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|  | No.996B | <h1 style="margin: 0;">2SC3039</h1> <p style="margin: 0;">NPN Triple Diffused Planar Silicon Transistor</p> <p style="margin: 0;">FOR SWITCHING REGULATORS</p> |
|---|---------|--|

Features

- . High breakdown voltage ($V_{CBO} \geq 500V$)
- . Fast switching speed.
- . Wide ASO.

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

| | | | unit |
|------------------------------|-----------|--|------------|
| Collector-to-Base Voltage | V_{CBO} | 500 | V |
| Collector-to-Emitter Voltage | V_{CEO} | 400 | V |
| Emitter-to-Base Voltage | V_{EBO} | 7 | V |
| Collector Current | I_C | 7 | A |
| Peak Collector Current | i_{cp} | 14 | A |
| | | $PW \leq 300\mu s,$ $Duty\ Cycle \leq 10\%$ | |
| Base Current | I_B | 3 | A |
| Collector Dissipation | P_C | 1.75 | W |
| | | $T_c=25^\circ C$ | |
| Junction Temperature | T_j | 150 | $^\circ C$ |
| Storage Temperature | T_{stg} | -55 to +150 | $^\circ C$ |

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

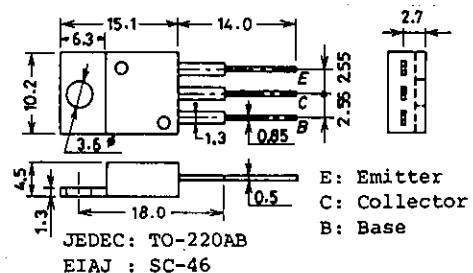
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|--------------------------|----------------|---|-----|-----|-----|-----|---------|
| Collector Cutoff Current | I_{CBO} | $V_{CB}=400V, I_E=0$ | | | | 10 | μA |
| Emitter Cutoff Current | I_{EBO} | $V_{EB}=5V, I_C=0$ | | | | 10 | μA |
| DC Current Gain | $h_{FE}(1)$ | $V_{CE}=5V, I_C=0.8A$ | 15* | | | 50* | |
| | $h_{FE}(2)$ | $V_{CE}=5V, I_C=4A$ | 8 | | | | |
| C-E Saturation Voltage | $V_{CE(sat)}$ | $I_C=4A, I_B=0.8A$ | | | | 1.0 | V |
| B-E Saturation Voltage | $V_{BE(sat)}$ | $I_C=4A, I_B=0.8A$ | | | | 1.5 | V |
| Gain Bandwidth Product | f_T | $V_{CE}=10V, I_C=0.8A$ | | 20 | | | MHz |
| Output Capacitance | c_{ob} | $V_{CB}=10V, f=1MHz$ | | | 80 | | pF |
| C-B Breakdown Voltage | $V_{(BR)CBO}$ | $I_C=1mA, I_E=0$ | 500 | | | | V |
| C-E Breakdown Voltage | $V_{(BR)CEO}$ | $I_C=5mA, R_{BE}=\infty$ | 400 | | | | V |
| E-B Breakdown Voltage | $V_{(BR)EBO}$ | $I_E=1mA, I_C=0$ | 7 | | | | V |
| C-E Sustain Voltage | $V_{CEO(sus)}$ | $I_C=7A, I_B=1.4A, L=50\mu H$ | 400 | | | | V |
| C-E Sustain Voltage | $V_{CEX(sus)}$ | $I_C=7A, I_{B1}=1.4A, L=200\mu H,$ $I_{B2}=-1.4A, clamped$ | 400 | | | | V |
| C-E Sustain Voltage | $V_{CEX(sus)}$ | $I_C=1.5A, I_{B1}=0.3A, L=200\mu H,$ $I_{B2}=-0.3A, clamped$ | 450 | | | | V |

Continued on next page.

*: The $h_{FE}(1)$ of the 2SC3039 is classified as follows. When specifying the $h_{FE}(1)$ rank, specify two ranks or more in principle.

