



2SB1124/2SD1624

High Current Switching Applications

Applications

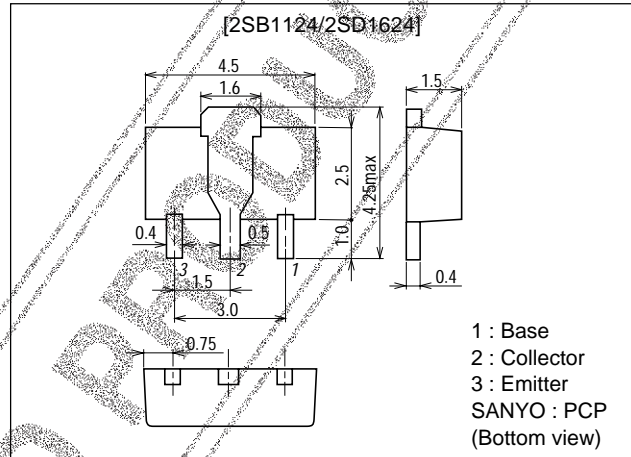
Voltage regulators, relay drivers, lamp drivers, electrical equipment.

Features

- Adoption of FBET, MBIT processes.
- Low collector-to-emitter saturation voltage.
- Fast switching speed.
- Large current capacity and wide ASO.

Package Dimensions

unit:mm
2038A



() : 2SB1124

Specifications

Absolute Maximum Ratings at Ta = 25 C

| Parameter | Symbol | Conditions | Ratings | Unit |
|------------------------------|------------------|--|-------------|------|
| Collector-to-Base Voltage | V _{CB0} | | (-)60 | V |
| Collector-to-Emitter Voltage | V _{CE0} | | (-)50 | V |
| Emitter-to-Base Voltage | V _{EB0} | | (-)6 | V |
| Collector Current | I _C | | (-)3 | A |
| Collector Current (Pulse) | I _{CP} | | (-)6 | A |
| Collector Dissipation | P _C | Mounted on ceramic board (250mm ² ×0.8mm) | 500 | 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} =(-)40V, I _E =0 | | | (-)1 | μA |
| Emitter Cutoff Current | I _{EBO} | V _{EB} =(-)4V, I _C =0 | | | (-)1 | μA |
| DC Current Gain | h _{FE1} | V _{CE} =(-)2V, I _C =(-)100mA | 100* | | 560* | |
| | h _{FE2} | V _{CE} =(-)2V, I _C =(-)3A | 35 | | | |
| Gain-Bandwidth Product | f _T | V _{CE} =(-)10V, I _C =(-)50mA | | 150 | | MHz |

* : The 2SB1124/2SD1624 are classified by 100mA h_{FE} as follows :

Marking 2SB1124 : BG
2SD1624 : DG

Continued on next page.

| Rank | R | S | T | U |
|-----------------|------------|------------|------------|------------|
| h _{FE} | 100 to 200 | 140 to 280 | 200 to 400 | 280 to 560 |

