



2SC3151

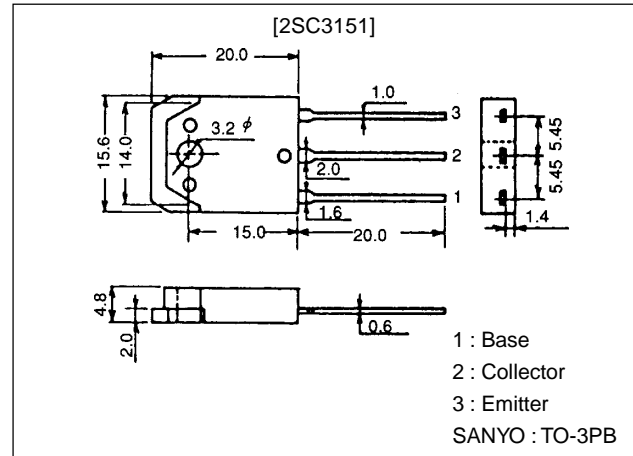
800V/1.5A Switching Regulator Applications

Features

- High breakdown voltage ($V_{CBO} \geq 900V$).
- Fast switching speed.
- Wide ASO.

Package Dimensions

unit:mm
2022A



Specifications

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

| Parameter | Symbol | Conditions | Ratings | Unit |
|------------------------------|-----------|---|-------------|------------|
| Collector-to-Base Voltage | V_{CBO} | | 900 | V |
| Collector-to-Emitter Voltage | V_{CEO} | | 800 | V |
| Emitter-to-Base Voltage | V_{EBO} | | 7 | V |
| Collector Current | I_C | | 1.5 | A |
| Collector Current (Pulse) | I_{CP} | $PW \leq 300\mu s$, Duty Cycle $\leq 10\%$ | 5 | A |
| Base Current | I_B | | 0.8 | A |
| Collector Dissipation | P_C | $T_c = 25^\circ C$ | 60 | W |
| Junction Temperature | T_j | | 150 | $^\circ C$ |
| Storage Temperature | T_{stg} | | -55 to +150 | $^\circ C$ |

Electrical Characteristics at $T_a = 25^\circ C$

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|--------------------------|-----------|-------------------------------|---------|-----|-----|---------|
| | | | min | typ | max | |
| Collector Cutoff Current | I_{CBO} | $V_{CB} = 800V$, $I_E = 0$ | | | 10 | μA |
| Emitter Cutoff Current | I_{EBO} | $V_{EB} = 5V$, $I_C = 0$ | | | 10 | μA |
| DC Current Gain | h_{FE1} | $V_{CE} = 5V$, $I_C = 0.1A$ | 10* | | 40* | |
| | h_{FE2} | $V_{CE} = 5V$, $I_C = 0.5A$ | 8 | | | |
| Gain-Bandwidth Product | f_T | $V_{CE} = 10V$, $I_C = 0.1A$ | | 15 | | MHz |
| Output Capacitance | C_{ob} | $V_{CB} = 10V$, $f = 1MHz$ | | 30 | | pF |

* : The h_{FE1} of the 2SC3151 is classified as follows. When specifying the h_{FE1} rank, specify two ranks or more in principle.

| | | | | | | | | |
|----|---|----|----|---|----|----|---|----|
| 10 | K | 20 | 15 | L | 30 | 20 | M | 40 |
|----|---|----|----|---|----|----|---|----|

