

2SA2043 / 2SC5709



DC / DC Converter Applications

Applications

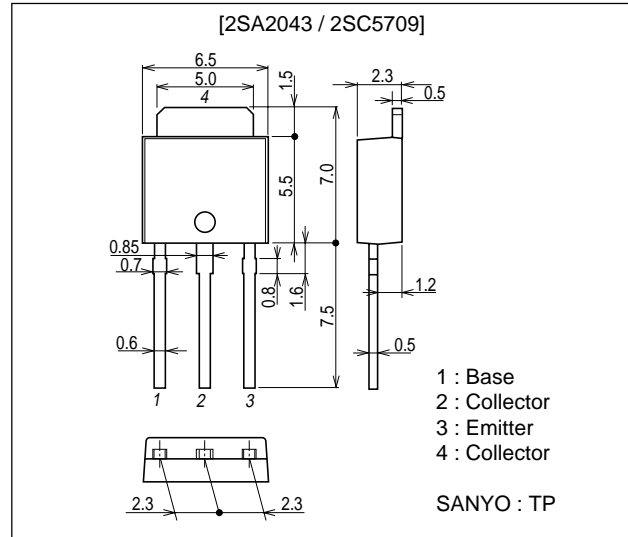
- Relay drivers, lamp drivers, motor drivers, strobes.

Features

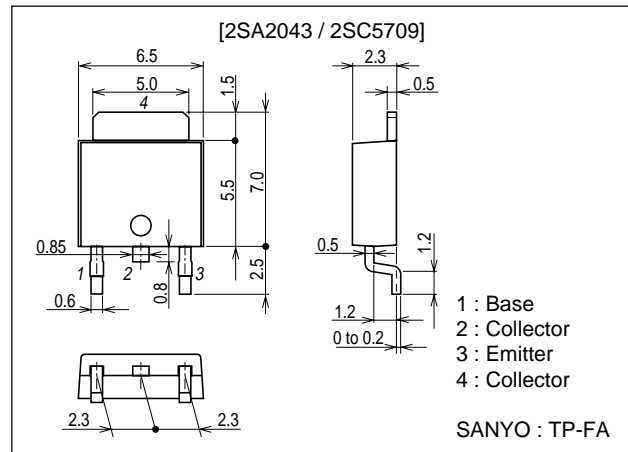
- Adoption of FBET and MBIT processes.
- Large current capacitance.
- Low collector-to-emitter saturation voltage.
- High-speed switching.
- High allowable power dissipation.

Package Dimensions

unit : mm
2045B



unit : mm
2044B



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Specifications

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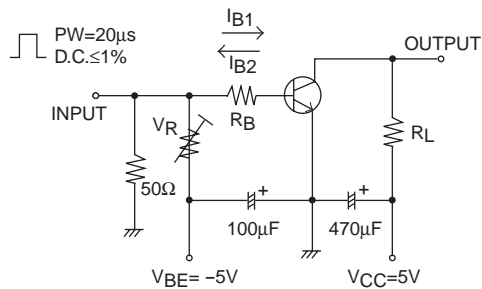
Absolute Maximum Ratings at Ta=25°C

