



2SA1607/2SC4168

High-Speed Switching Applications

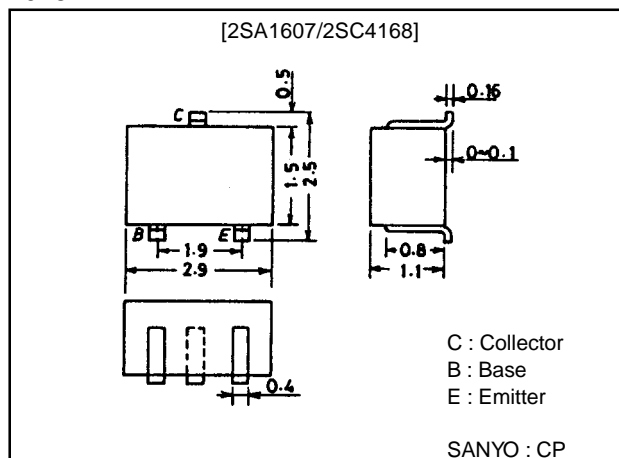
Features

- Fast switching speed.
- High gain-bandwidth product.
- Low saturation voltage.

Package Dimensions

unit:mm

2018A



(): 2SA1607

Specifications

Absolute Maximum Ratings at Ta = 25°C

| Parameter | Symbol | Conditions | Ratings | Unit |
|------------------------------|-----------|------------|-------------|------|
| Collector-to-Base Voltage | V_{CB0} | | (-)40 | V |
| Collector-to-Emitter Voltage | V_{CEO} | | (-)20 | V |
| Emitter-to-Base Voltage | V_{EBO} | | (-)5 | V |
| Collector Current | I_C | | (-)150 | mA |
| Collector Current (Pulse) | I_{CP} | | (-)300 | mA |
| Base Current | I_B | | (-)30 | mA |
| Collector Dissipation | P_C | | 200 | mW |
| Junction Temperature | T_J | | 150 | °C |
| Storage Temperature | T_{stg} | | -55 to +150 | °C |

Electrical Characteristics at Ta = 25°C

| Parameter | Symbol | Conditions | Ratings | | Unit | |
|--------------------------|-----------|----------------------------------|---------|-------|--------|---------|
| | | | min | typ | | max |
| Collector Cutoff Current | I_{CBO} | $V_{CB} = (-)30V, I_E = 0$ | | | (-)0.1 | μA |
| Emitter Cutoff Current | I_{EBO} | $V_{EB} = (-)4V, I_C = 0$ | | | (-)0.1 | μA |
| DC Current Gain | h_{FE} | $V_{CE} = (-)1V, I_C = (-)10mA$ | 60* | | 270* | |
| | | | | | (180) | |
| Gain-Bandwidth Product | f_T | $V_{CE} = (-)10V, I_C = (-)10mA$ | | 700 | | MHz |
| | | | | (400) | | MHz |

Continued on next page.

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SANYO Electric Co., Ltd. Semiconductor Business Headquarters

TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

82098HA (KT)/7129MO/4077TA, TS No.2479-1/5

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Continued from preceding page.

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---|---------------|-----------------------------|---------|---------|--------|------|
| | | | min | typ | max | |
| Output Capacitance | C_{ob} | $V_{CB}=(-)10V, f=1MHz$ | | (2.9) | | pF |
| Collector-to-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=(-)10mA, I_B=(-)1mA$ | | 2.6 | | pF |
| Base-to-Emitter Saturation Voltage | $V_{BE(sat)}$ | $I_C=(-)10mA, I_B=(-)1mA$ | | 0.08 | (-0.2) | V |
| | | | | (-0.07) | | V |
| Collector-to-Base Breakdown Voltage | $V_{(BR)CBO}$ | $I_C=(-)10\mu A, I_E=0$ | | 0.72 | (-1.0) | V |
| | | | | (-0.75) | | V |
| Collector-to-Base Breakdown Voltage | $V_{(BR)CEO}$ | $I_C=(-)1mA, R_{BE}=\infty$ | | | | V |
| Collector-to-Base Breakdown Voltage | $V_{(BR)CEO}$ | $I_C=(-)1mA, R_{BE}=\infty$ | | | | V |
| Emitter-to-Base Breakdown Voltage | $V_{(BR)EBO}$ | $I_E=(-)10\mu A, I_C=0$ | | | | V |
| Delay Time | t_d | See specified Test Circuit | | (14)11 | 20 | ns |
| Rise Time | t_r | See specified Test Circuit | | (11)10 | 20 | ns |
| Storage Time | t_{stg} | See specified Test Circuit | | (80)70 | 180 | ns |
| Fall Time | t_f | See specified Test Circuit | | (16)15 | 25 | ns |