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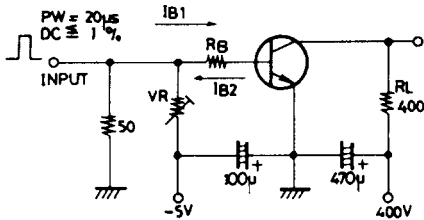
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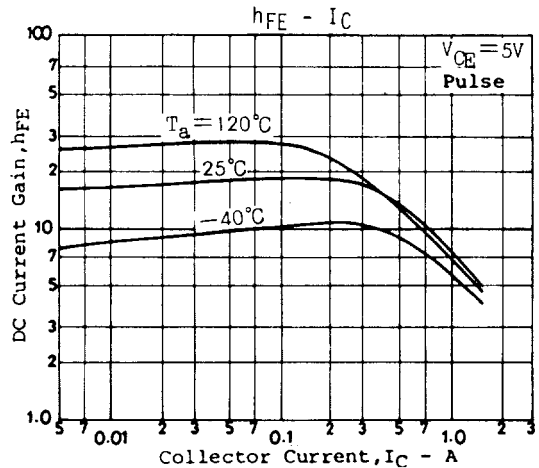
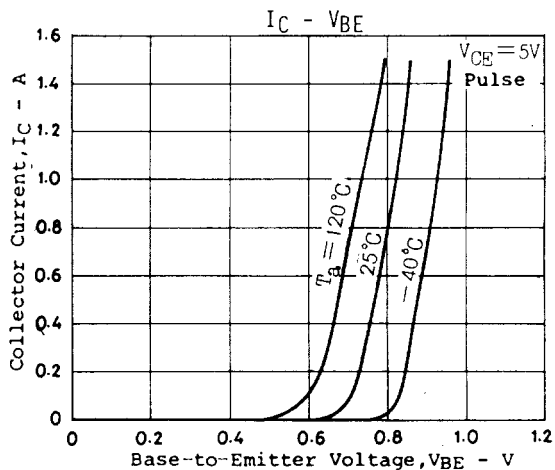
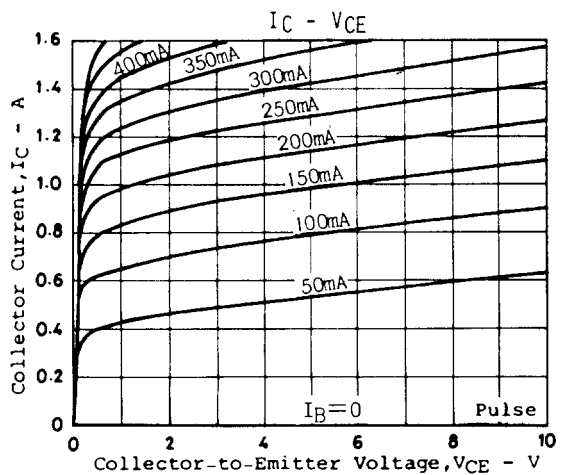
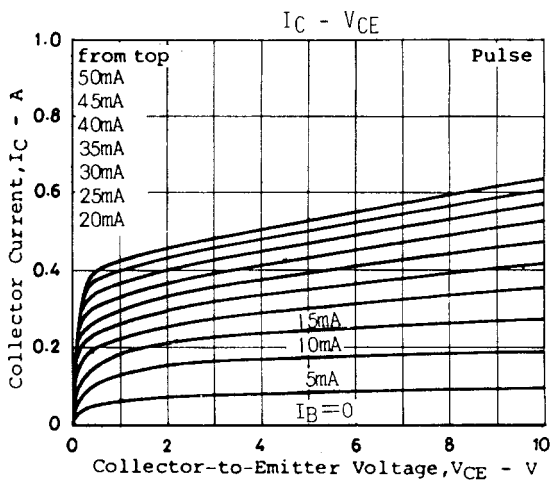
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| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---|-----------------|--|---------|-----|-----|---------|
| | | | min | typ | max | |
| Collector-to-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=0.75A, I_B=0.15A$ | | | 2.0 | V |
| Base-to-Emitter Saturation Voltage | $V_{BE(sat)}$ | $I_C=0.75A, I_B=0.15A$ | | | 1.5 | V |
| Collector-to-Base Breakdown Voltage | $V_{(BR)CBO}$ | $I_C=1mA, I_E=0$ | 900 | | | V |
| Collector-to-Emitter Breakdown Voltage | $V_{(BR)CEO}$ | $I_C=5mA, R_{BE}=\infty$ | 800 | | | V |
| Emitter-to-Base Breakdown Voltage | $V_{(BR)EBO}$ | $I_E=1mA, I_C=0$ | 7 | | | V |
| Collector-to-Emitter Sustain Voltage | $V_{CEO(sus)}$ | $I_C=1.5A, L=1mH, I_B=0.5A$ | 800 | | | V |
| Collector-to-Emitter Sustain Voltage | $V_{CEX(sus)1}$ | $I_C=0.5A, I_{B1}=0.1A, I_{B2}=-0.1A, L=5mH, \text{clamped}$ | 800 | | | V |
| | $V_{CEX(sus)2}$ | $I_C=0.25A, I_{B1}=0.05A, I_{B2}=-0.05A, L=10mH, \text{clamped}$ | 900 | | | V |
| Turn-ON Time | t_{on} | $I_C=1A, I_{B1}=0.2A, I_{B2}=-0.4A, R_L=400\Omega, V_{CC}=400V$ | | | 1.0 | μs |
| Storage Time | t_{stg} | $I_C=1A, I_{B1}=0.2A, I_{B2}=-0.4A, R_L=400\Omega, V_{CC}=400V$ | | | 3.0 | μs |
| Fall Time | t_f | $I_C=1A, I_{B1}=0.2A, I_{B2}=-0.4A, R_L=400\Omega, V_{CC}=400V$ | | | 0.7 | μs |