| Parameter | Symbol | Conditions | Ratings | Unit |
|------------------------------|------------------|----------------------|-------------|------|
| Collector-to-Base Voltage | V _{CB0} | | (-)15 | V |
| Collector-to-Emitter Voltage | V _{CEO} | | (-)15 | V |
| Emitter-to-Base Voltage | V _{EBO} | | (-)5 | V |
| Collector Current | I _C | | (-)10 | A |
| Collector Current (Pulse) | I _{CP} | | (-)13 | A |
| Base Current | I _B | | (-)1.2 | A |
| Collector Dissipation | P _C | | 1 | W |
| | | T _C =25°C | 15 | W |
| 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} =(-)12V, 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} =(-)2V, I _C =(-)500mA | 200 | | 560 | |
| Gain-Bandwidth Product | f _T | V _{CE} =(-)2V, I _C =(-)500mA | | (220)280 | | MHz |
| Output Capacitance | C _{ob} | V _{CB} =(-)10V, f=1MHz | | (90)50 | | pF |
| Collector-to-Emitter Saturation Voltage | V _{CE(sat)} | I _C =(-)3A, I _B =(-)60mA | | (-110)120 | (-170)180 | mV |
| | | I _C =(-)4.5A, I _B =(-)90mA | | (-160)180 | (-240)280 | mV |
| Base-to-Emitter Saturation Voltage | V _{BE(sat)} | I _C =(-)3A, I _B =(-)60mA | | (-)0.85 | (-)1.2 | V |
| Collector-to-Base Breakdown Voltage | V _{(BR)CBO} | I _C =(-)10μA, I _E =0 | (-)15 | | | V |
| Collector-to-Emitter Breakdown Voltage | V _{(BR)CEO} | I _C =(-)1mA, R _{BE} =∞ | (-)15 | | | V |
| Emitter-to-Base Breakdown Voltage | V _{(BR)EBO} | I _E =(-)10μA, I _C =0 | (-)5 | | | V |
| Turn-On Time | t _{on} | See specified test circuit. | | 30 | | ns |
| Storage Time | t _{stg} | See specified test circuit. | | (120)180 | | ns |
| Fall Time | t _f | See specified test circuit. | | (14)25 | | ns |