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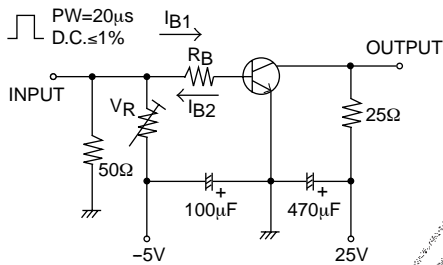
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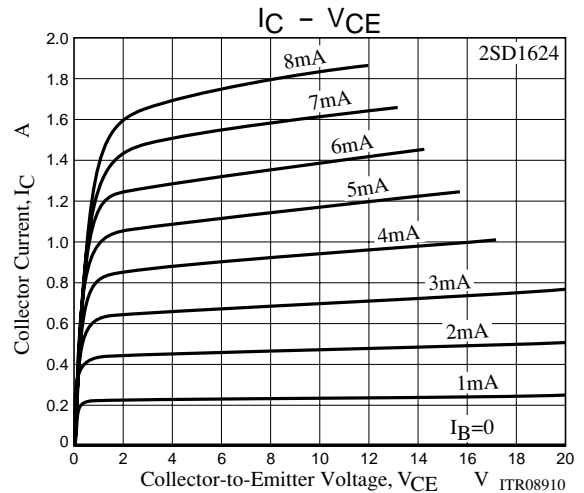
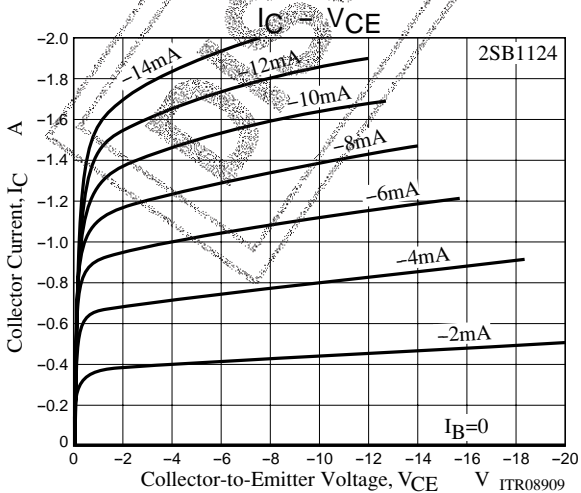
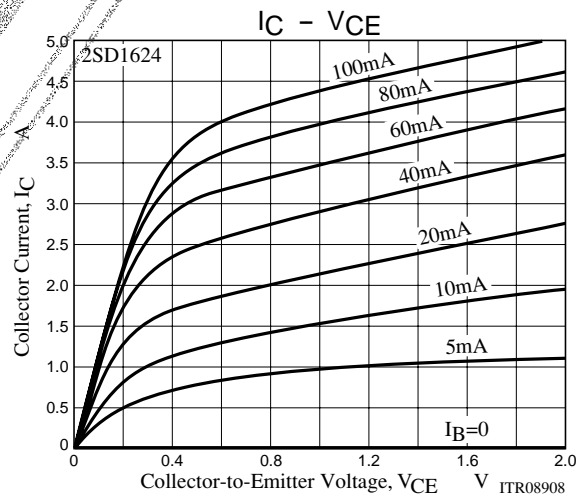
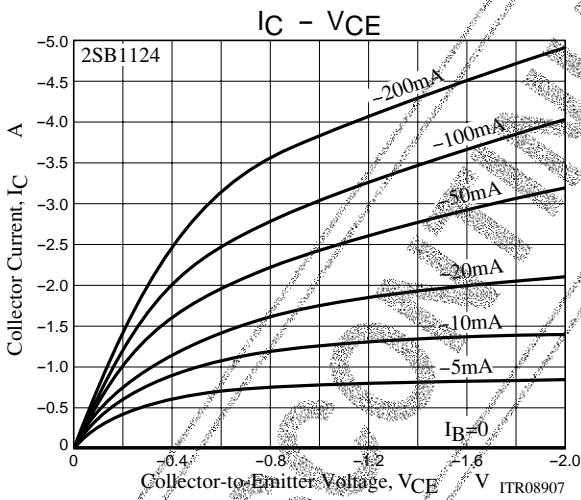
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| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---|---------------|-----------------------------|---------|---------|--------|------|
| | | | min | typ | max | |
| Output Capacitance | C_{ob} | $V_{CB}=(-)10V, f=1MHz$ | | (39) | | pF |
| | | | | 25 | | pF |
| Collector-to-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=(-)2A, I_B=(-)100mA$ | | (-0.35) | (-0.7) | V |
| Base-to-Emitter Saturation Voltage | $V_{BE(sat)}$ | $I_C=(-)2A, I_B=(-)100mA$ | | 0.19 | 0.5 | V |
| Collector-to-Base Breakdown Voltage | $V_{(BR)CBO}$ | $I_C=(-)10\mu A, I_E=0$ | (-60) | | | V |
| Collector-to-Emitter Breakdown Voltage | $V_{(BR)CEO}$ | $I_C=(-)1mA, R_{BE}=\infty$ | (-50) | | | V |
| Emitter-to-Base Breakdown Voltage | $V_{(BR)EBO}$ | $I_E=(-)10\mu A, I_C=0$ | (-6) | | | V |
| Turn-ON Time | t_{on} | See specified Test Circuit. | | 70 | | ns |
| | | | | (70) | | ns |
| Storage Time | t_{stg} | See specified Test Circuit. | | 650 | | ns |
| | | | | (450) | | ns |
| Fall Time | t_f | See specified Test Circuit. | | 35 | | ns |
| | | | | (35) | | ns |

