



2SA2016/2SC5569

DC/DC Converter Applications

Applications

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

Features

- Adoption of FBET and MBIT processes.
- High current capacitance.
- Low collector-to-emitter saturation voltage.
- High-speed switching.
- Ultrasmall package facilitates miniaturization in end products.
- High allowable power dissipation.

Specifications

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

| Parameter | Symbol | Conditions | Ratings | Unit |
|------------------------------|-----------|--|-------------|------------------|
| Collector-to-Base Voltage | V_{CB0} | | (-50)80 | V |
| Collector-to-Emitter Voltage | V_{CE0} | | (-50) | V |
| Emitter-to-Base Voltage | V_{EB0} | | (-6) | V |
| Collector Current | I_C | | (-7) | A |
| Collector Current (Pulse) | I_{CP} | | (-10) | A |
| Base Current | I_B | | (-1.2) | A |
| Collector Dissipation | P_C | Mounted on a ceramic board (250mm ² ×0.8mm) | 1.3 | W |
| | | $T_c=25^\circ\text{C}$ | 3.5 | W |
| Junction Temperature | T_j | | 150 | $^\circ\text{C}$ |
| Storage Temperature | T_{stg} | | -55 to +150 | $^\circ\text{C}$ |

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

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|--------------------------|-----------|---|---------|--------|--------|---------------|
| | | | min | typ | max | |
| Collector Cutoff Current | I_{CBO} | $V_{CB}=-40\text{V}, I_E=0$ | | | (-0.1) | μA |
| Emitter Cutoff Current | I_{EBO} | $V_{EB}=-4\text{V}, I_C=0$ | | | (-0.1) | μA |
| DC Current Gain | h_{FE} | $V_{CE}=-2\text{V}, I_C=-500\text{mA}$ | 200 | | 560 | |
| Gain-Bandwidth Product | f_T | $V_{CE}=-10\text{V}, I_C=-500\text{mA}$ | | (290) | | MHz |
| | | | | 330 | | MHz |
| Output Capacitance | C_{ob} | $V_{CB}=-10\text{V}, f=1\text{MHz}$ | | (50)28 | | pF |

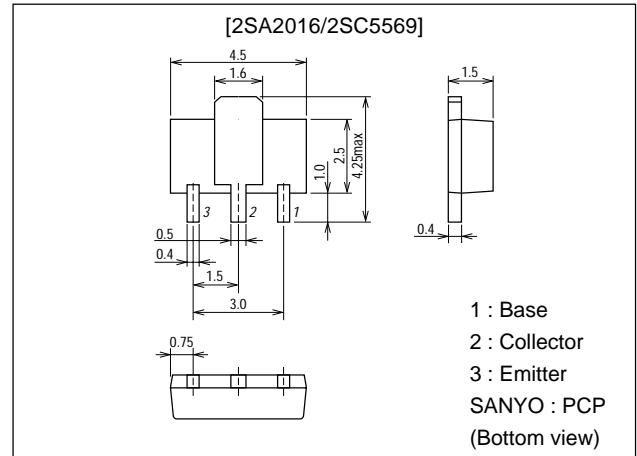
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Package Dimensions