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| 15 L 30 | 20 M 40 | 30 N 50 |
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Package Dimensions 2010A
(unit:mm)

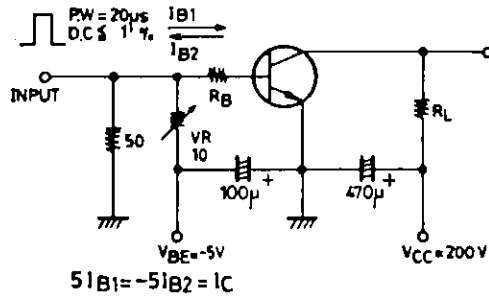


E: Emitter
C: Collector
B: Base

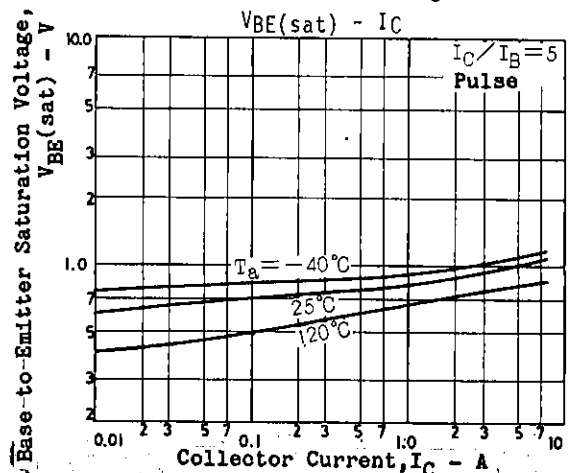
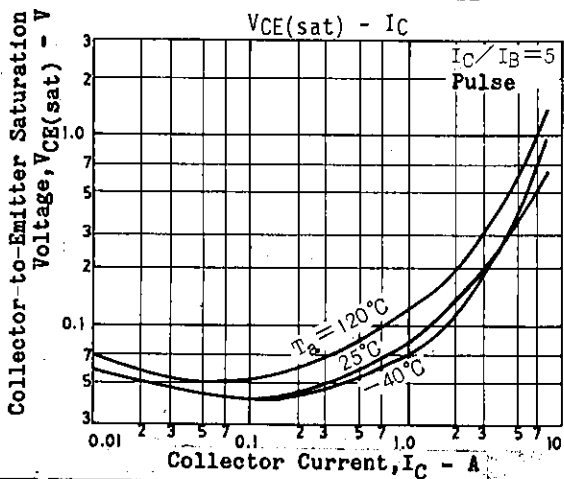
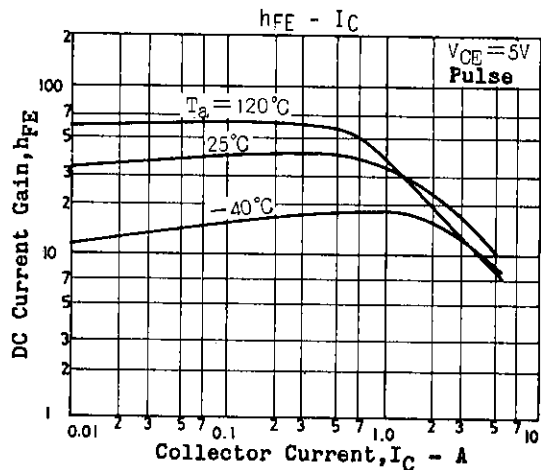
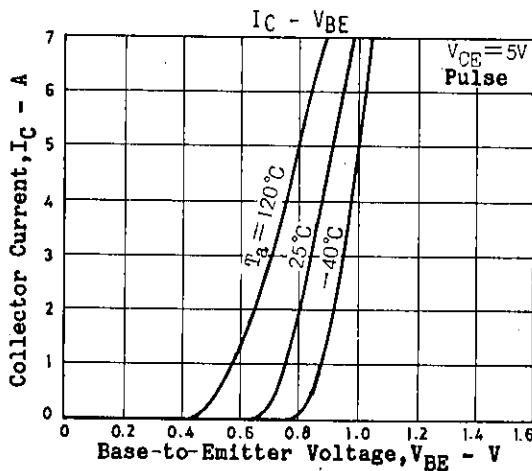
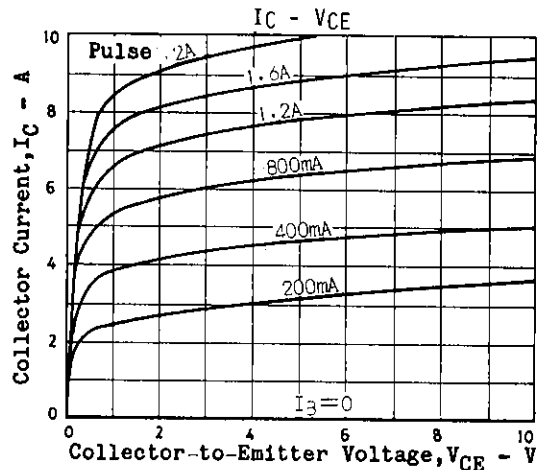
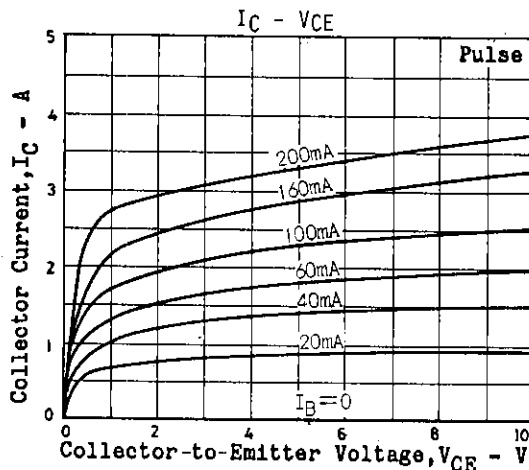
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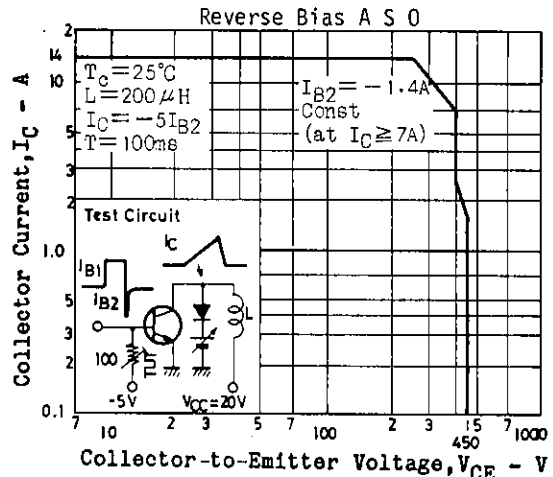
