

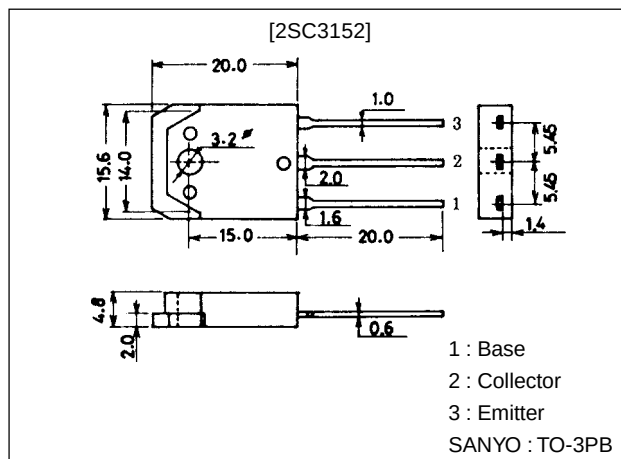
**2SC3152****800V/3A Switching Regulator Applications****Features**

- 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            | $I_C$     |                                                    | 3           | A          |
| Collector Current (Pulse)    | $I_{CP}$  | Pulse, $PW \leq 300\mu s$ , Duty Cycle $\leq 10\%$ | 10          | A          |
| Base Current                 | $I_B$     |                                                    | 1.5         | A          |
| Collector Dissipation        | $P_C$     | $T_c = 25^\circ C$                                 | 80          | 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  | $\mu A$ |
| Emitter Cutoff Current   | $I_{EBO}$ | $V_{EB} = 5V$ , $I_C = 0$     |         |     | 10  | $\mu A$ |
| DC Current Gain          | $h_{FE1}$ | $V_{CE} = 5V$ , $I_C = 0.2A$  | 10*     |     | 40* |         |
|                          | $h_{FE2}$ | $V_{CE} = 5V$ , $I_C = 1A$    | 8       |     |     |         |
| Gain-Bandwidth Product   | $f_T$     | $V_{CE} = 10V$ , $I_C = 0.2A$ |         | 15  |     | MHz     |
| Output Capacitance       | $C_{ob}$  | $V_{CB} = 10V$ , $f = 1MHz$   |         | 60  |     | pF      |

\* : For the  $h_{FE1}$  of the 2SC3152, specify two ranks or more in principle.