unit:mm

2163



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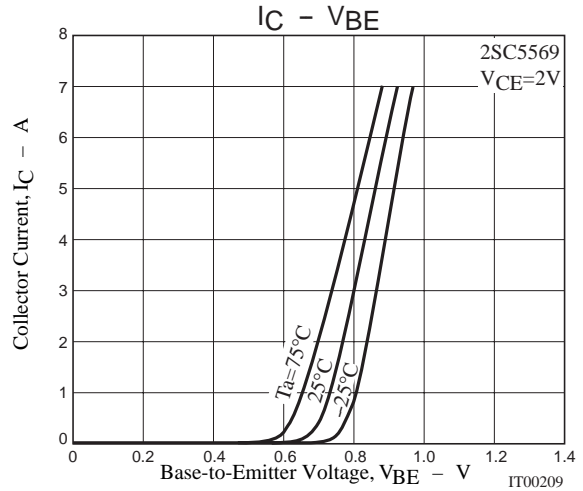
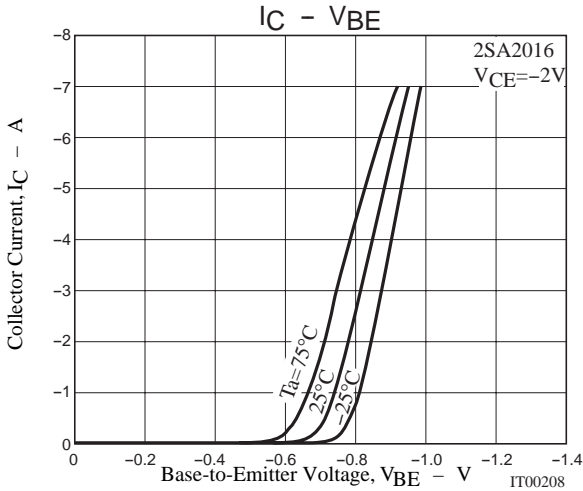
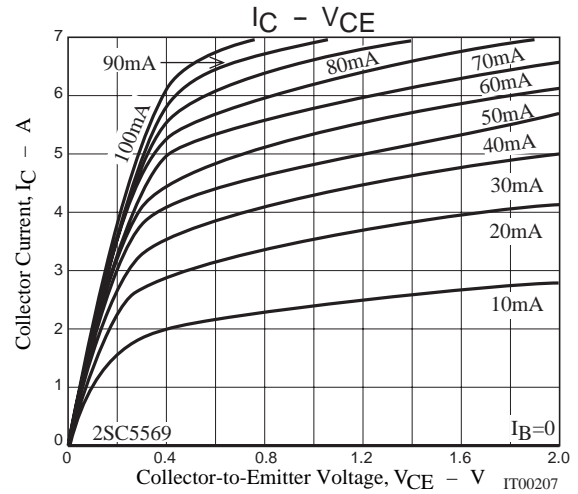
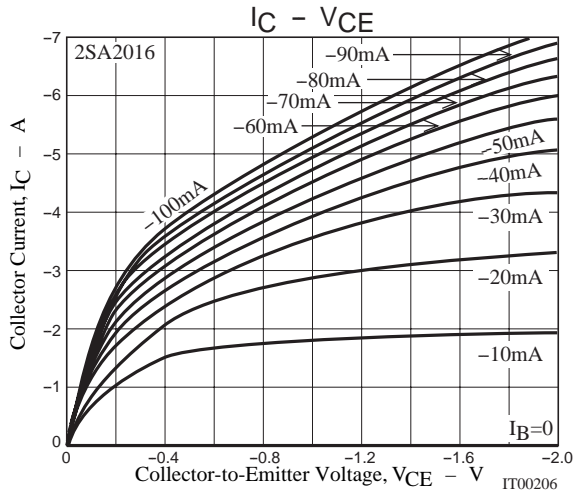
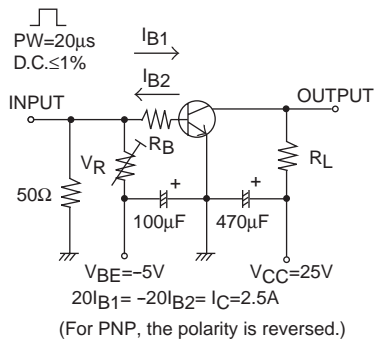
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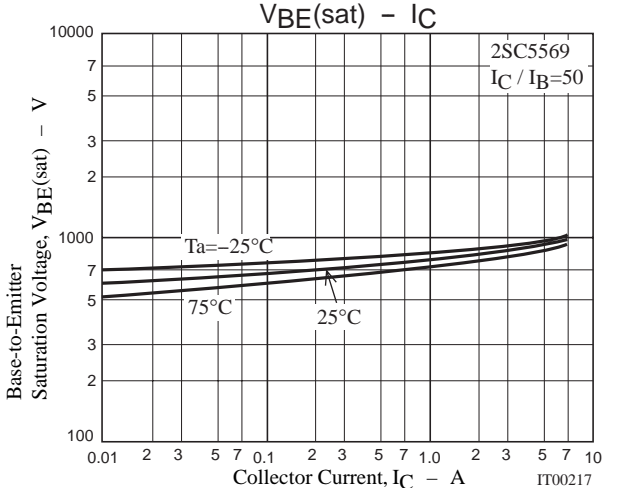
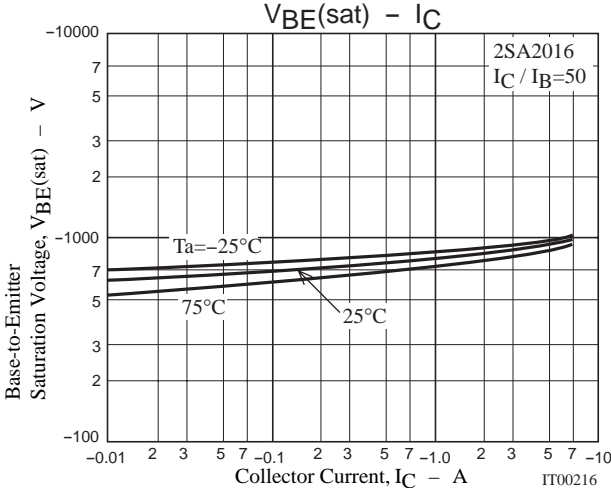
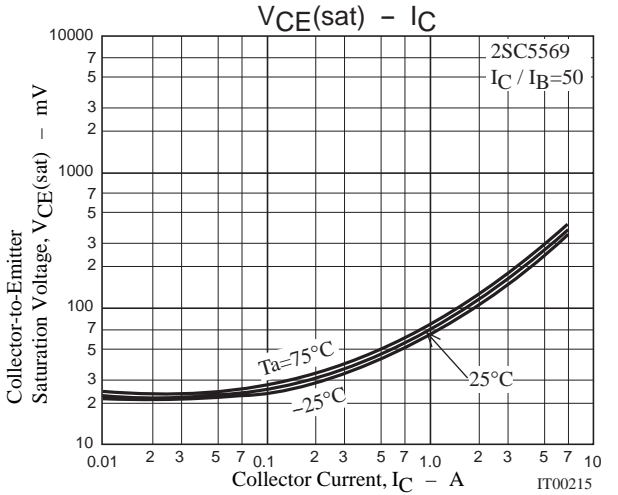
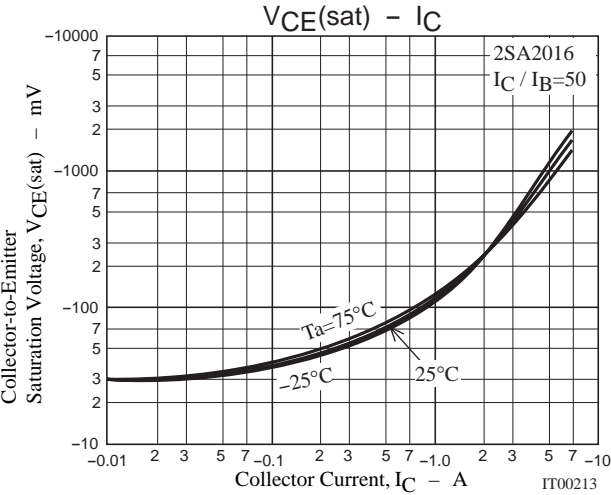
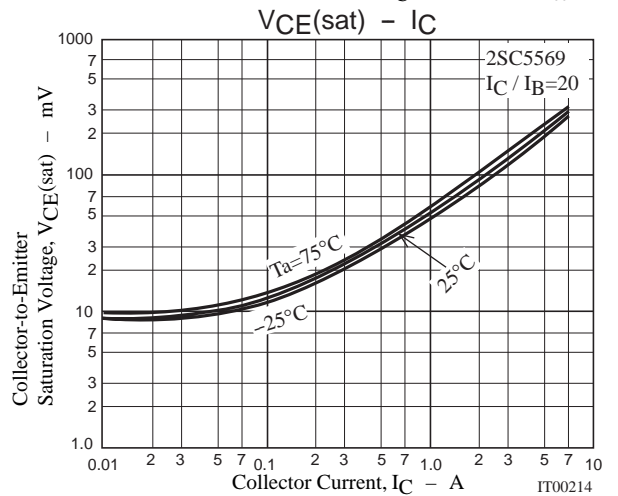
