



SANYO Semiconductors

DATA SHEET

2SC6013

 — NPN Epitaxial Planar Silicon Transistor
DC / DC Converter Applications

Applications

- Relay drivers, lamp drivers, motor drivers, flash.

Features

- Adoption of MBIT process.
- Large current capacitance.
- Low collector-to-emitter saturation voltage.
- High-speed switching.
- Narrow hFE range.
- High allowable power dissipation.

Specifications

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 _{EB0} | | 6 | V |
| Collector Current | I _C | | 6 | A |
| Collector Current (Pulse) | I _{CP} | | 9 | A |
| Base Current | I _B | | 600 | mA |
| Collector Dissipation | P _C | Mounted on a ceramic board (250mm ² ×0.8mm) | 1.3 | W |
| | | T _c =25°C | 3.5 | 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 _{CB0} | V _{CB} =12V, I _E =0A | | | 0.1 | μA |
| Emitter Cutoff Current | I _{EB0} | V _{EB} =4V, I _C =0A | | | 0.1 | μA |
| DC Current Gain | h _{FE} | V _{CE} =2V, I _C =500mA | 250 | | 400 | |

Marking : QA

Continued on next page.

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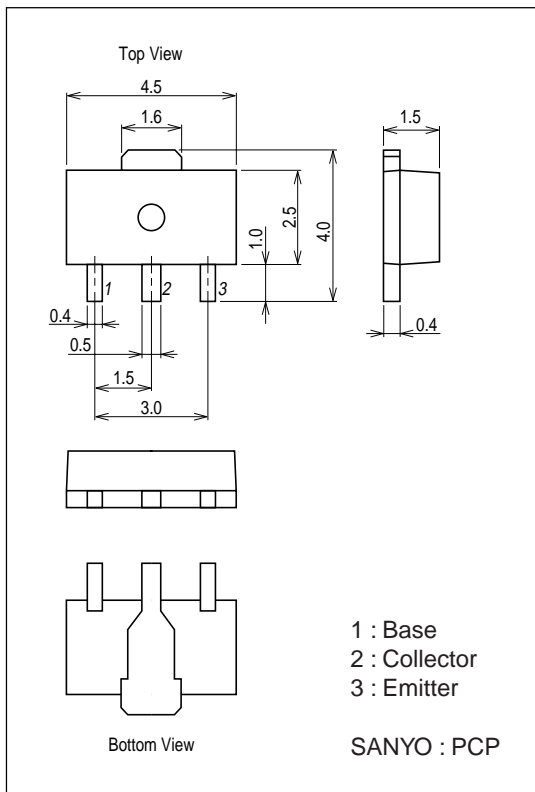
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| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---|---------------|-----------------------------|---------|------|-----|------|
| | | | min | typ | max | |
| Gain-Bandwidth Product | f_T | $V_{CE}=2V, I_C=500mA$ | | 380 | | MHz |
| Output Capacitance | C_{ob} | $V_{CB}=10V, f=1MHz$ | | 23 | | pF |
| Collector-to-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=1.5A, I_B=30mA$ | | 90 | 135 | mV |
| | | $I_C=3A, I_B=60mA$ | | 135 | 200 | mV |
| Base-to-Emitter Saturation Voltage | $V_{BE(sat)}$ | $I_C=1.5A, I_B=30mA$ | | 0.85 | 1.2 | V |
| Collector-to-Base Breakdown Voltage | $V_{(BR)CBO}$ | $I_C=10\mu A, I_E=0A$ | 15 | | | V |
| Collector-to-Emitter Breakdown Voltage | $V_{(BR)CEO}$ | $I_C=1mA, R_{BE}=\infty$ | 15 | | | V |
| Emitter-to-Base Breakdown Voltage | $V_{(BR)EBO}$ | $I_E=10\mu A, I_C=0A$ | 6 | | | V |
| Turn-ON Time | t_{on} | See specified Test Circuit. | | 30 | | ns |
| Storage Time | t_{stg} | See specified Test Circuit. | | 190 | | ns |
| Fall Time | t_f | See specified Test Circuit. | | 15 | | ns |