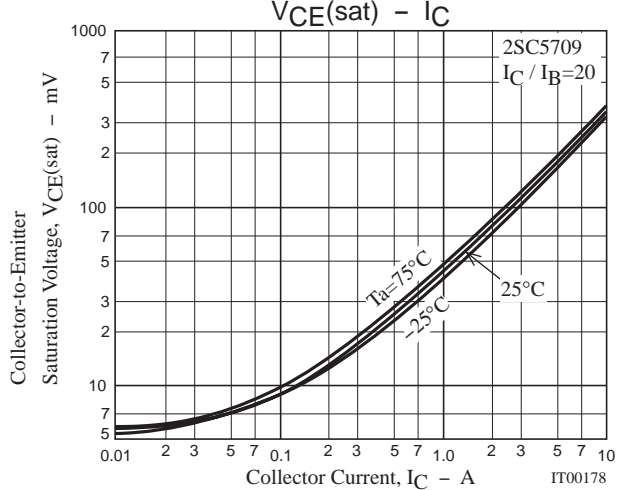
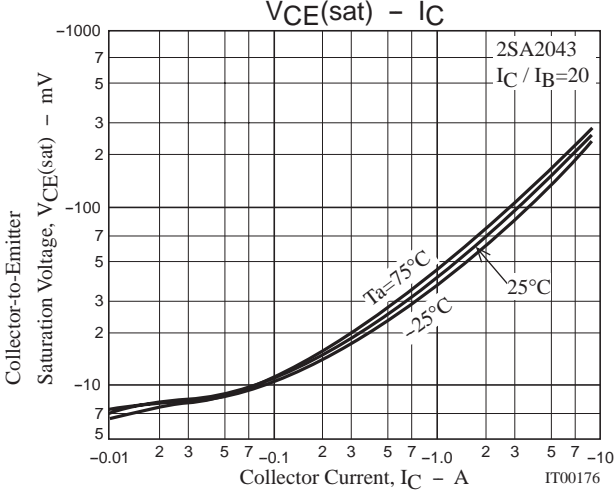
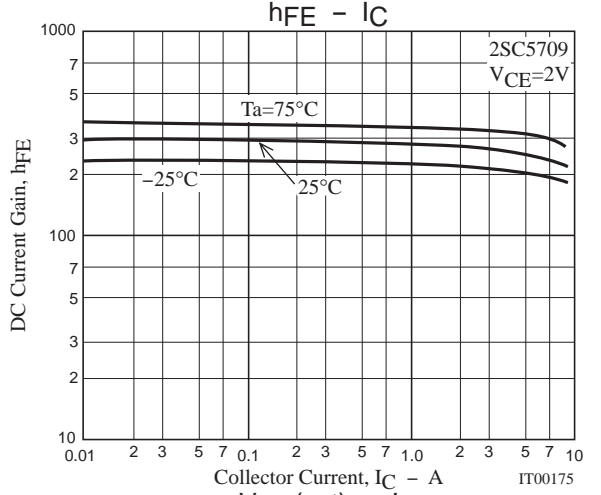
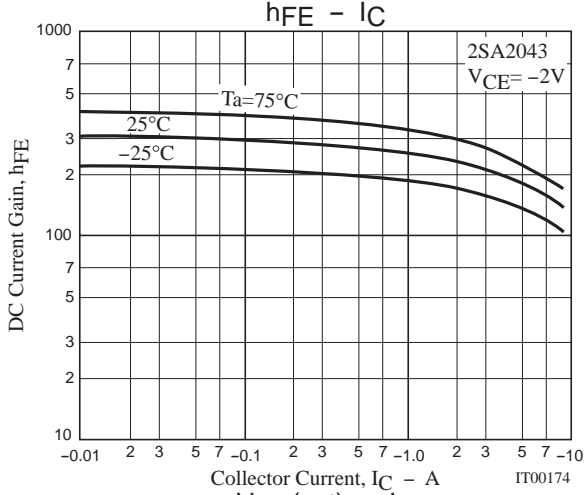
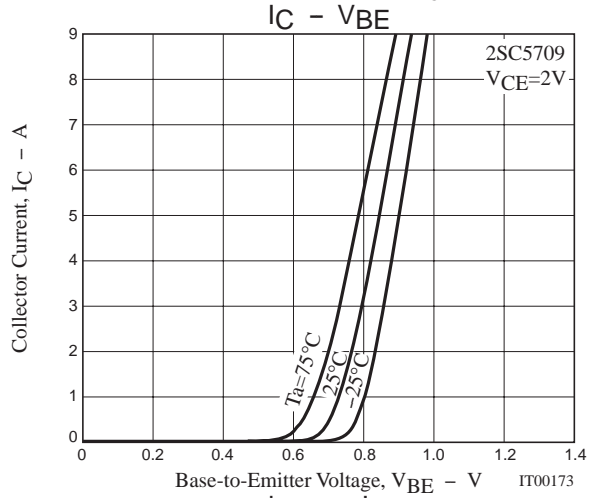
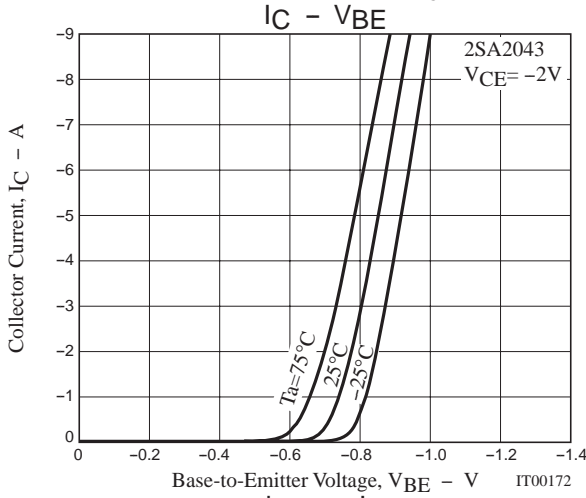
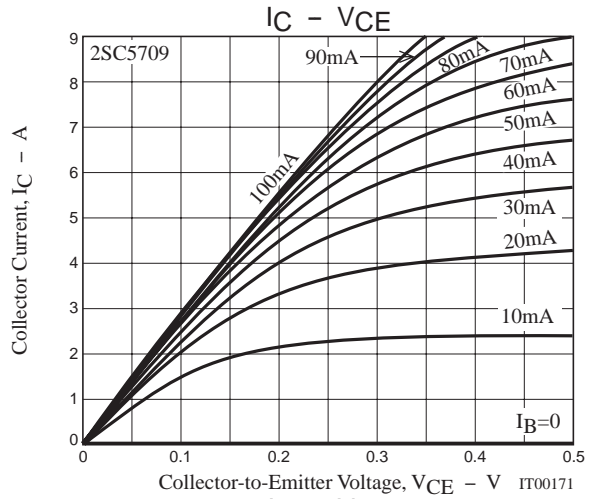
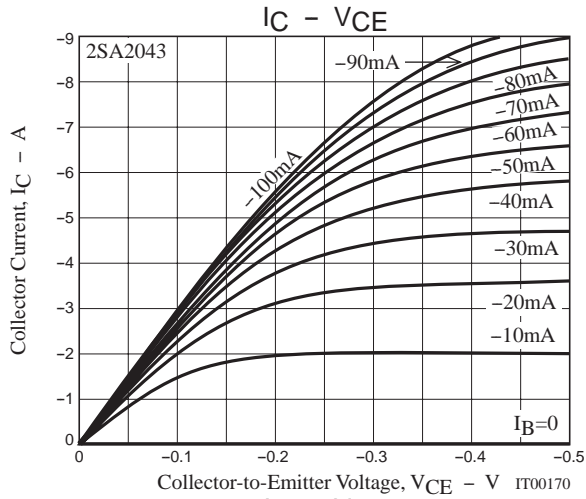
Swicthing Time Test Circuit