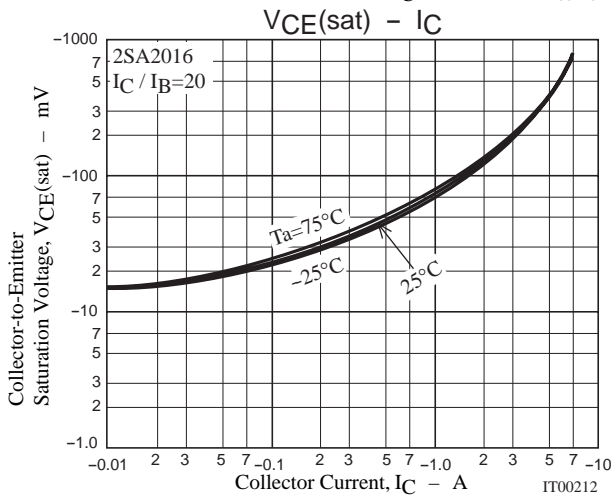
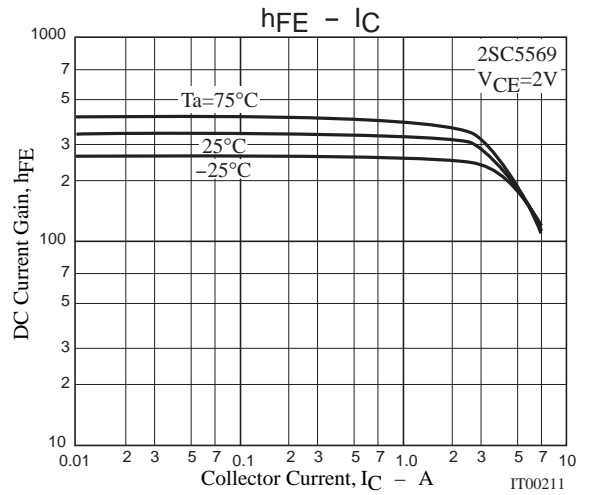
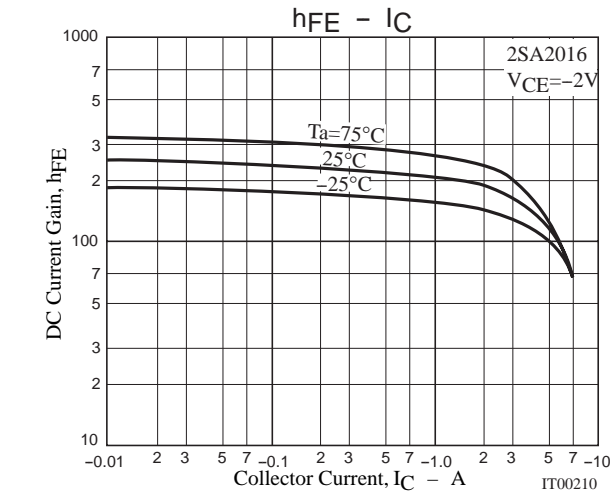
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| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---|---------------|-----------------------------|---------|---------|--------|------|
| | | | min | typ | max | |
| Collector-to-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=(-)3.5A, I_B=(-)175mA$ | | (-230) | (-390) | mV |
| | | | | 160 | 240 | mV |
| | | | | (-240) | (-400) | mV |
| | | $I_C=(-)2A, I_B=(-)40mA$ | 110 | 170 | mV | |
| Base-to-Emitter Saturation Voltage | $V_{BE(sat)}$ | $I_C=(-)2A, I_B=(-)40mA$ | | (-0.83) | (-1.2) | V |
| Collector-to-Base Breakdown Voltage | $V_{(BR)CBO}$ | $I_C=(-)10\mu A, I_E=0$ | | | | V |
| | | | | 80 | | 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 | | (40)30 | | ns |
| Storage Time | t_{stg} | See specified Test Circuit | | (225) | | ns |
| | | | | 420 | | ns |
| Fall Time | t_f | See specified Test Circuit | | 25 | | ns |