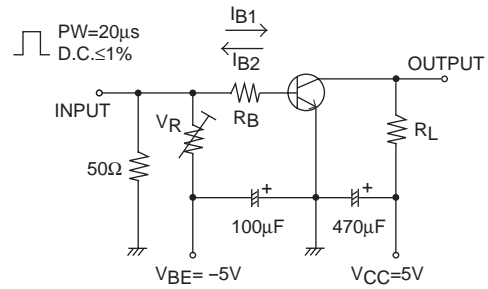
Package Dimensions

unit : mm

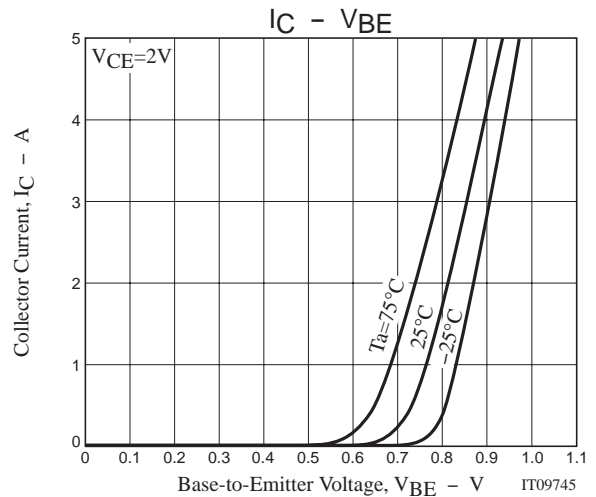
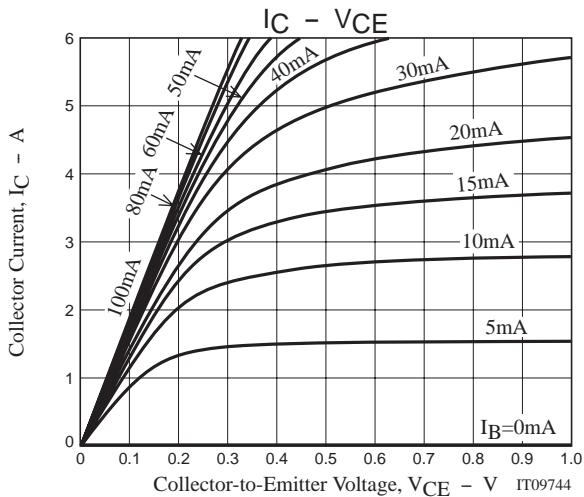
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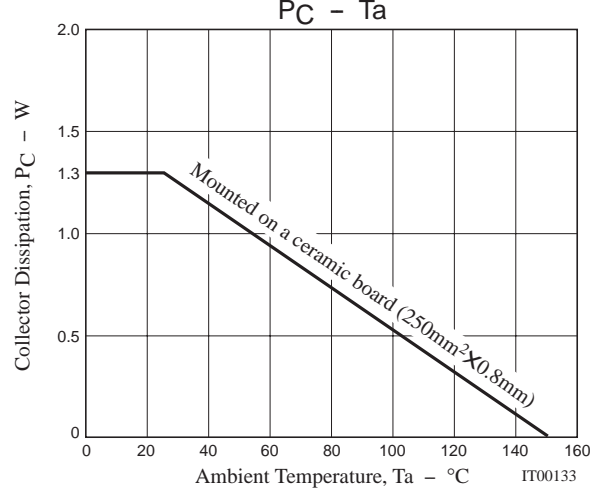
