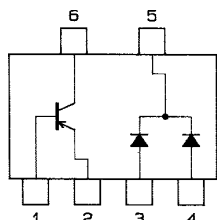


**SANYO****FX802**

TR:PNP Epitaxial Planar Silicon Transistor  
 SBD:Schottky Barrier Diode (Twin type · Cathode Common)

**DC-DC Converter****Features**

- Complex type of a low saturation voltage, high speed switching and large current PNP transistor and a fast recovery and low forward voltage Schottky barrier diode facilitating high-density mounting.
- The FX802 is composed of 2 chips, one being equivalent to the 2SB1302 and the other the SB20W03P, placed in one package.

**Electrical Connection**

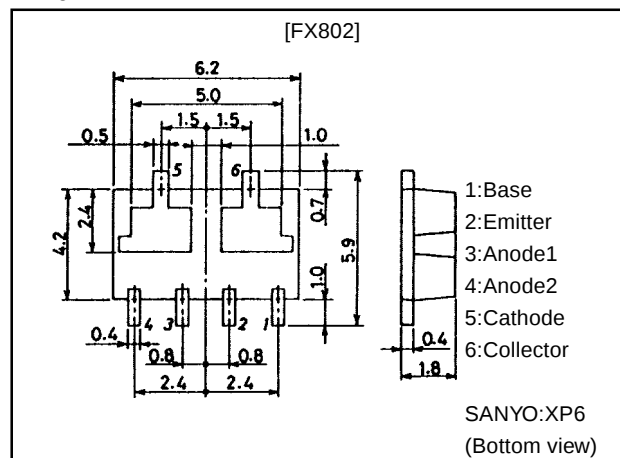
1:Base  
 2:Emitter  
 3:Anode1  
 4:Anode2  
 5:Cathode  
 6:Collector

(Top view)

**Package Dimensions**

unit:mm

2126

**Specifications****Absolute Maximum Ratings at Ta = 25°C**

| Parameter                                 | Symbol    | Conditions                                                  | Ratings     | Unit |
|-------------------------------------------|-----------|-------------------------------------------------------------|-------------|------|
| [TR]                                      |           |                                                             |             |      |
| Collector-to-Base Voltage                 | $V_{CBO}$ |                                                             | -25         | V    |
| Collector-to-Emitter Voltage              | $V_{CEO}$ |                                                             | -20         | V    |
| Emitter-to-Base Voltage                   | $V_{EBO}$ |                                                             | -5          | V    |
| Collector Current                         | $I_C$     |                                                             | -5          | A    |
| Collector Current (Pulse)                 | $I_{CP}$  |                                                             | -8          | A    |
| Base Current                              | $I_B$     |                                                             | -1          | A    |
| Collector Dissipation                     | $P_C$     | Mounted on ceramic board (750mm <sup>2</sup> ×0.8mm) 1 unit | 1.5         | W    |
| Junction Temperature                      | $T_J$     |                                                             | 150         | °C   |
| [SBD]                                     |           |                                                             |             |      |
| Repetitive Peak Reverse Voltage           | $V_{RRM}$ |                                                             | 30          | V    |
| Non-repetitive Peak Reverse Surge Voltage | $V_{RSM}$ |                                                             | 35          | V    |
| Average Rectified Current                 | $I_O$     |                                                             | 2           | A    |
|                                           | $I_O$     | (Total)                                                     | 4           | A    |
| Surge Forward Current                     | $I_{FSM}$ | 50Hz sine wave, 1 cycle                                     | 10          | A    |
| Junction Temperature                      | $T_J$     |                                                             | -55 to +125 | °C   |
| Storage Temperature                       | $T_{stg}$ |                                                             | -55 to +125 | °C   |

· Marking:802

Continued on next page.

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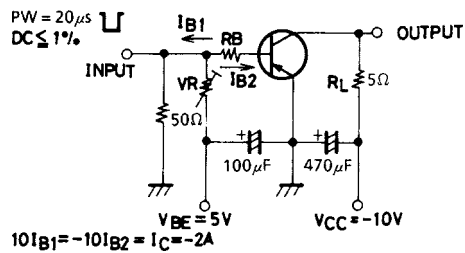
52098HA (KT)/41095TS (KOTO) TA-0134 No.5052-1/4

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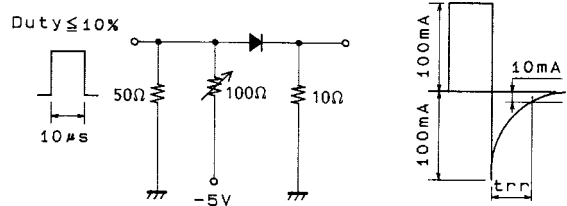
**Electrical Characteristics at Ta = 25°C**