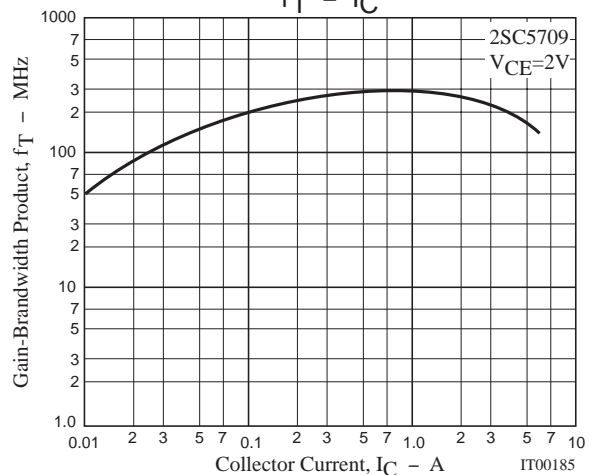
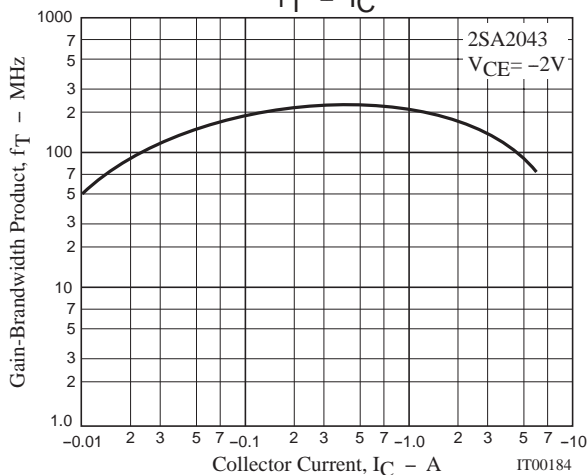
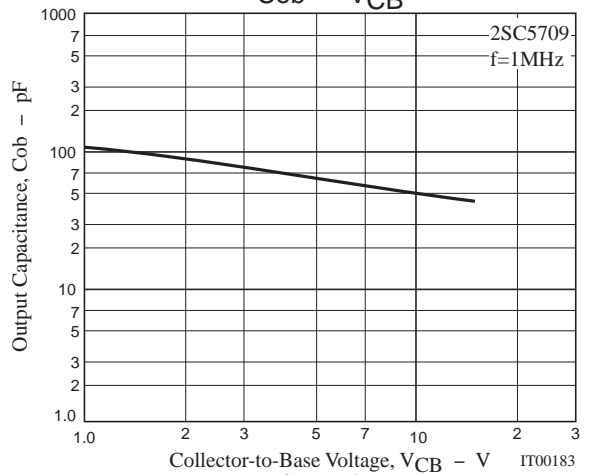
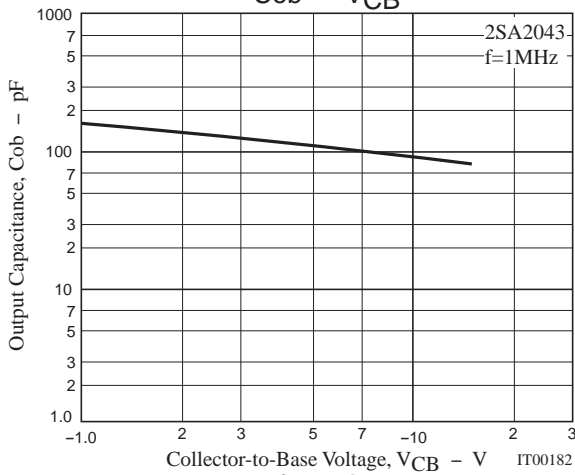