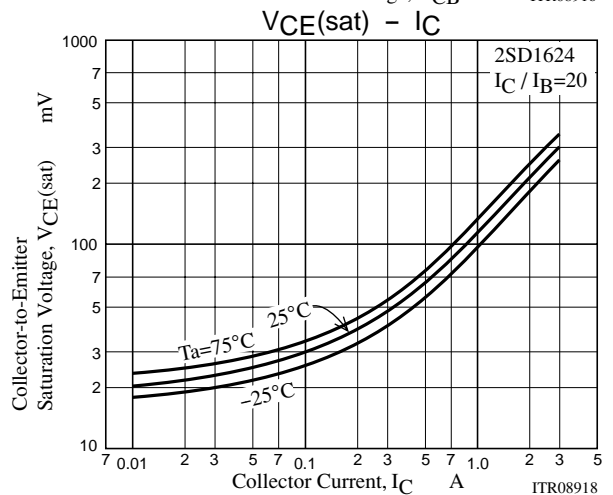
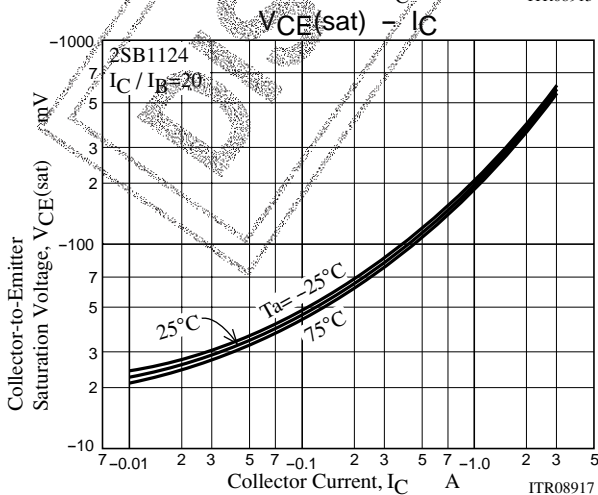
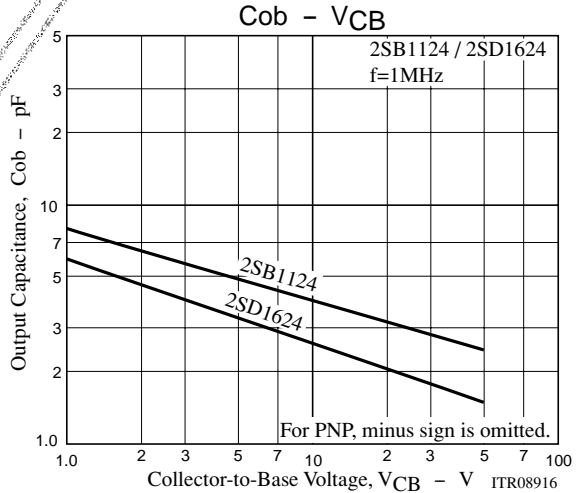
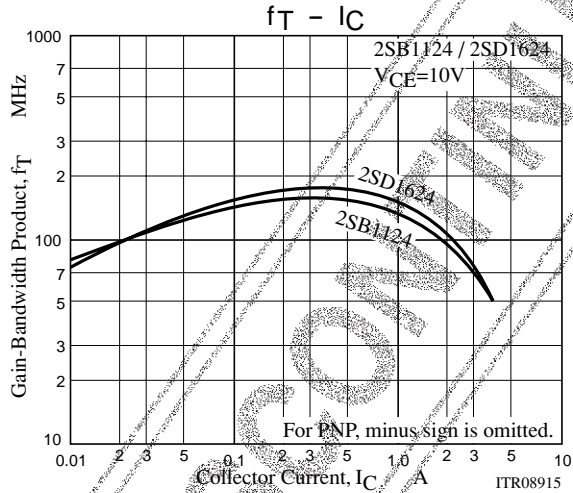
