



2SC4107

400V/10A Switching Regulator Applications

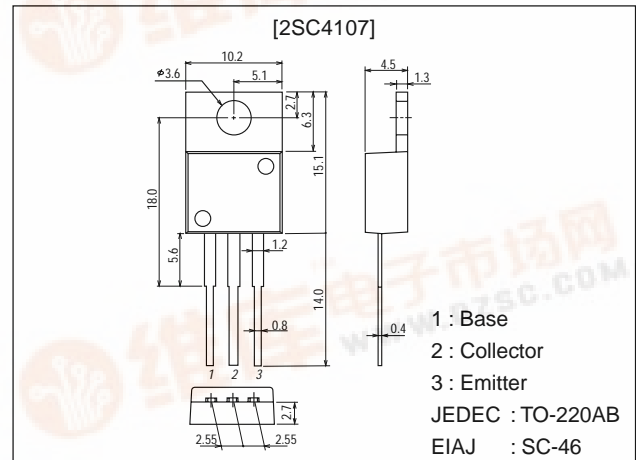
Features

- High breakdown voltage and high reliability.
- Fast switching speed.
- Wide ASO.
- Adoption of MBIT process.

Package Dimensions

unit:mm

2010C



Specifications

Absolute Maximum Ratings at Ta = 25°C

| Parameter | Symbol | Conditions | Ratings | Unit |
|------------------------------|------------------|--------------------------|-------------|------|
| Collector-to-Base Voltage | V _{CB0} | | 500 | V |
| Collector-to-Emitter Voltage | V _{CEO} | | 400 | V |
| Emitter-to-Base Voltage | V _{EBO} | | 7 | V |
| Collector Current | I _C | | 10 | A |
| Collector Current (Pulse) | I _{CP} | PW≤300μs, duty cycle≤10% | 20 | A |
| Base Current | I _B | | 3.5 | A |
| Collector Dissipation | P _C | | 1.75 | W |
| | | T _c =25°C | 60 | 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} =400V, I _E =0 | | | 10 | μA |
| Emitter Cutoff Current | I _{EBO} | V _{EB} =5V, I _C =0 | | | 10 | μA |
| DC Current Gain | h _{FE1} | V _{CE} =5V, I _C =1.2A | 15* | | 50* | |
| | h _{FE2} | V _{CE} =5V, I _C =6A | 10 | | | |
| | h _{FE3} | V _{CE} =5V, I _C =10mA | 10 | | | |

* : The h_{FE1} of the 2SC4107 is classified as follows. When specifying the h_{FE1} rank, specify two ranks or more in principle.

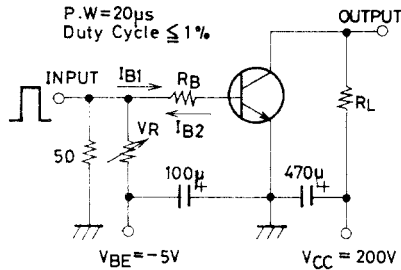
| | | | | | | | | |
|----|---|----|----|---|----|----|---|----|
| 15 | L | 30 | 20 | M | 40 | 30 | N | 50 |
|----|---|----|----|---|----|----|---|----|