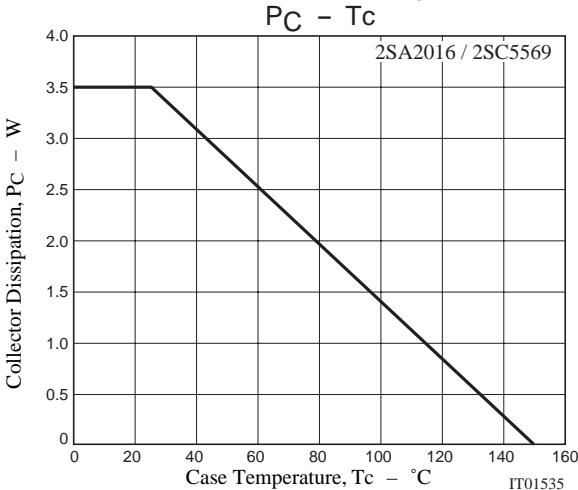
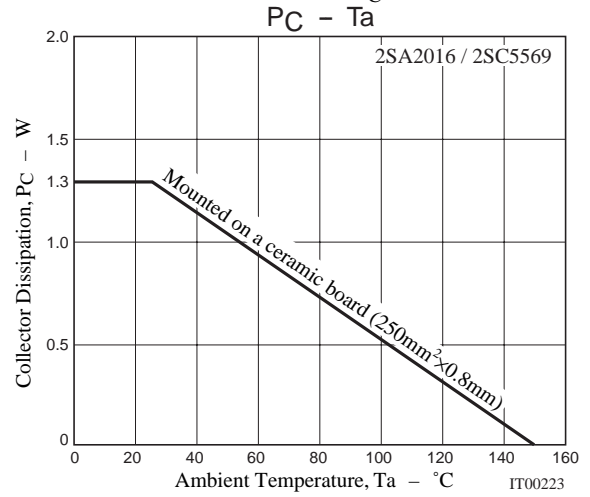
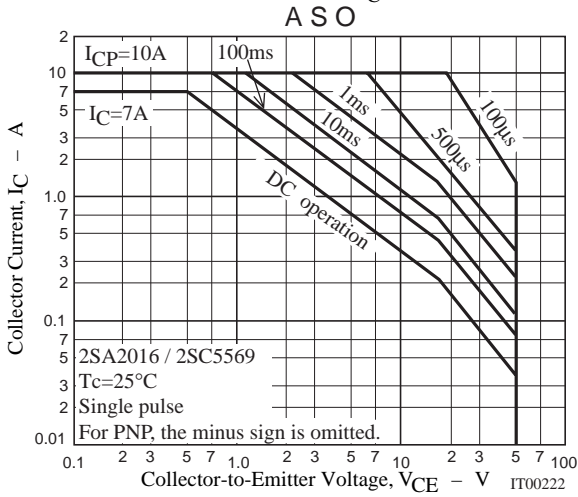
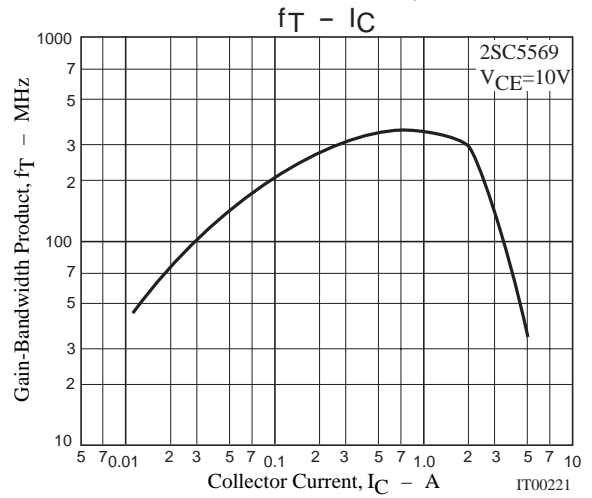
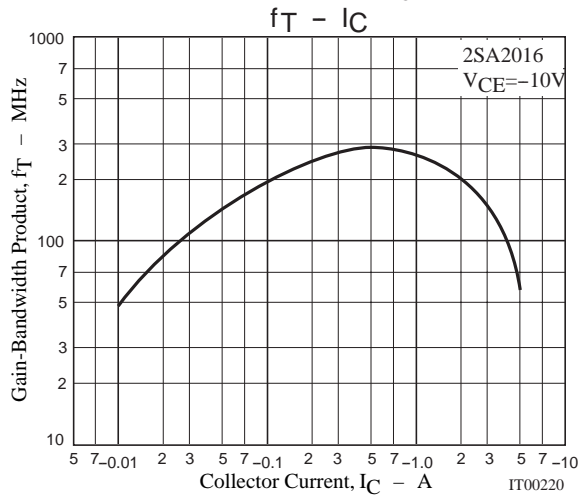