* : The 2SA1607/2SC4168 are classified by 10mA h_{FE} as follows :

| | | | | | | |
|---------|----|---|-----|----|-----|-----|
| 2SA1607 | 60 | 3 | 120 | 90 | 4 | 180 |
| 2SC4168 | 60 | 3 | 120 | 90 | 4 | 180 |
| | | | | | 135 | 5 |
| | | | | | 270 | |

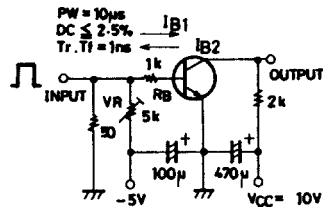
Marking 2SA1607 : YL

2SC4168 : GT

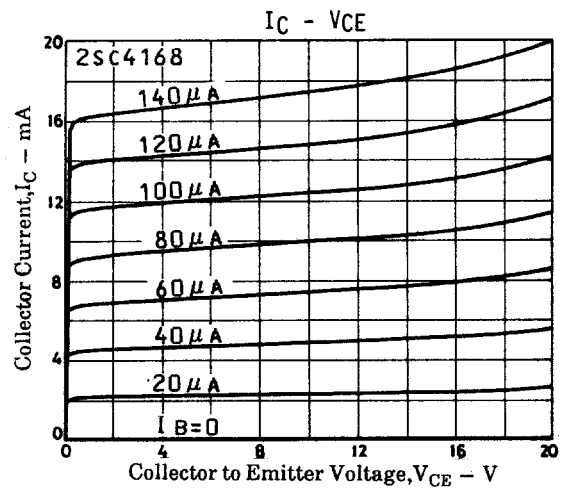
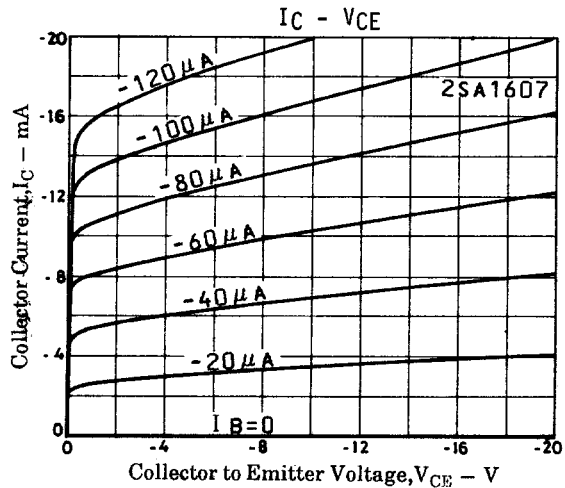
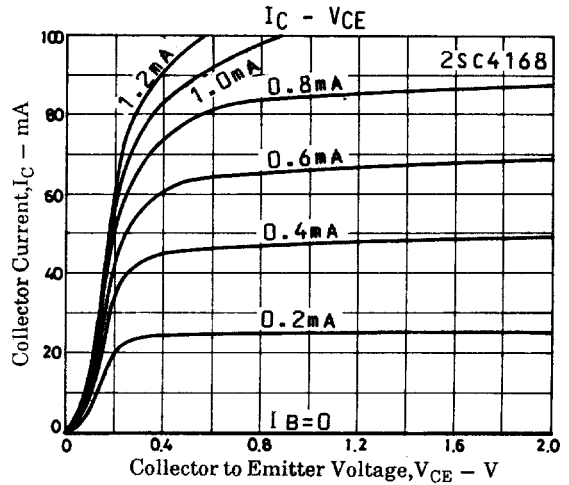
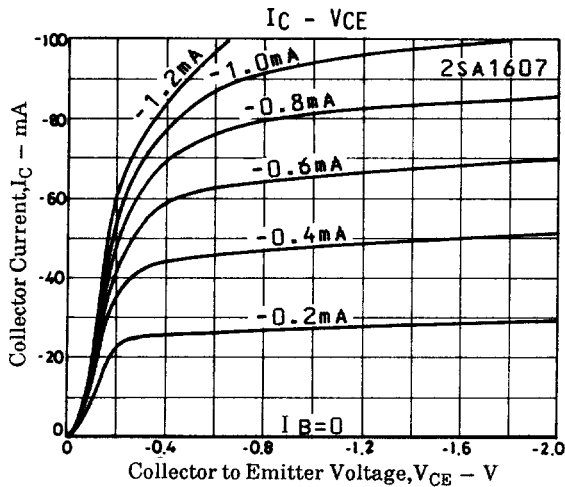
h_{FE} rank 2SA1607 : 3, 4