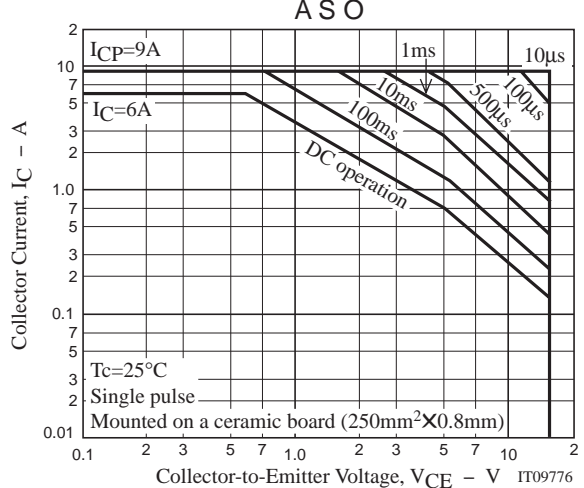
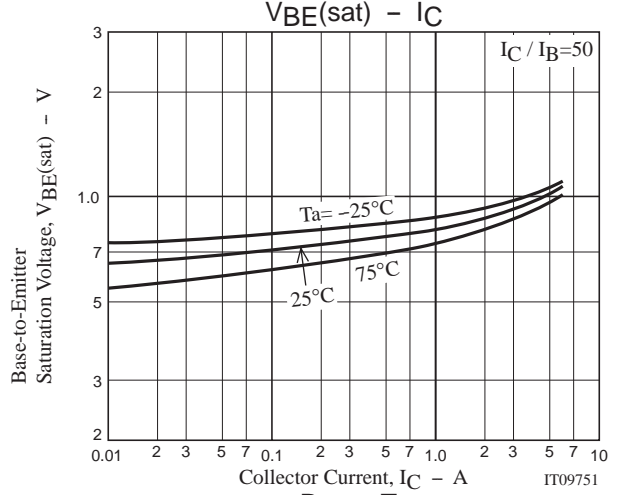
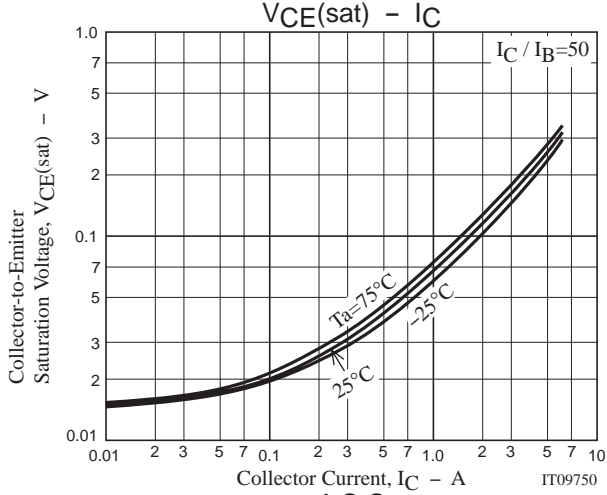
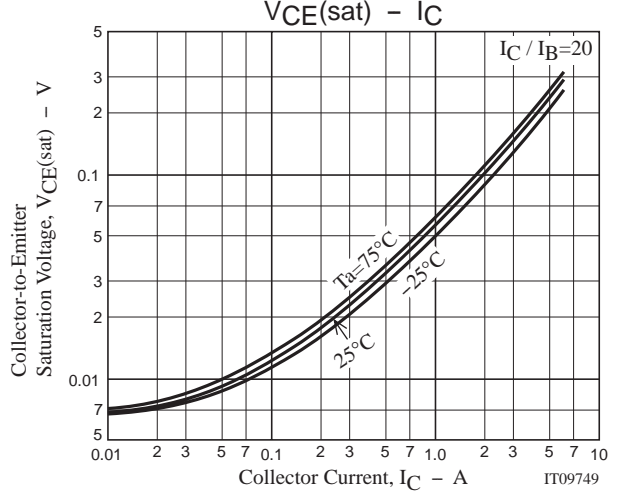
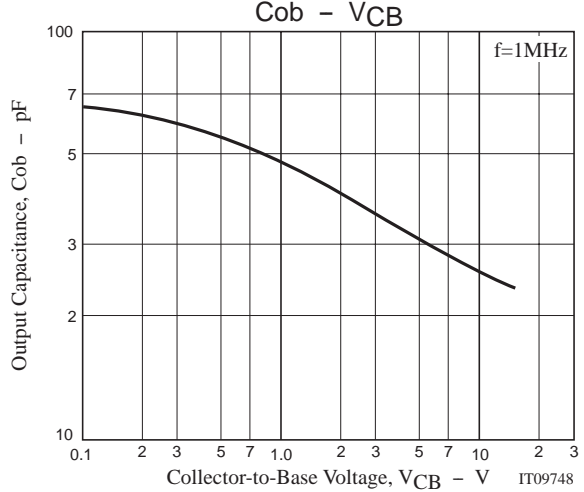
