

**SANYO**

No. 1017B

**2SC3088**

NPN Triple Diffused Planar Silicon Transistor

FOR SWITCHING REGULATORS

**Features**

- . High breakdown voltage ( $V_{CBO} \geq 800V$ )
- . Fast switching speed.
- . Wide ASO.

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

| Parameter                    | Symbol    | Value  | unit       |
|------------------------------|-----------|--|------------|
| Collector-to-Base Voltage    | $V_{CBO}$ | 800  | V          |
| Collector-to-Emitter Voltage | $V_{CEO}$ | 500  | V          |
| Emitter-to-Base Voltage      | $V_{EBO}$ | 7  | V          |
| Collector Current            | $I_C$     | 4  | A          |
| Peak Collector Current       | $i_{cp}$  | 8  | A          |
|                              |           | PW $\leq 300\mu s$ ,<br>Duty Cycle $\leq 10\%$ |            |
| Base Current                 | $I_B$     | 1.5  | A          |
| Collector Dissipation        | $P_C$     | 2.5  | W          |
|                              |           | 60   | 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  $T_a=25^\circ C$**

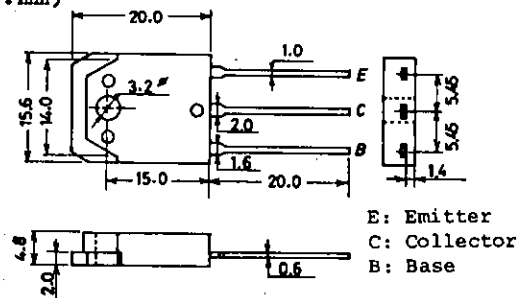
| Parameter                | Symbol         | Test Conditions  | min | typ | max | unit    |
|--------------------------|----------------|--|-----|-----|-----|---------|
| Collector Cutoff Current | $I_{CBO}$      | $V_{CB}=500V, I_E=0$   |     |     | 10  | $\mu A$ |
| Emitter Cutoff Current   | $I_{EBO}$      | $V_{EB}=5V, I_C=0$   |     |     | 10  | $\mu A$ |
| DC Current Gain          | $h_{FE}(1)$    | $V_{CE}=5V, I_C=0.3A$  | 15* |     | 50* |         |
|                          | $h_{FE}(2)$    | $V_{CE}=5V, I_C=1.5A$  | 8   |     |     |         |
| C-E Saturation Voltage   | $V_{CE(sat)}$  | $I_C=1.5A, I_B=0.3A$   |     |     | 1.0 | V       |
| B-E Saturation Voltage   | $V_{BE(sat)}$  | $I_C=1.5A, I_B=0.3A$   |     |     | 1.5 | V       |
| Gain-Bandwidth Product   | $f_T$          | $V_{CE}=10V, I_C=0.3A$   |     | 18  |     | MHz     |
| Output Capacitance       | $c_{ob}$       | $V_{CB}=10V, f=1MHz$   |     | 40  |     | pF      |
| C-B Breakdown Voltage    | $V_{(BR)CBO}$  | $I_C=1mA, I_E=0$   | 800 |     |     | V       |
| C-E Breakdown Voltage    | $V_{(BR)CEO}$  | $I_C=1mA, R_{BE}=\infty$   | 500 |     |     | V       |
| E-B Breakdown Voltage    | $V_{(BR)EBO}$  | $I_E=1mA, I_C=0$   | 7   |     |     | V       |
| C-E Sustain Voltage      | $V_{CEO(sus)}$ | $I_C=4A, I_B=0.8A, L=50\mu H$  | 500 |     |     | V       |
| C-E Sustain Voltage      | $V_{CEX(sus)}$ | $I_C=4A, I_{B1}=0.8A, L=200\mu H,$<br>$I_{B2}=-0.8A, \text{clamped}$     | 500 |     |     | V       |
| C-E Sustain Voltage      | $V_{CEX(sus)}$ | $I_C=0.6A, I_{B1}=0.12A, L=200\mu H,$<br>$I_{B2}=-0.12A, \text{clamped}$ | 550 |     |     | V       |

Continued on next page.

\*: The  $h_{FE}(1)$  of the 2SC3088 is classified as follows. When specifying the  $h_{FE}(1)$  rank, specify two ranks or more in principle.