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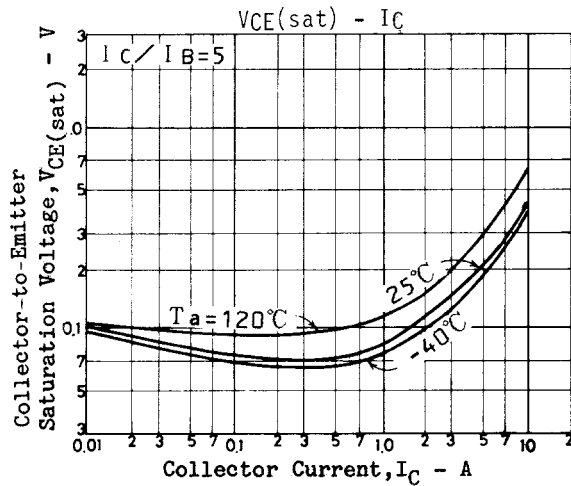
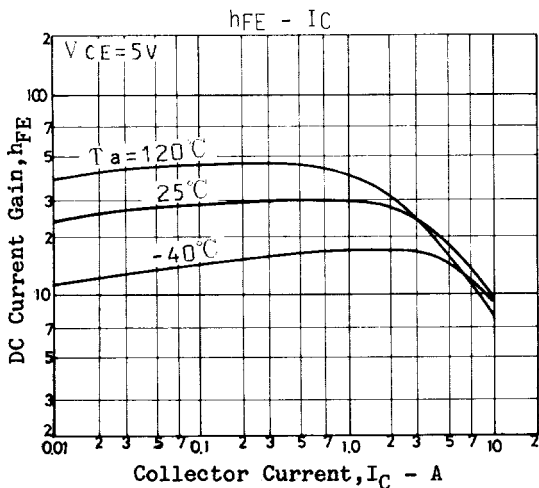
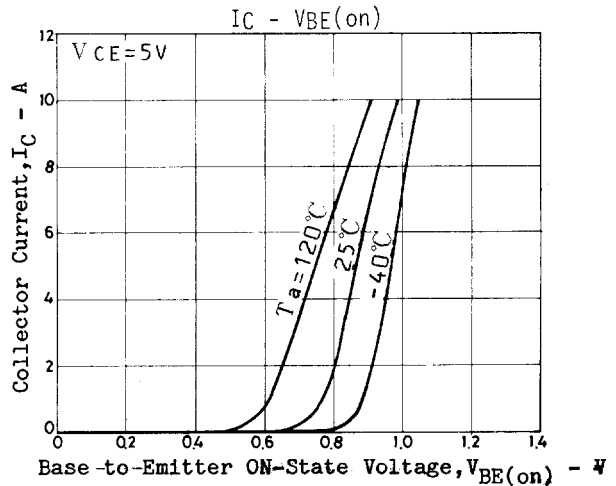
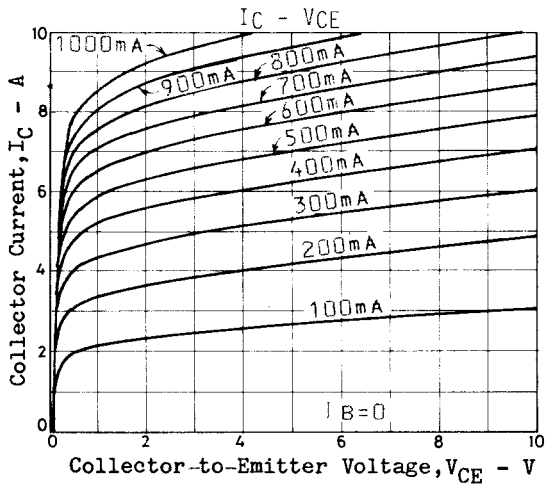
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| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---|----------------|--|---------|-----|-----|---------|
| | | | min | typ | max | |
| Collector-to-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=6A, I_B=1.2A$ | | | 0.8 | V |
| Base-to-Emitter Saturation Voltage | $V_{BE(sat)}$ | $I_C=6A, I_B=1.2A$ | | | 1.5 | V |
| Gain-Bandwidth Product | f_T | $V_{CE}=10V, I_C=1.2A$ | | 20 | | MHz |
| Output Capacitance | C_{ob} | $V_{CB}=10V, f=1MHz$ | | 120 | | pF |
| Collector-to-Base Breakdown Voltage | $V_{(BR)CBO}$ | $I_C=1mA, I_E=0$ | 500 | | | V |
| Collector-to-Emitter Breakdown Voltage | $V_{(BR)CEO}$ | $I_C=5mA, R_{BE}=\infty$ | 400 | | | V |
| Emitter-to-Base Breakdown Voltage | $V_{(BR)EBO}$ | $I_E=1mA, I_C=0$ | 7 | | | V |
| Collector-to-Emitter Sustain Voltage | $V_{CEX(sus)}$ | $I_C=4.5A, I_{B1}=0.45A, I_{B2}=-1.8A, L=500\mu H, \text{clamped}$ | 400 | | | V |
| Turn-ON Time | t_{on} | $I_C=7A, I_{B1}=1.4A, I_{B2}=-2.8A, R_L=28.6\Omega, V_{CC}=200V$ | | | 0.5 | μs |
| Storage Time | t_{stg} | $I_C=7A, I_{B1}=1.4A, I_{B2}=-2.8A, R_L=28.6\Omega, V_{CC}=200V$ | | | 2.5 | μs |
| Fall Time | t_f | $I_C=7A, I_{B1}=1.4A, I_{B2}=-2.8A, R_L=28.6\Omega, V_{CC}=200V$ | | | 0.3 | μs |