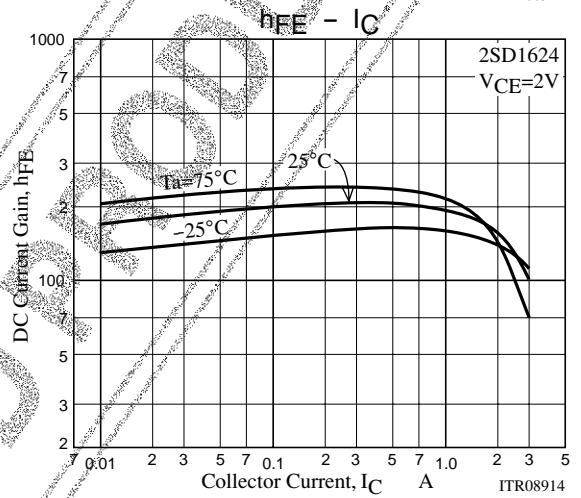
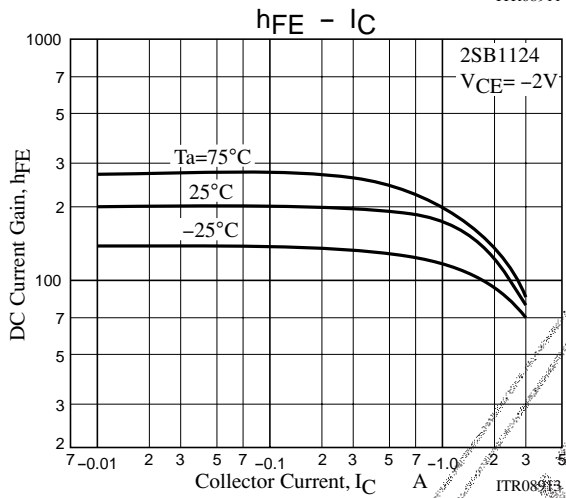
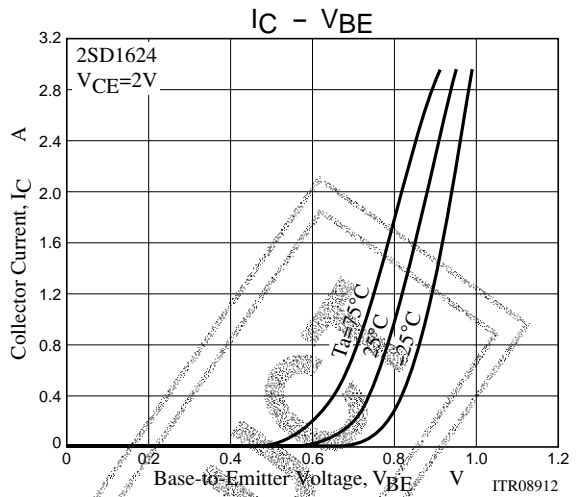
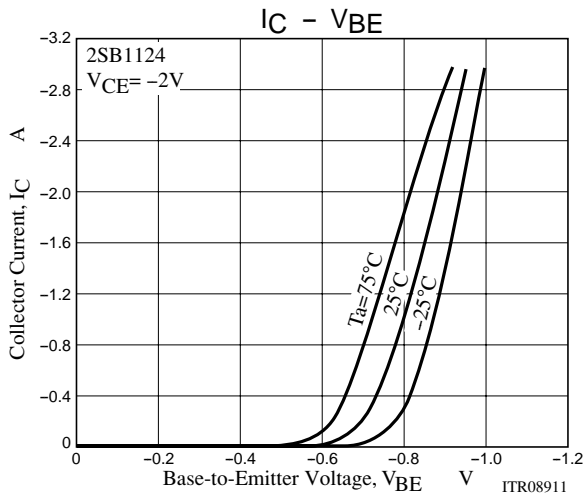
Switching Time Test Circuit