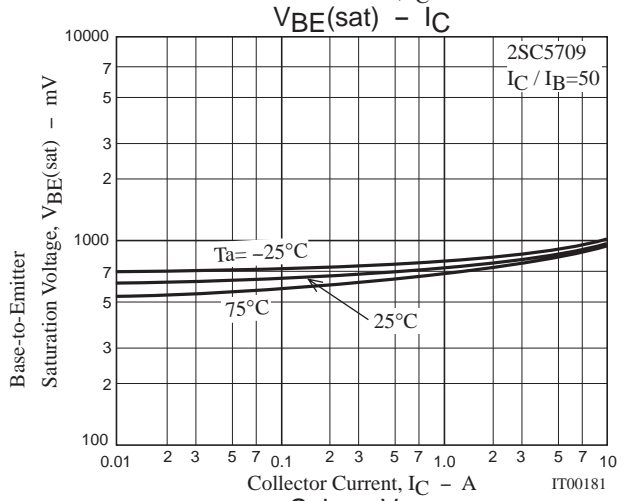
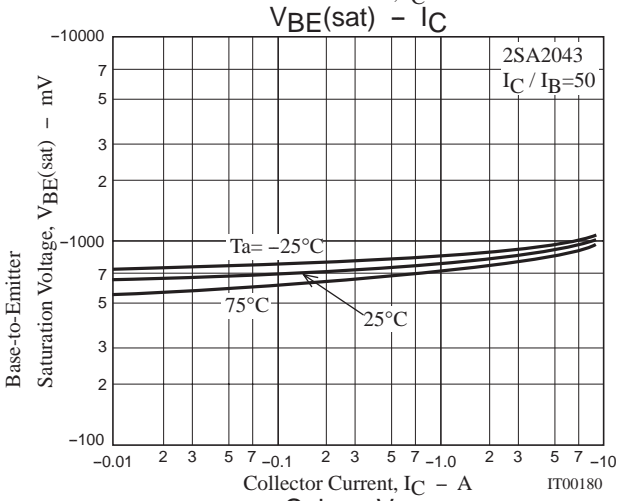
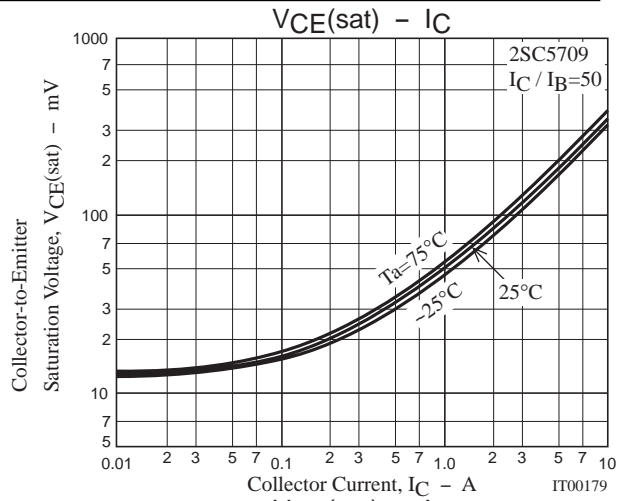
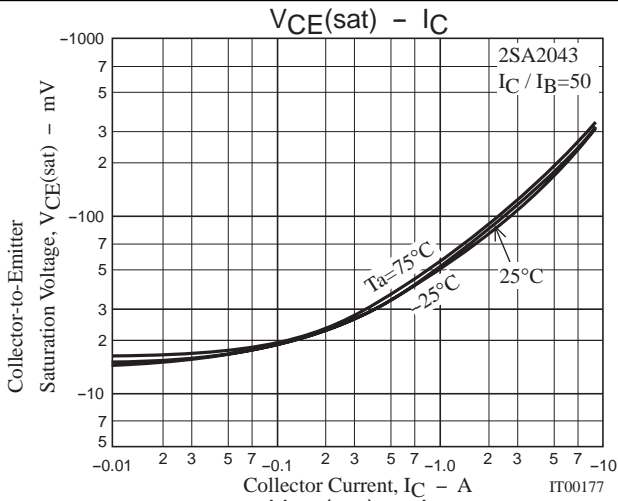
$$I_C = 20I_{B1} = -20I_{B2} = 3A$$

