

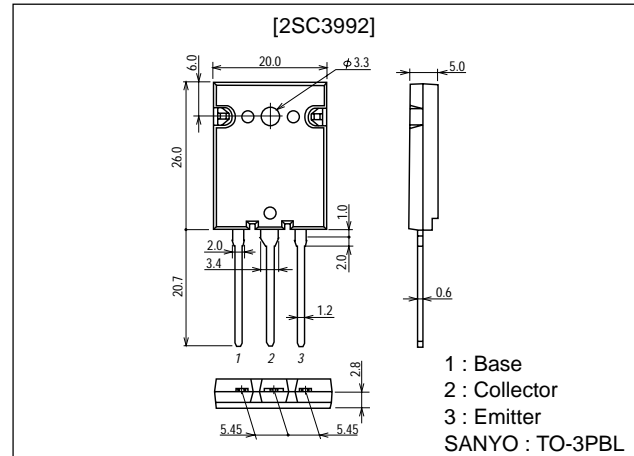
**2SC3992****800V/12A Switching Regulator Applications****Features**

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

Package Dimensions

unit:mm

2048B

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

| Parameter | Symbol | Conditions | Ratings | Unit |
|------------------------------|-----------|---|-------------|------------------|
| Collector-to-Base Voltage | V_{CB0} | | 1100 | V |
| Collector-to-Emitter Voltage | V_{CEO} | | 800 | V |
| Emitter-to-Base Voltage | V_{EBO} | | 7 | V |
| Collector Current | I_C | | 12 | A |
| Collector Current (Pulse) | I_{CP} | $PW \leq 300\mu\text{s}$, duty cycle $\leq 10\%$ | 30 | A |
| Base Current | I_B | | 6 | A |
| Collector Dissipation | P_C | $T_c = 25^\circ\text{C}$ | 200 | 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} | $V_{CB} = 800\text{V}$, $I_E = 0$ | | | 10 | μA |
| Emitter Cutoff Current | I_{EBO} | $V_{EB} = 5\text{V}$, $I_C = 0$ | | | 10 | μA |
| DC Current Gain | h_{FE1} | $V_{CE} = 5\text{V}$, $I_C = 0.8\text{A}$ | 10* | | 40* | |
| | h_{FE2} | $V_{CE} = 5\text{V}$, $I_C = 4\text{A}$ | 8 | | | |

* : The 2SC3992 is classified by 0.8A h_{FE} as follows :

Continued on next page.

| Rank | K | L | M |
|----------|----------|----------|----------|
| h_{FE} | 10 to 20 | 15 to 30 | 20 to 40 |