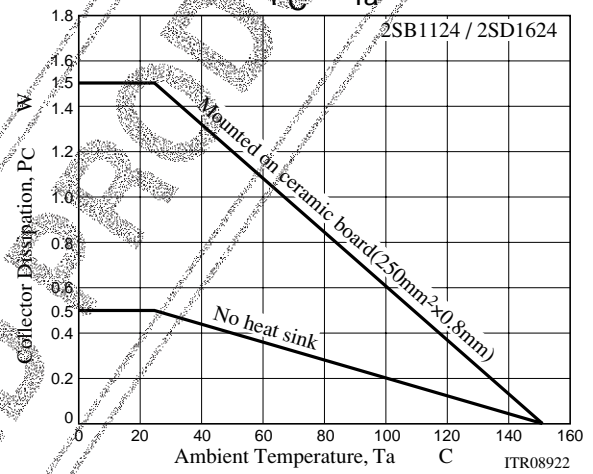
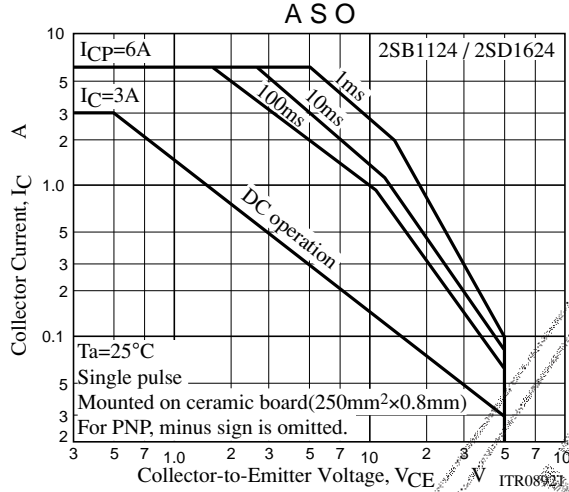
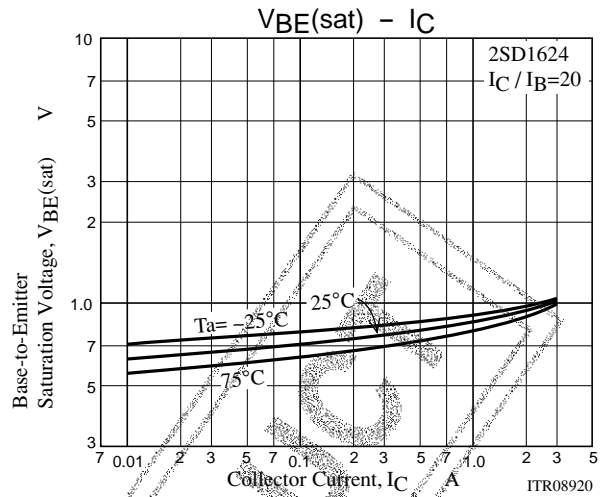
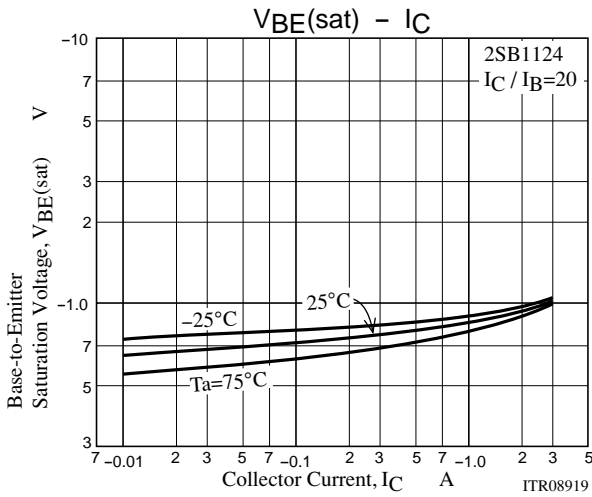
$10I_{B1} = -10I_{B2} = I_C = 1A$
(For PNP, the polarity is reversed.)



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