50MHz$)
- 4) Complements the 2SD1918 / 2SD1857A / 2SD2400A / 2SD1763A.

●Packaging specifications and hfe

| Type | 2SB1275 | 2SB1236A | 2SB1569A | 2SB1186A |
|------------------------------|---------|----------|----------|----------|
| Package | CPT3 | ATV | TO-220FN | TO-220FP |
| hFE | NP | PQ | E | DE |
| Code | TL | TV2 | — | — |
| Basic ordering unit (pieces) | 2500 | 2500 | 500 | 500 |

●Absolute maximum ratings (Ta=25°C)

| Parameter | Symbol | Limits | Unit |
|-----------------------------|-----------|----------|--------------|
| Collector-base voltage | V_{CBO} | −160 | V |
| Collector-emitter voltage | V_{CEO} | −160 | V |
| Emitter-base voltage | V_{EBO} | −5 | V |
| Collector current | I_C | −1.5 | A (DC) |
| | | −3 | A (Pulse) *1 |
| Collector power dissipation | P_C | 1 | W (Tc=25°C) |
| | | 10 | |
| | | 1 | W *2 |
| | | 2 | |
| 2SB1569A, 2SB1186A | | 20 | W (Tc=25°C) |
| Junction temperature | T_J | 150 | °C |
| Storage temperature | T_{stg} | −55~+150 | °C |

*1 Single pulse Pw=100ms

*2 Printed circuit board 1.7mm thick, collector plating 1cm² or larger.

●Electrical characteristics (Ta=25°C)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|--------------------------------------|---------------|------|------|------|---------|---------------------------------------|
| Collector-base breakdown voltage | BV_{CBO} | −160 | — | — | V | $I_C = -50 \mu A$ |
| Collector-emitter breakdown voltage | BV_{CEO} | −160 | — | — | V | $I_C = -1mA$ |
| Emitter-base breakdown voltage | BV_{EBO} | −5 | — | — | V | $I_E = -50 \mu A$ |
| Collector cutoff current | I_{CBO} | — | −1 | — | μA | $V_{CB} = -120V$ |
| Emitter cutoff current | I_{EBO} | — | −1 | — | μA | $V_{EB} = -4V$ |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | — | — | −2 | V | $I_C/I_E = -1A/-0.1A$ * |
| Base-emitter saturation voltage | $V_{BE(sat)}$ | — | — | −1.5 | V | $I_C/I_E = -1A/-0.1A$ * |
| DC current transfer ratio | 2SB1275 | hFE | 56 | — | 180 | $V_{CE} = -5V, I_C = -1A$ |
| | 2SB1236A | | 82 | — | 270 | |
| | 2SB1569A | | 100 | — | 200 | |
| | 2SB1186A | | 60 | — | 200 | |
| Transition frequency | f_T | — | 50 | — | MHz | $V_{CE} = -5V, I_E = 0.1A, f = 30MHz$ |
| Output capacitance | C_{ob} | — | 30 | — | pF | $V_{CB} = -10V, I_E = 0A, f = 1MHz$ |

* Measured using pulse current.

(96-612-A58)

Power Transistor (160V, 1.5A)

2SD2211 / 2SD1918 / 2SD1857A / 2SD2400A / 2SD1763A

●Features

- 1) High breakdown voltage. ($BV_{CEO} = 160V$)
- 2) Low collector output capacitance. (Typ. 20pF at $V_{CB} = 10V$)
- 3) High transition frequency. ($f_T = 80MHz$)
- 4) Complements the 2SB1275 / 2SB1236A / 2SB1569A / 2SB1186A.

●Packaging specifications and hfe

| Type | 2SD2211 | 2SD1918 | 2SD1857A | 2SD2400A | 2SD1763A |
|------------------------------|---------|---------|----------|----------|----------|
| Package | MPT3 | CPT3 | ATV | TO-220FN | TO-220FP |
| hFE | Q | Q | PQ | E | DE |
| Marking | DQ* | — | — | — | — |
| Code | T100 | TL | TV2 | — | — |
| Basic ordering unit (pieces) | 1000 | 2500 | 2500 | 500 | 500 |

* Denotes hFE

●Absolute maximum ratings (Ta=25°C)

| Parameter | Symbol | Limits | Unit |
|-----------------------------|-----------|----------|--------------|
| Collector-base voltage | V_{CBO} | 160 | V |
| Collector-emitter voltage | V_{CEO} | 160 | V |
| Emitter-base voltage | V_{EBO} | 5 | V |
| Collector current | I_C | 1.5 | A (DC) |
| | | 3 | A (Pulse) *1 |
| Collector power dissipation | P_C | 1 | W *2 |
| | | 2 | |
| | | 1 | W *3 |
| | | 10 | |
| | | 2 | |
| 2SD2400A, 2SD1763A | | 20 | W (Tc=25°C) |
| Junction temperature | T_J | 150 | °C |
| Storage temperature | T_{stg} | −55~+150 | °C |

*1 Single pulse Pw=100ms

*2 Printed circuit board 1.7mm thick, collector plating 1cm² or larger.

*3 When mounted on a 40 x 40 x 0.7mm ceramic board.

●Electrical characteristics (Ta=25°C)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|--------------------------------------|------------------|------|------|------|---------|---------------------------------------|
| Collector-base breakdown voltage | BV_{CBO} | 160 | — | — | V | $I_C = 50 \mu A$ |
| Collector-emitter breakdown voltage | BV_{CEO} | 160 | — | — | V | $I_C = 1mA$ |
| Emitter-base breakdown voltage | BV_{EBO} | 5 | — | — | V | $I_E = 50 \mu A$ |
| Collector cutoff current | I_{CBO} | — | — | 1 | μA | $V_{CB} = 120V$ |
| Emitter cutoff current | I_{EBO} | — | — | 1 | μA | $V_{EB} = 4V$ |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | — | — | 2 | V | $I_C/I_E = 1A/0.1A$ * |
| Base-emitter saturation voltage | $V_{BE(sat)}$ | — | — | 1.5 | V | $I_C/I_E = 1A/0.1A$ * |
| DC current transfer ratio | 2SD2211, 2SD1918 | hFE | 120 | — | 390 | $V_{CE}/I_C = 5V/0.1A$ |
| | 2SD1857A | | 82 | — | 270 | |
| | 2SD2400A | | 100 | — | 200 | |
| | 2SD1763A | | 60 | — | 200 | |
| Transition frequency | f_T | — | 80 | — | MHz | $V_{CE} = 5V, I_E = -0.1A, f = 30MHz$ |
| Output capacitance | C_{ob} | — | 20 | — | pF | $V_{CB} = 10V, I_E = 0A, f = 1MHz$ |

* Measured using pulse current.

(96-744-C58)