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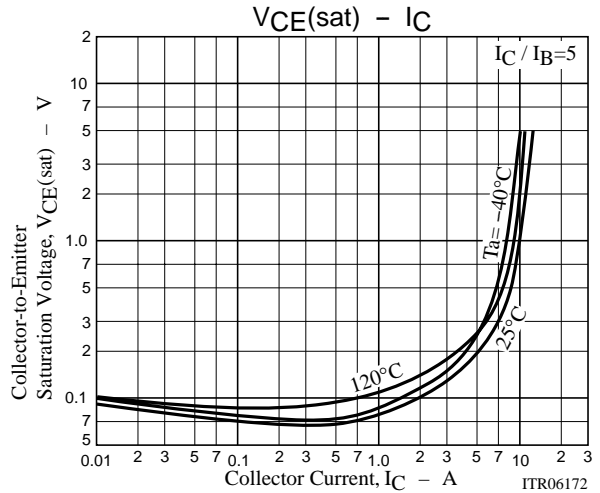
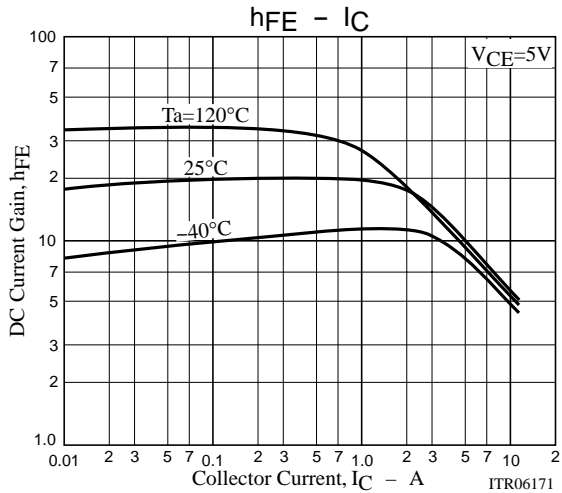
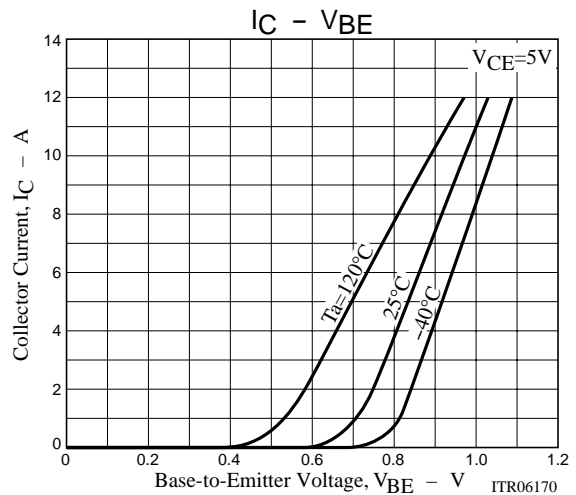
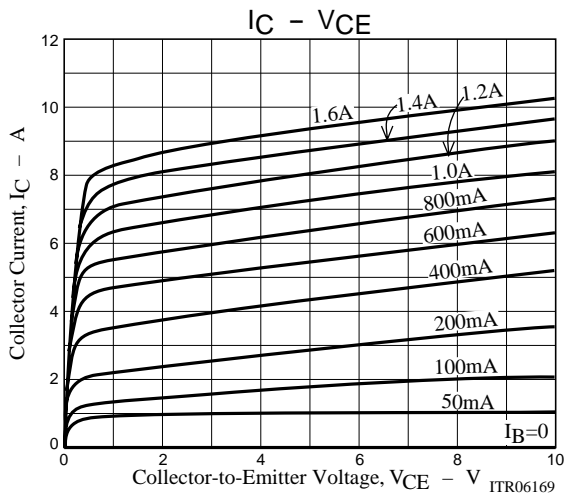
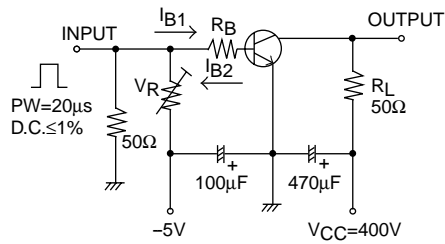
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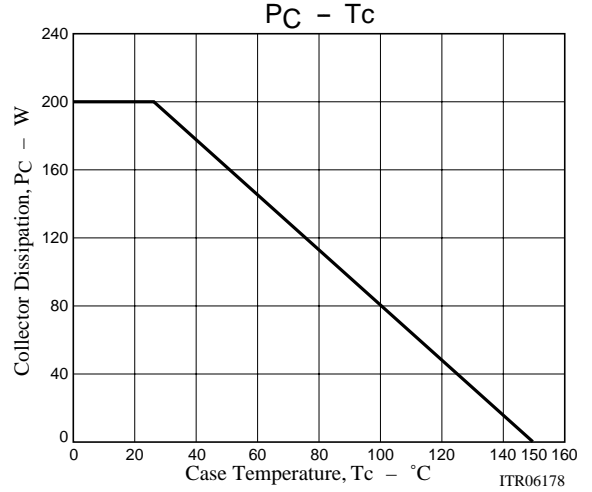
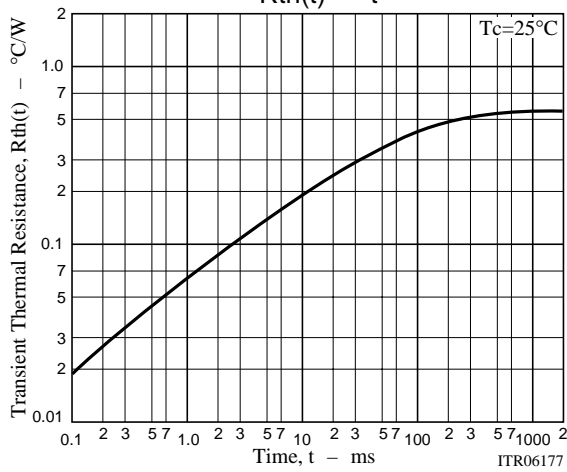
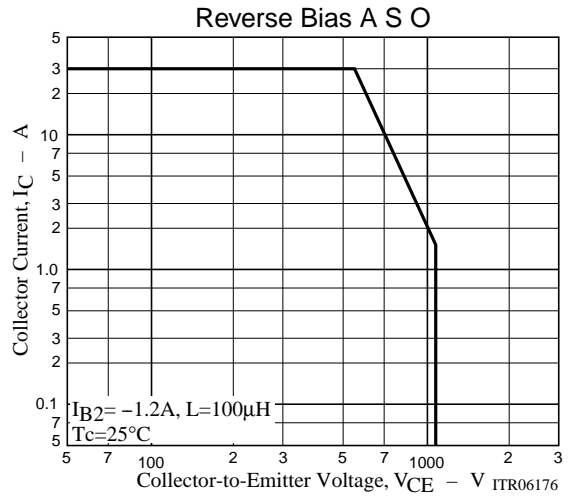
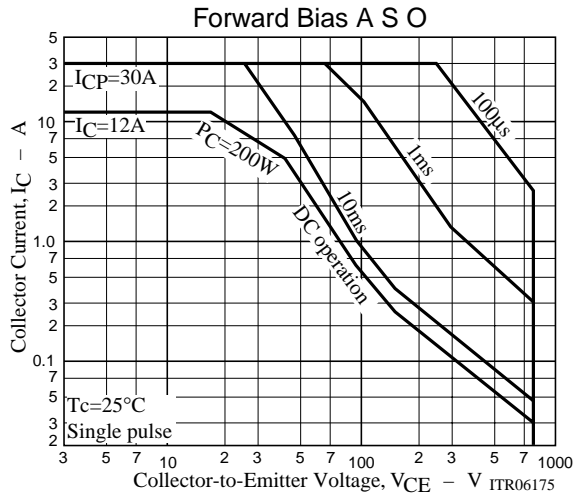
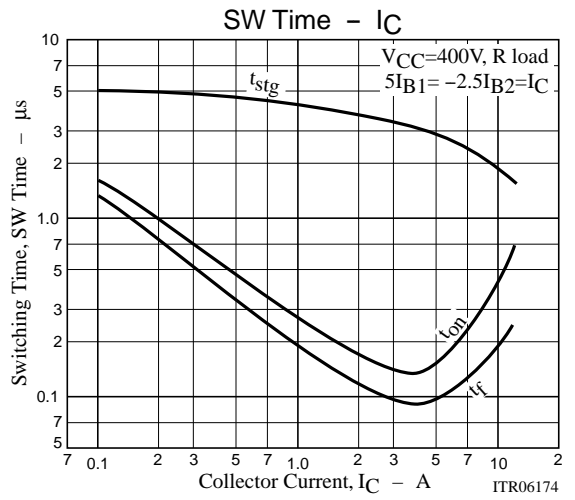
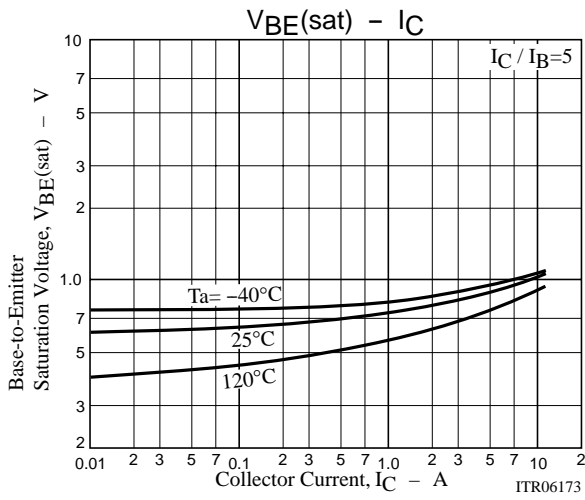
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| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---|----------------|--|---------|-----|-----|---------|
| | | | min | typ | max | |
| Gain-Bandwidth Product | f_T | $V_{CE}=10V, I_C=0.8A$ | | 15 | | MHz |