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

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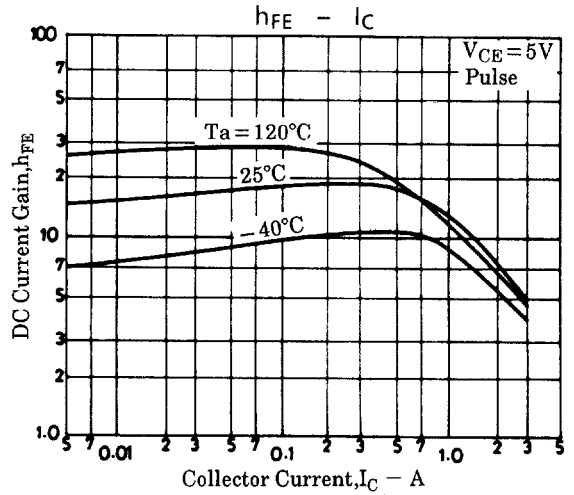
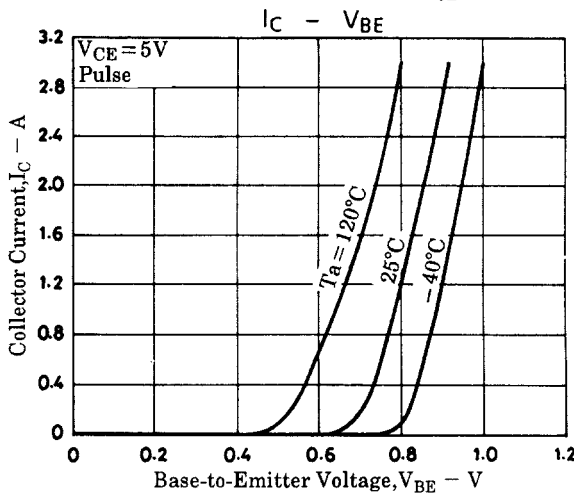
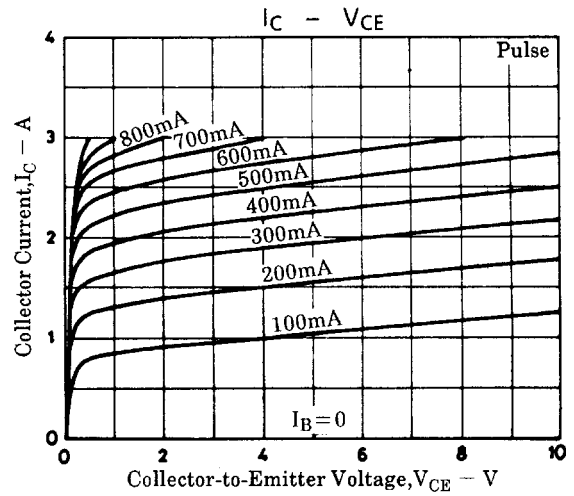
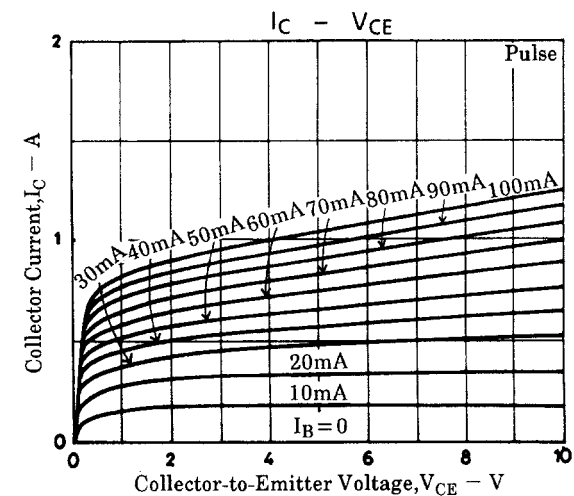
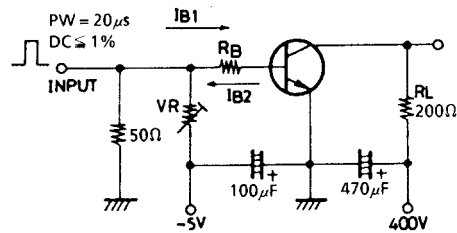
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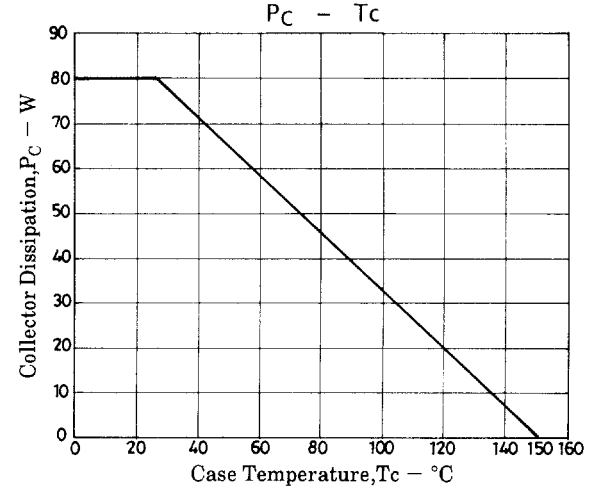
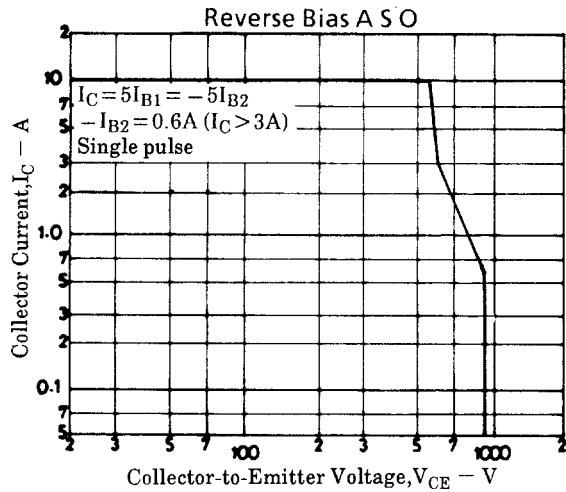
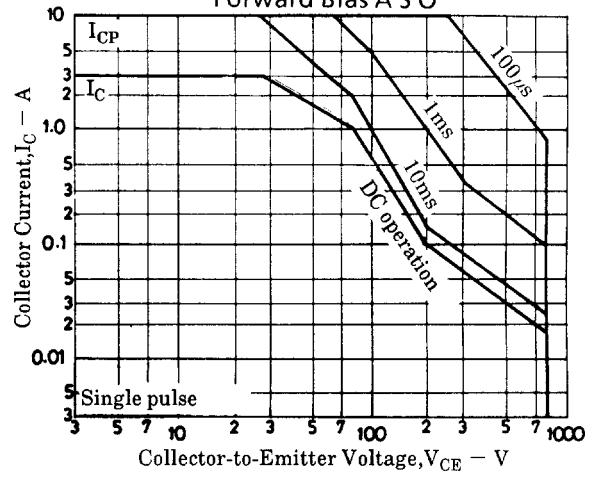
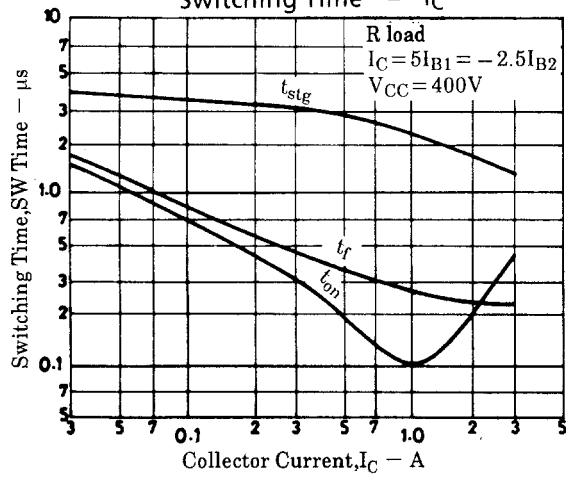
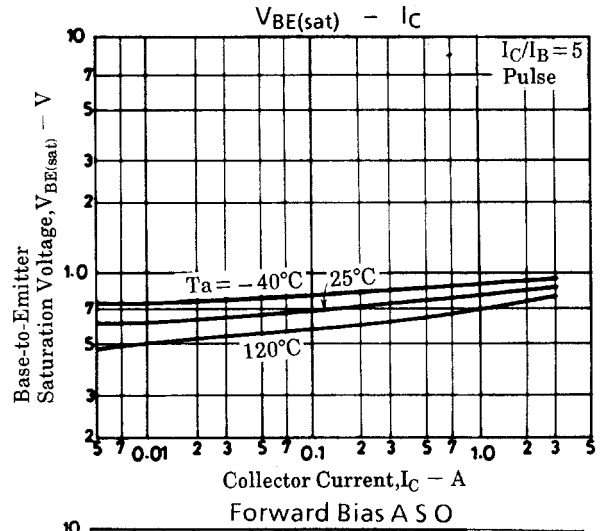
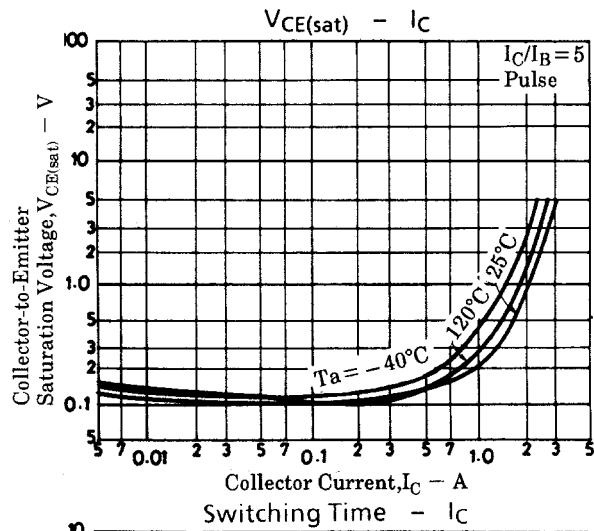
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2SC3152