2SC4168 : 3, 4, 5

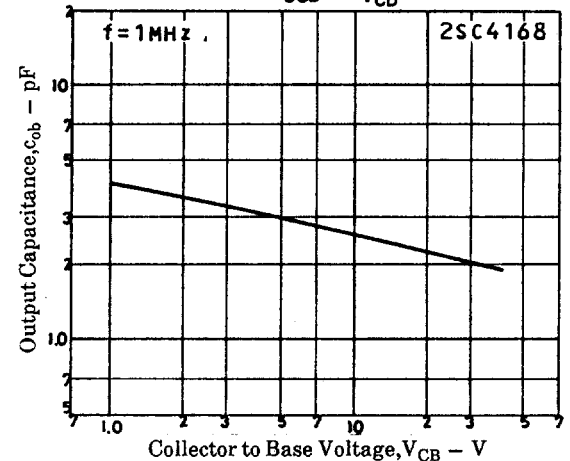
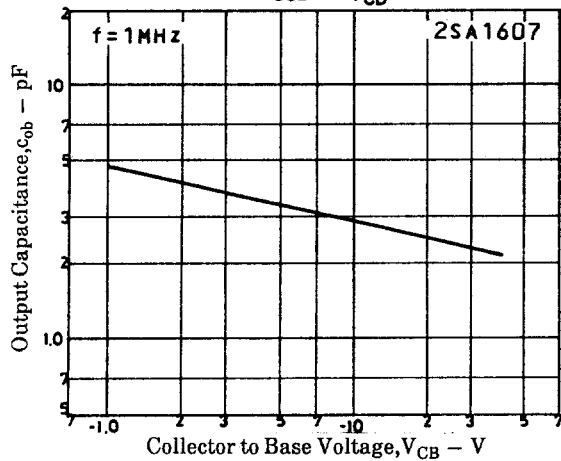
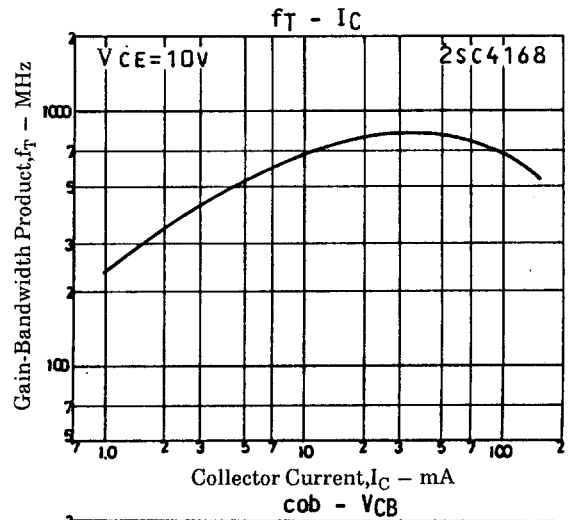
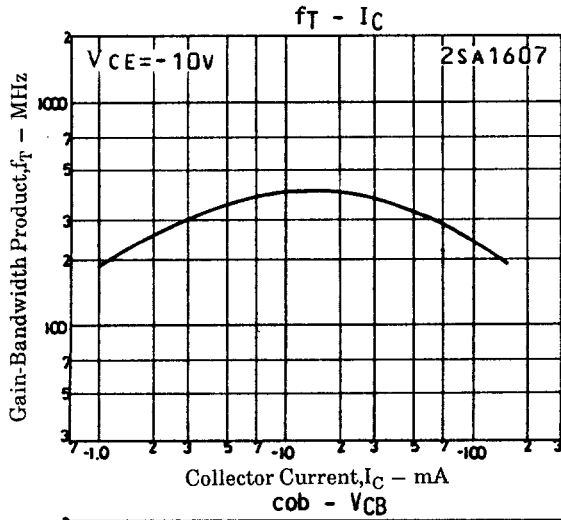