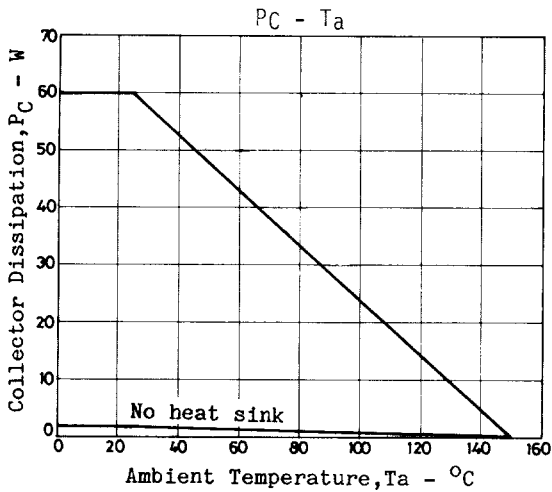
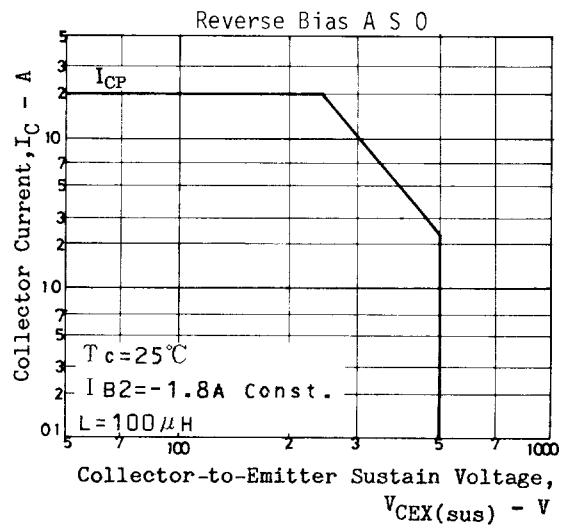
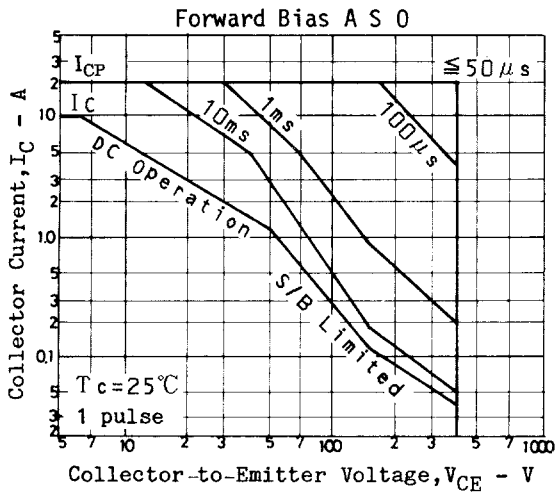
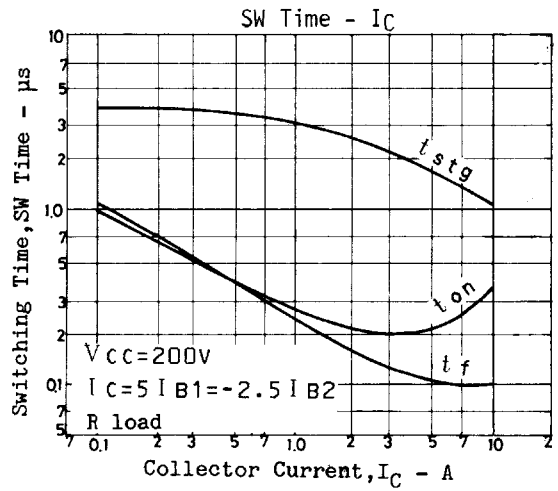
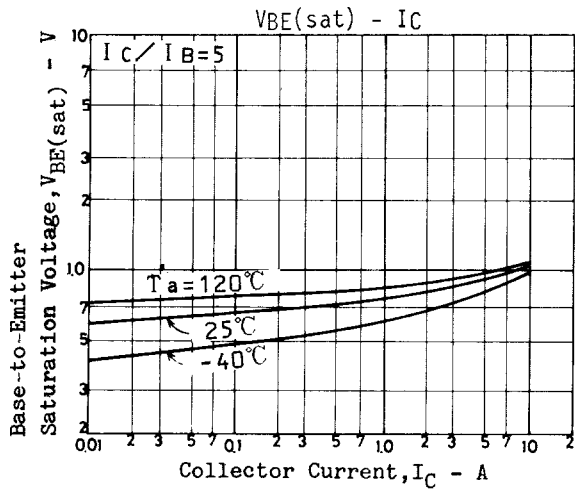
Switching Time Test Circuit



Unit (resistance : Ω , capacitance : F)



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