| Output Capacitance | C_{ob} | $V_{CB}=10V, f=1MHz$ | | 215 | | pF |
| Collector-to-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=6A, I_B=1.2A$ | | | 2.0 | V |
| Base-to-Emitter Saturation Voltage | $V_{BE(sat)}$ | $I_C=6A, I_B=1.2A$ | | | 1.5 | V |
| Collector-to-Base Breakdown Voltage | $V_{(BR)CBO}$ | $I_C=1mA, I_E=0$ | 1100 | | | 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 | $V_{CEX(sus)}$ | $I_C=6A, I_{B1}=-I_{B2}=-1.2A, L=500\mu H, \text{clamped}$ | 800 | | | V |
| Turn-ON Time | t_{on} | $V_{CC}=400V, 5I_{B1}=-2.5I_{B2}=I_C=8A, R_L=50\Omega$ | | | 0.5 | μs |
| Storage Time | t_{stg} | $V_{CC}=400V, 5I_{B1}=-2.5I_{B2}=I_C=8A, R_L=50\Omega$ | | | 3.0 | μs |
| Fall Time | t_f | $V_{CC}=400V, 5I_{B1}=-2.5I_{B2}=I_C=8A, R_L=50\Omega$ | | | 0.3 | μs |

Switching Time Test Circuit



2SC3992



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