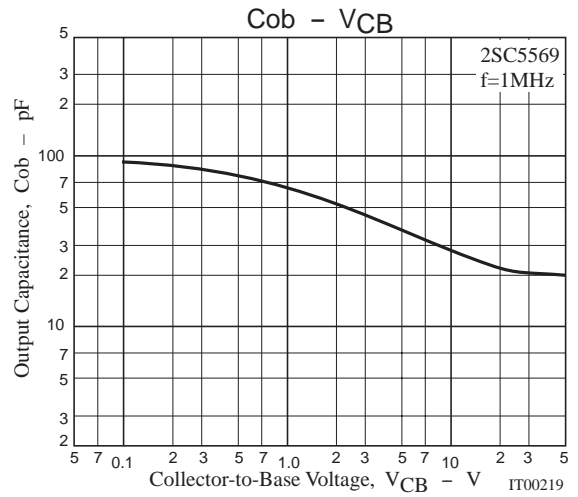
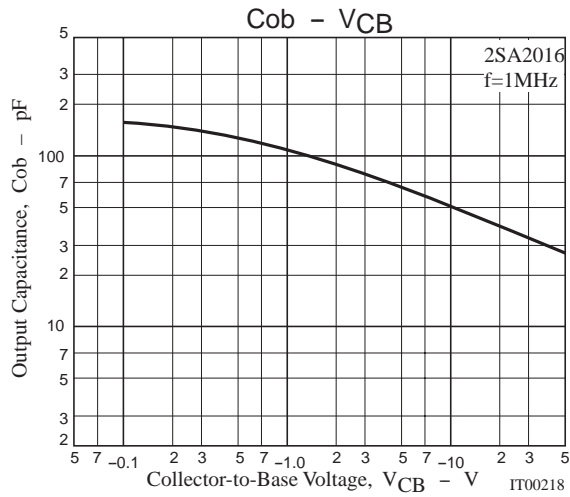
Switching Time Test Circuit



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