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

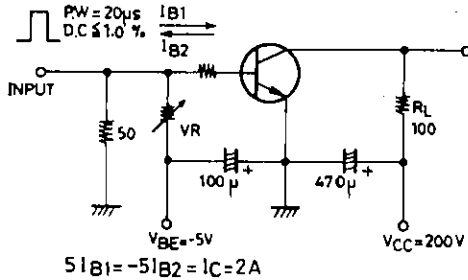
**Package Dimensions 2022 (unit:mm)**



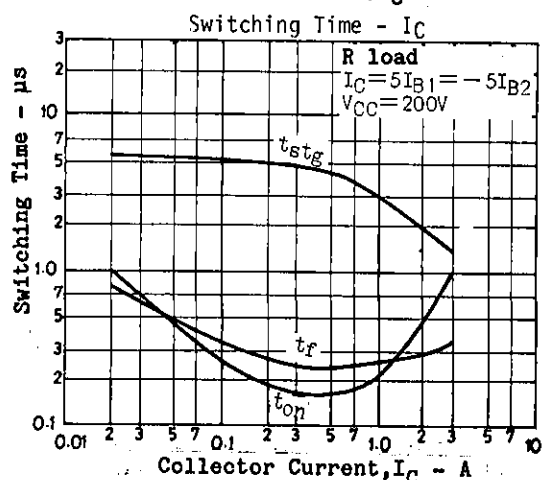
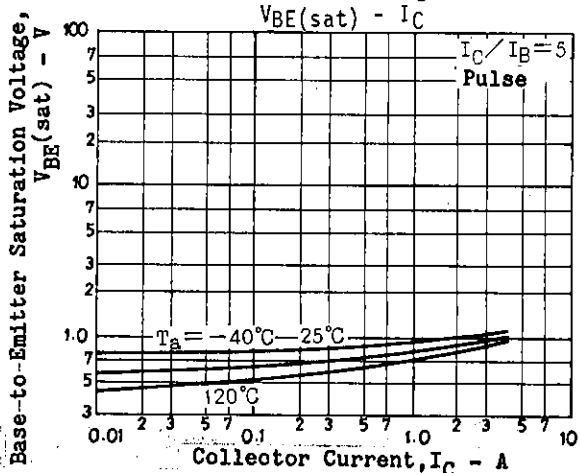
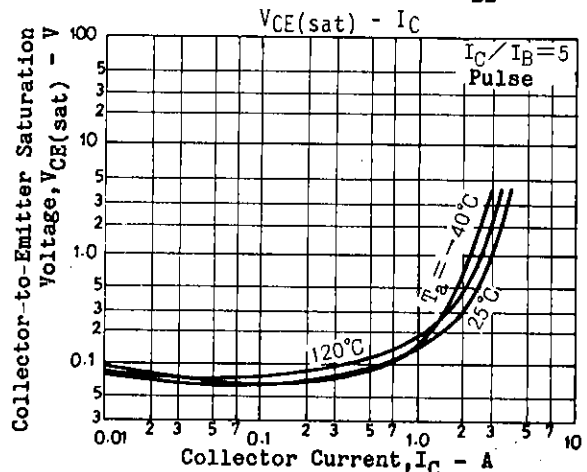
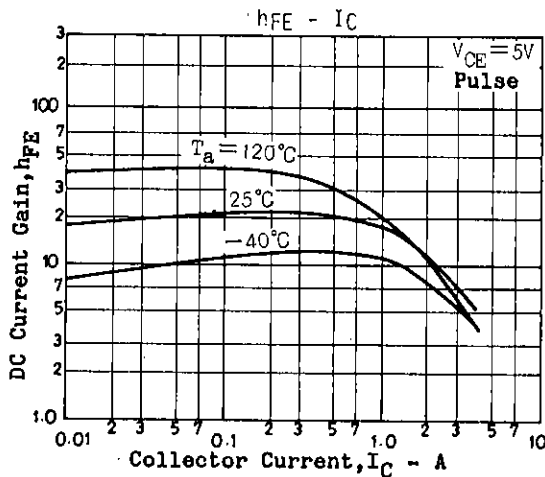
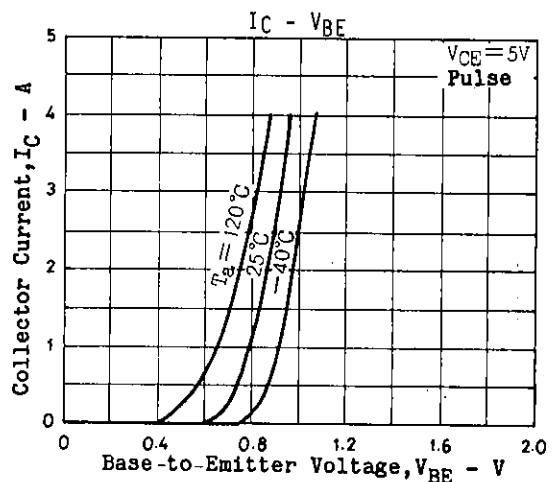
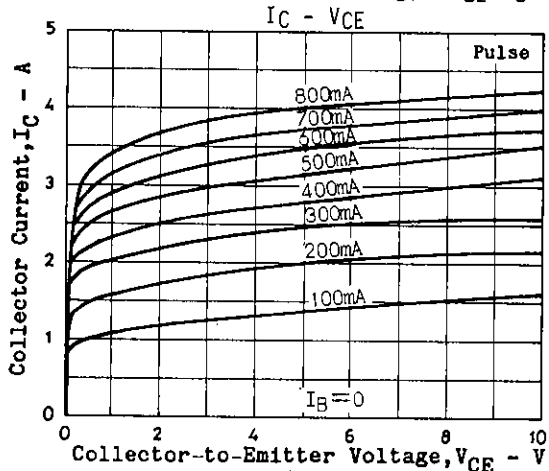
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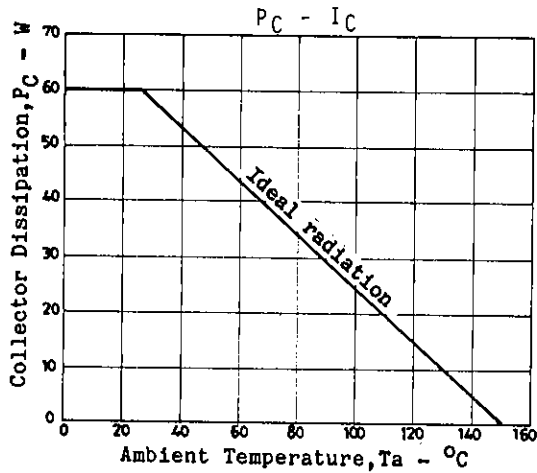
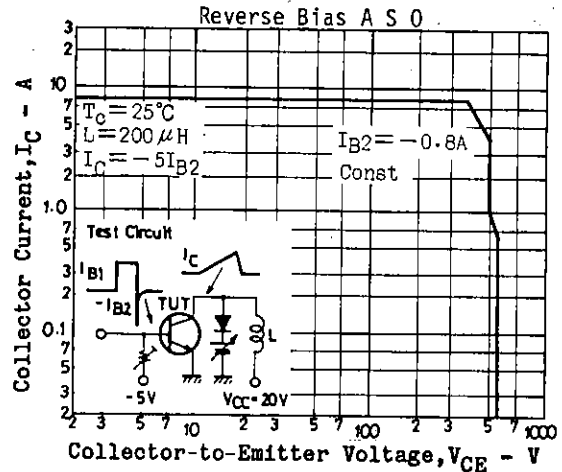
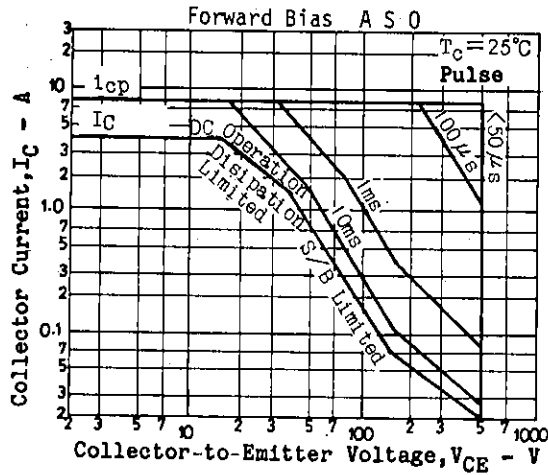
|              |           |   | min | typ | max | unit    |
|--------------|-----------|---|-----|-----|-----|---------|
| Turn-ON Time | $t_{on}$  | $I_C=2A, I_{B1}=0.4A, I_{B2}=-0.4A,$<br>$R_L=100\text{ohms}, V_{CC}=200V$ |     |     | 1.0 | $\mu s$ |
| Storage Time | $t_{stg}$ | " "   |     |     | 3.0 | $\mu s$ |
| Fall Time    | $t_f$     | " "   |     |     | 1.0 | $\mu s$ |

Switching Time Test Circuit



Unit (Resistance :  $\Omega$ , Capacitance : F)





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