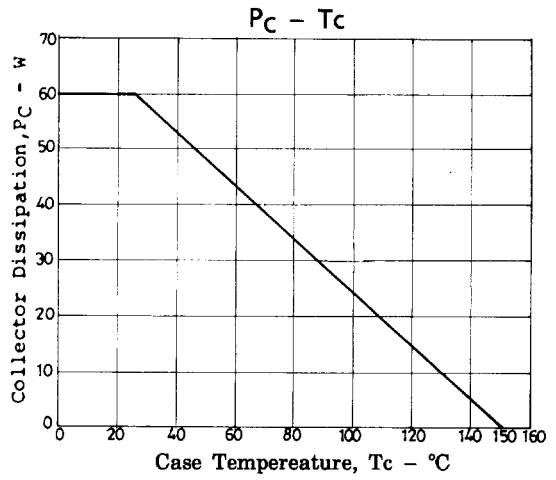
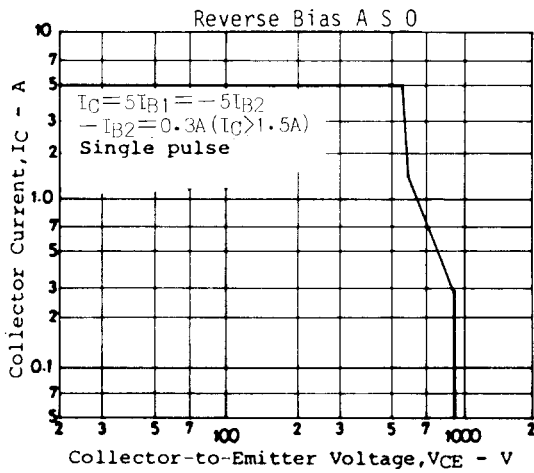
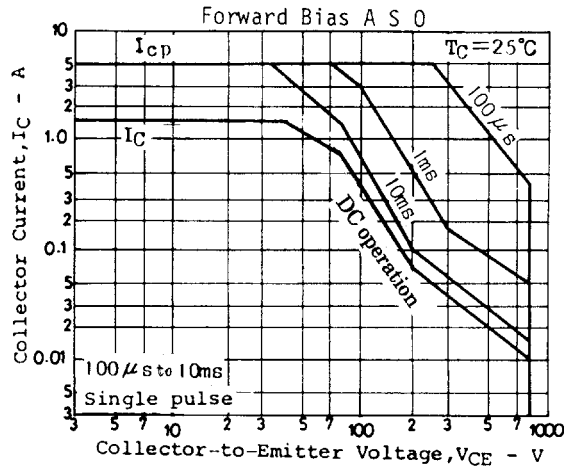
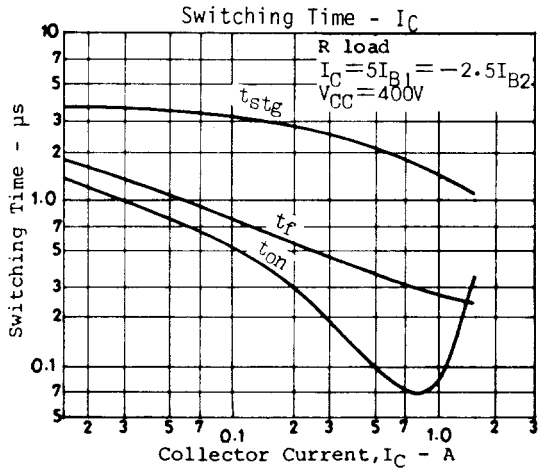
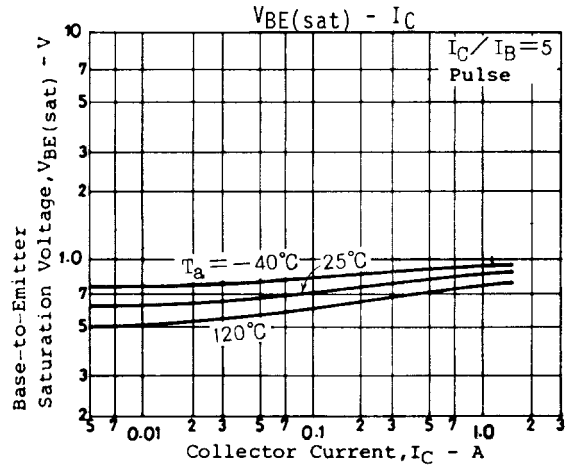
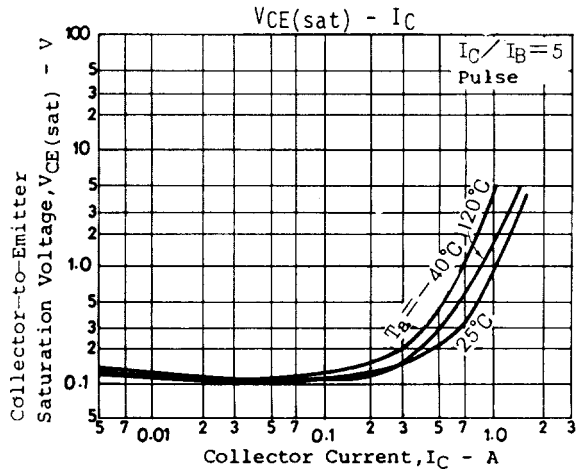
Switching Time Test Circuit



Unit (resistance : Ω , capacitance : F)



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