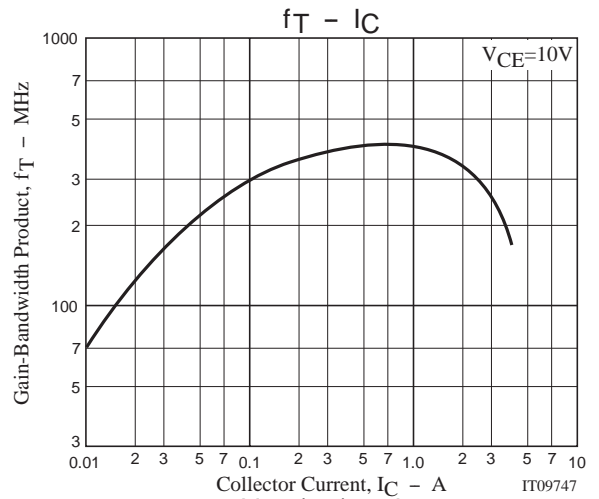
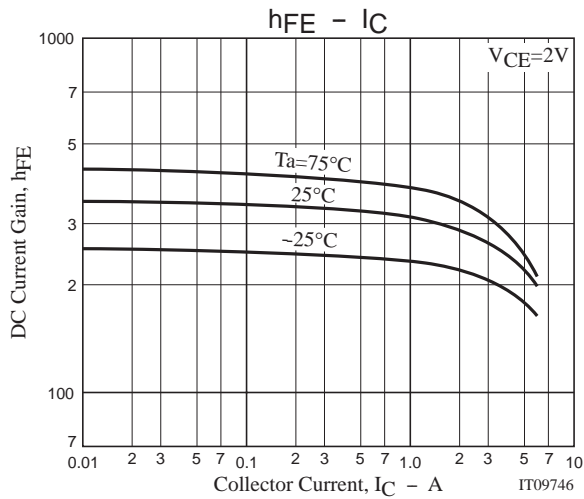
Switching Time Test Circuit

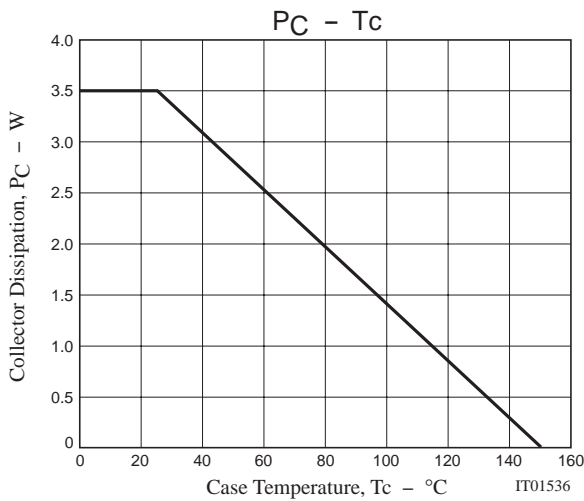


$$I_C = 20I_{B1} = -20I_{B2} = 1.5A$$



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