For PNP, the polarity is reversed.

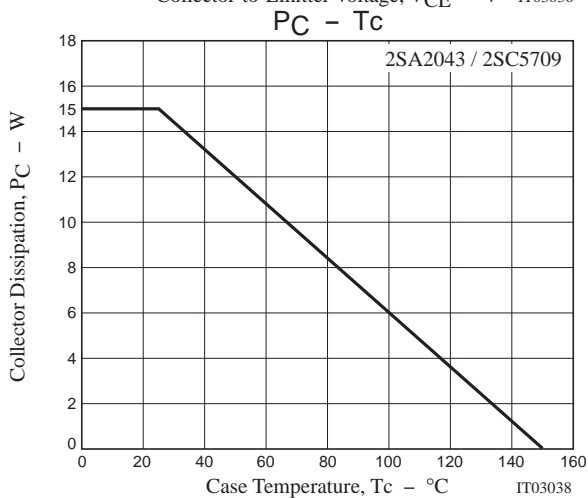
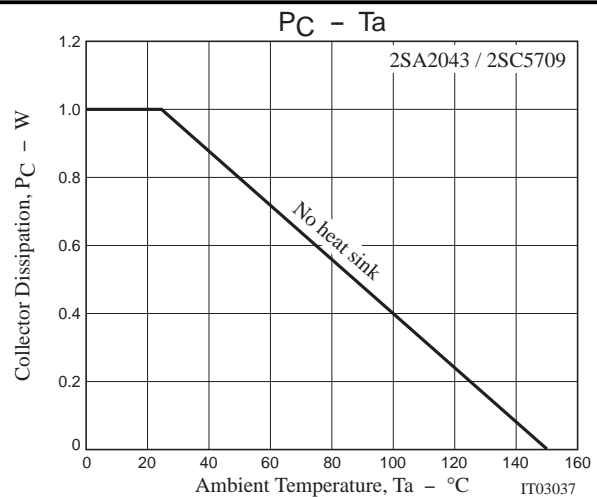
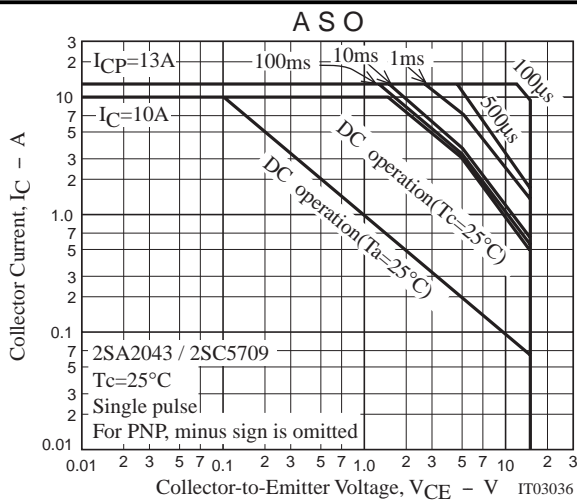
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