| Parameter                               | Symbol          | Conditions                                                     | Ratings |     |     | Unit    |
|-----------------------------------------|-----------------|----------------------------------------------------------------|---------|-----|-----|---------|
|                                         |                 |                                                                | min     | typ | max |         |
| Collector-to-Emitter Saturation Voltage | $V_{CE(sat)}$   | $I_C=1.5A, I_B=0.3A$                                           |         |     | 2.0 | V       |
| Base-to-Emitter Saturation Voltage      | $V_{BE(sat)}$   | $I_C=1.5A, I_B=0.3A$                                           |         |     | 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    | $V_{CEO(sus)}$  | $I_C=3A, L=50\mu H, I_B=1A$                                    | 800     |     |     | V       |
| Collector-to-Emitter Sustain Voltage    | $V_{CEX(sus)1}$ | $I_C=1A, I_{B1}=0.2A, I_{B2}=-0.2A, L=2mH, \text{clamped}$     | 800     |     |     | V       |
|                                         | $V_{CEX(sus)2}$ | $I_C=0.5A, I_{B1}=0.4A, I_{B2}=-0.1A, L=5mH, \text{clamped}$   | 900     |     |     | V       |
| Turn-ON Time                            | $t_{on}$        | $I_C=2A, I_{B1}=0.4A, I_{B2}=-0.8A, R_L=20\Omega, V_{CC}=400V$ |         |     | 1.0 | $\mu s$ |
| Storage Time                            | $t_{stg}$       | $I_C=2A, I_{B1}=0.4A, I_{B2}=-0.8A, R_L=20\Omega, V_{CC}=400V$ |         |     | 3.0 | $\mu s$ |
| Fall Time                               | $t_f$           | $I_C=2A, I_{B1}=0.4A, I_{B2}=-0.8A, R_L=20\Omega, V_{CC}=400V$ |         |     | 0.7 | $\mu s$ |

Switching Time Test Circuit





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