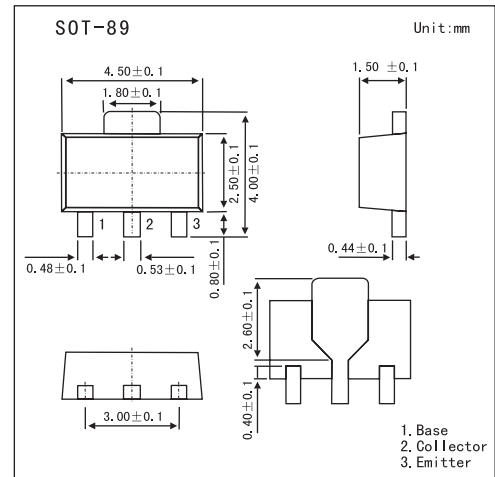


High-Voltage Switching Applications

2SA1418

■ Features

- Adoption of FBET, MBIT Processes
- High Breakdown Voltage and Large Current Capacity
- Fast Switching Speed

■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

| Parameter | Symbol | Rating | Unit |
|-----------------------------|-----------|-------------|------------------|
| Collector-Base Voltage | V_{CB0} | -180 | V |
| Collector-Emitter Voltage | V_{CEO} | -160 | V |
| Emitter-Base Voltage | V_{EB0} | -6 | V |
| Collector Current | I_C | -0.7 | A |
| Collector Current (Pulse) | I_{CP} | -1.5 | A |
| Collector Power Dissipation | P_C | 500 | mW |
| | P_{C^*} | 1.3 | W |
| Junction temperature | T_j | 150 | $^\circ\text{C}$ |
| Storage temperature Range | T_{stg} | -55 to +150 | $^\circ\text{C}$ |

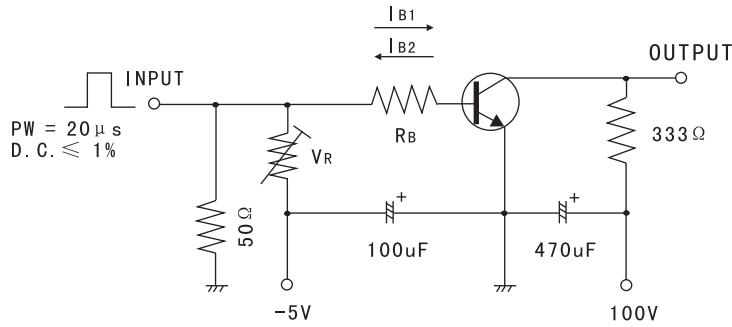
* Mounted on ceramic board (250 mm² x 0.8 mm)

■ Electrical Characteristics $T_a = 25^\circ\text{C}$

| Parameter | Symbol | Testconditions | Min | Typ | Max | Unit |
|--------------------------------------|---------------|---|------|-------|------|---------------|
| Collector Cut-off Current | I_{CBO} | $V_{CB} = -120V, I_E = 0$ | | | -0.1 | μA |
| Emitter Cut-off Current | I_{EBO} | $V_{EB} = -4V, I_C = 0$ | | | -0.1 | μA |
| Collector-Base Breakdown Voltage | $V_{(BR)CBO}$ | $I_C = -10\mu\text{A}, I_E = 0$ | -180 | | | V |
| Collector-Emitter Breakdown Voltage | $V_{(BR)CEO}$ | $I_C = -1\text{mA}, R_{BE} = \infty$ | -160 | | | V |
| Emitter-Base Breakdown Voltage | $V_{(BR)EBO}$ | $I_E = -10\mu\text{A}, I_C = 0$ | -6 | | | V |
| DC Current Gain | h_{FE} | $V_{CE} = -5V, I_C = -100\text{mA}$ | 100 | | 400 | |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C = -250\text{mA}, I_B = -25\text{mA}$ | | -0.2 | -0.5 | V |
| Base-Emitter Saturation Voltage | $V_{BE(sat)}$ | $I_C = -250\text{mA}, I_B = -25\text{mA}$ | | -0.85 | -1.2 | V |
| Gain-Bandwidth Product | f_T | $V_{CE} = -10V, I_C = -50\text{mA}$ | | 120 | | MHz |
| Collector Output Capacitance | C_{ob} | $V_{CB} = -10V, I_E = 0, f = 1\text{MHz}$ | | 11 | | pF |
| Turn-On Time | t_{on} | See Test Circuit. | | 60 | | ns |
| Storage Time | t_{stg} | | | 900 | | |
| Fall Time | t_f | | | 60 | | |