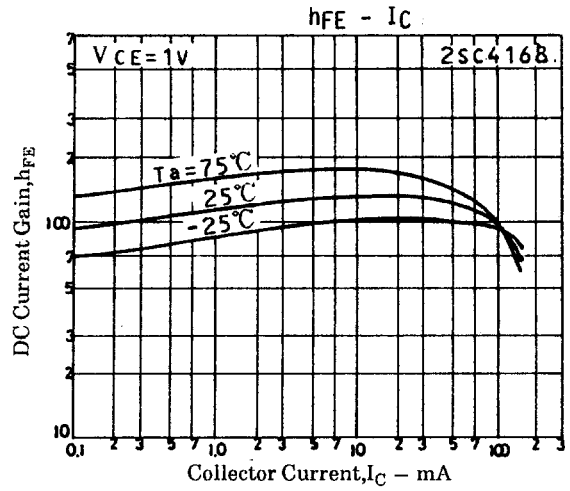
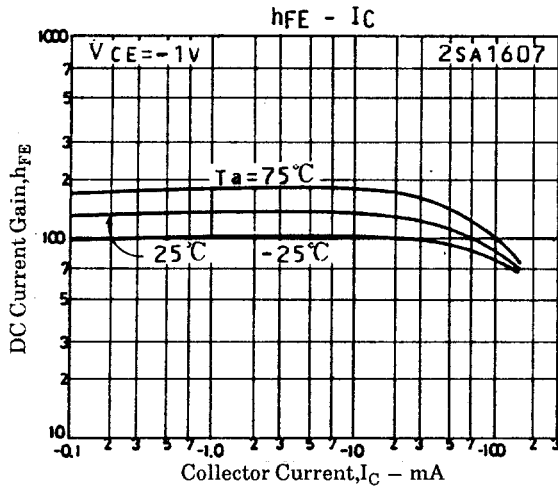
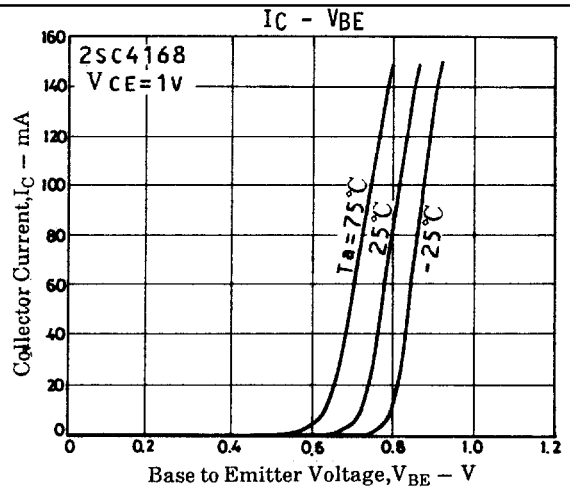
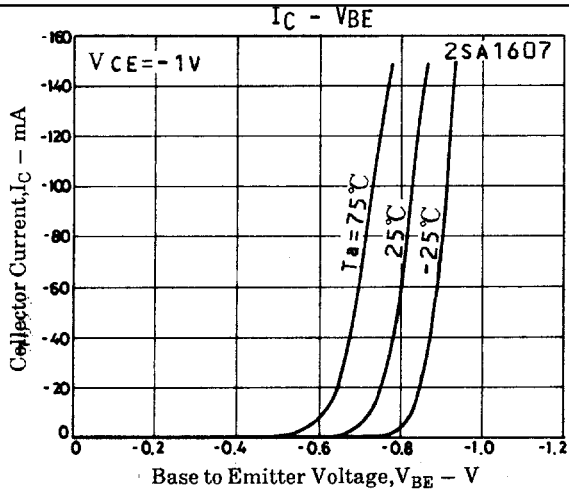
Switching Time Test Circuit