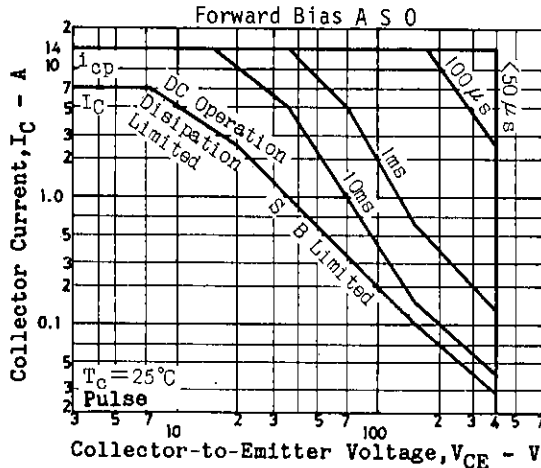
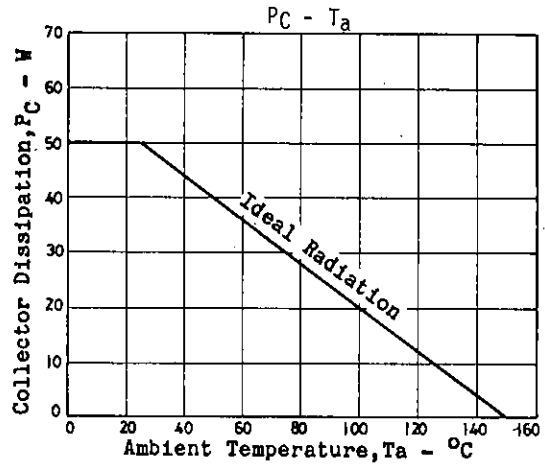
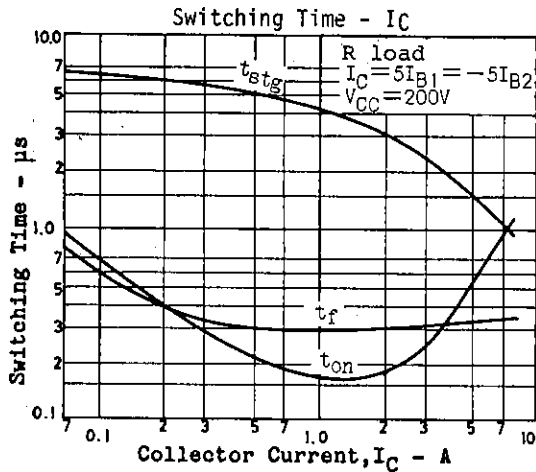
| | | | min | typ | max | unit |
|--------------|-----------|---|-----|-----|-----|---------|
| Turn-ON Time | t_{on} | $I_C=5A, I_{B1}=1A, I_{B2}=-1A,$ $R_L=40\Omega, V_{CC}=200V$ | | | 1.0 | μs |
| Storage Time | t_{stg} | " " | | | 2.5 | μs |
| Fall Time | t_f | " " | | | 1.0 | μs |

Switching Time Test Circuit



Unit (Resistance : Ω , Capacitance : F)





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