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Test Circuit

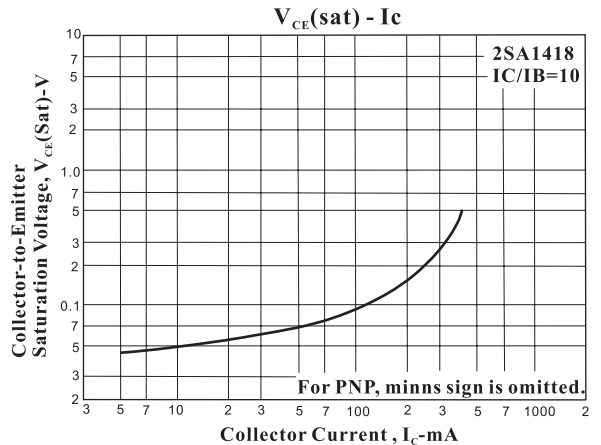
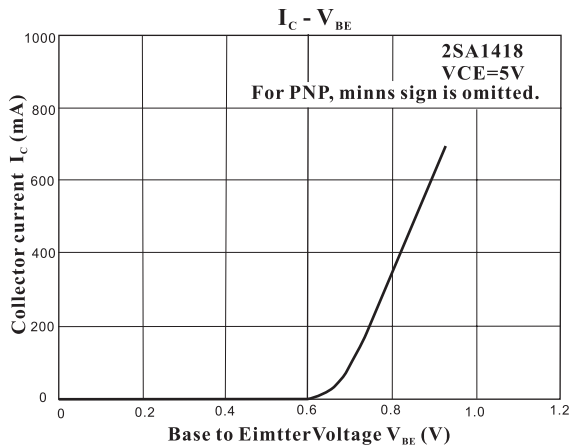
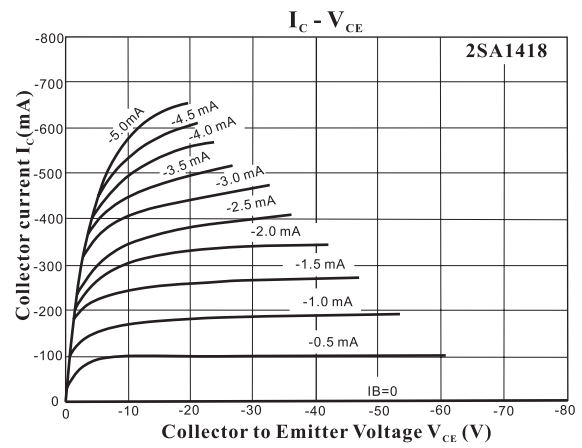
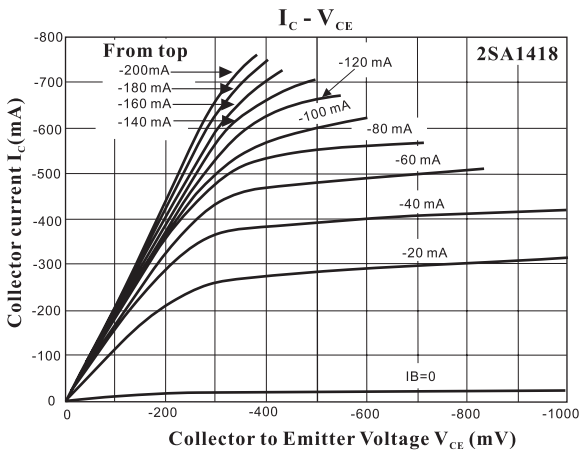


$20I_{B1} = -20I_{B2} = I_C = 300\text{mA}$
 (For PNP, the polarity is reversed.)

hFE Classification

| | | | |
|---------|-----------|-----------|-----------|
| Marking | AD | | |
| Rank | R | S | T |
| hFE | 100 ~ 200 | 140 ~ 280 | 200 ~ 400 |

Electrical Characteristics Curves



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