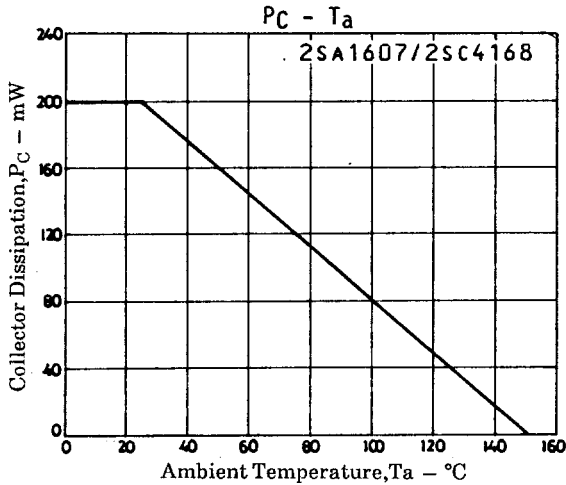
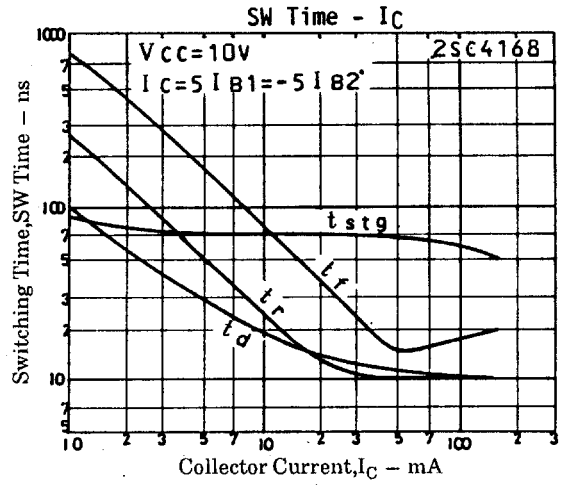
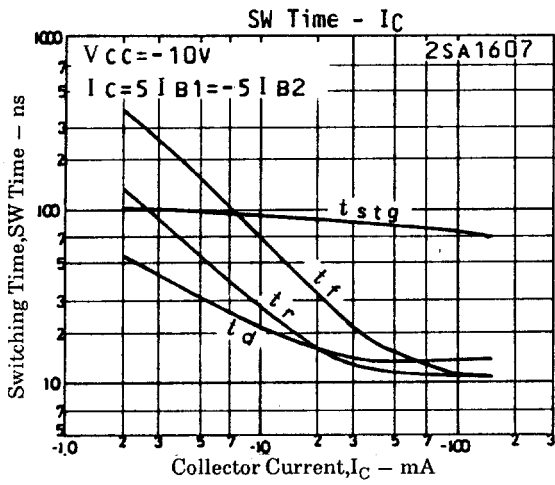
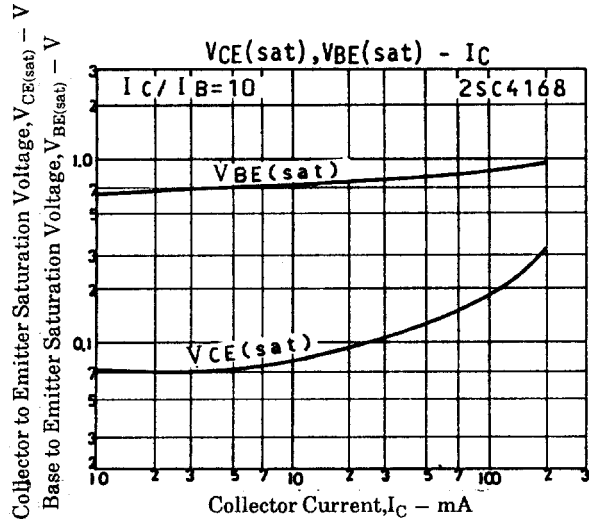
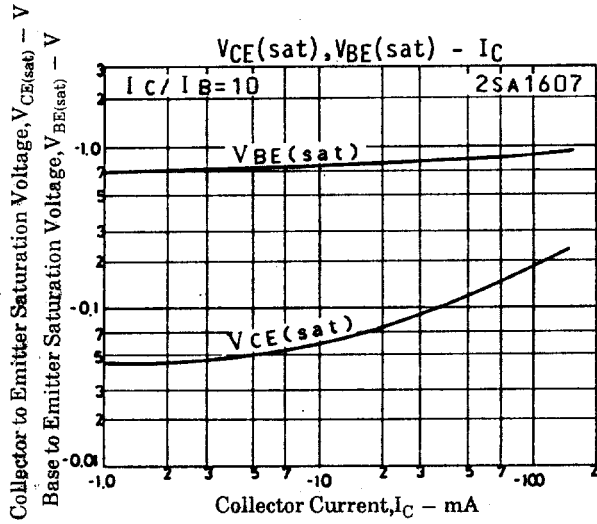
$5I_{B1} = -5I_{B2} = I_C = 50mA$
 (For PNP, the polarity is reserved.)
 Unit (resistance : Ω , capacitance : F)



2SA1607/2SC4168



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