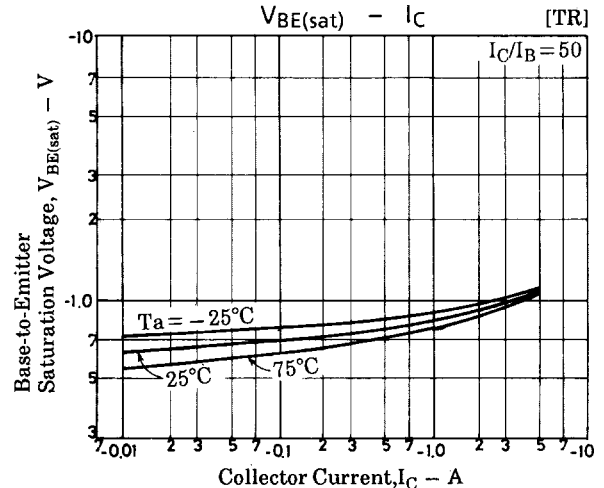
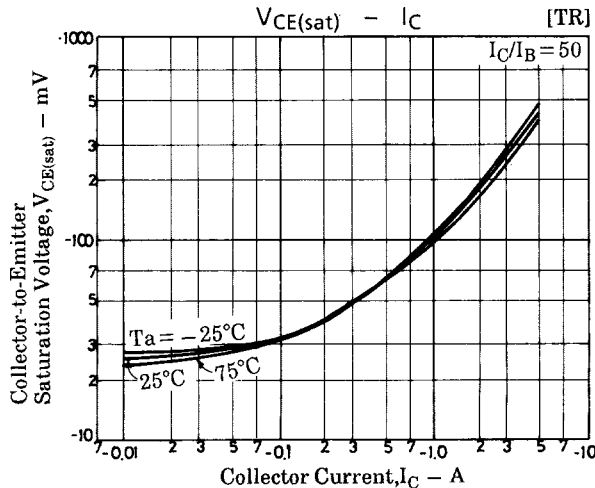
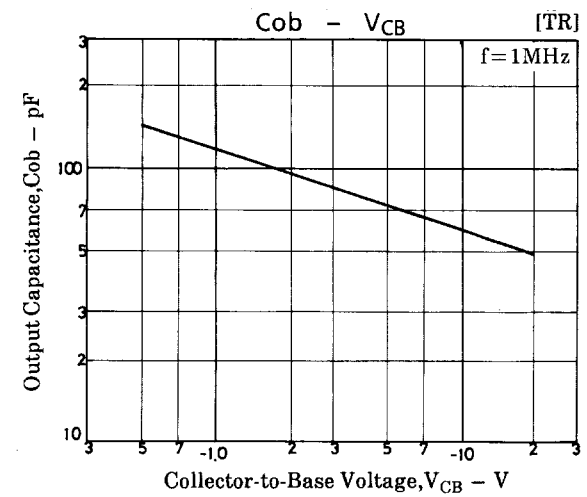
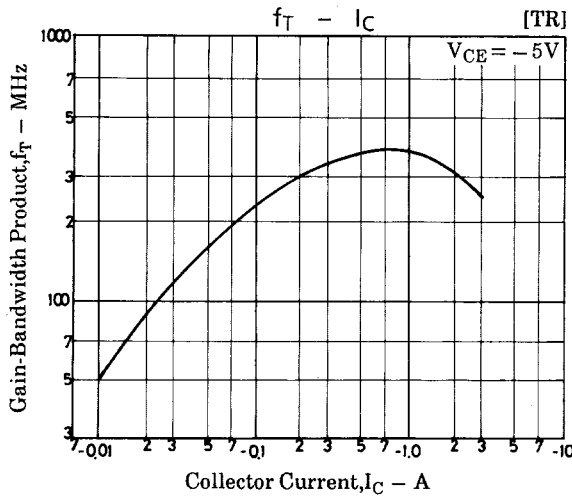
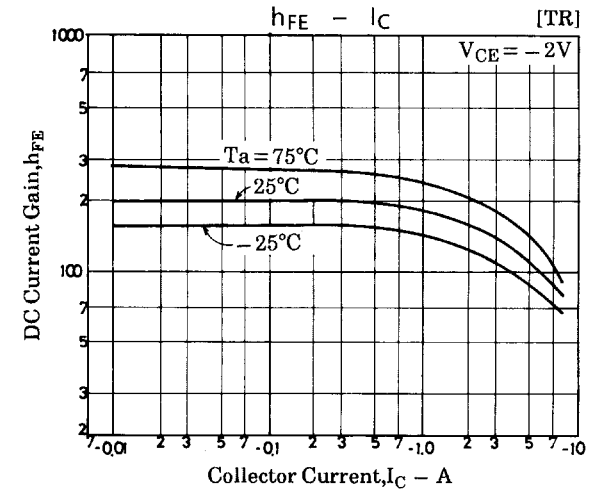
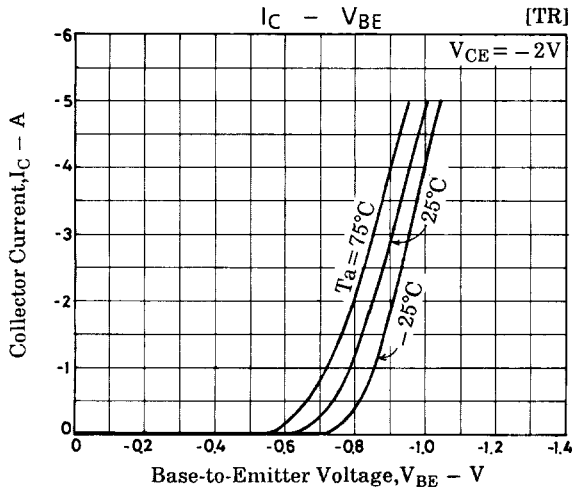
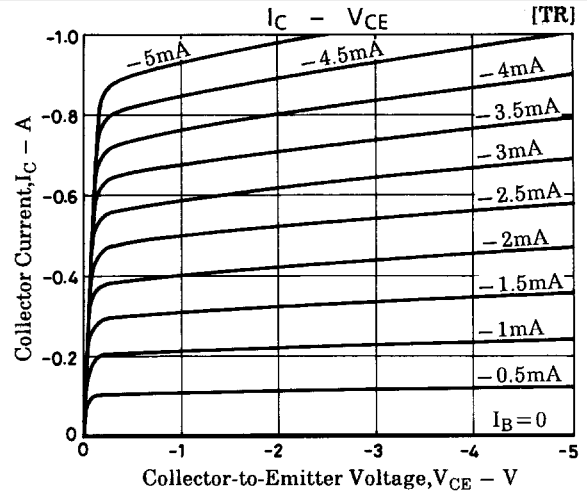
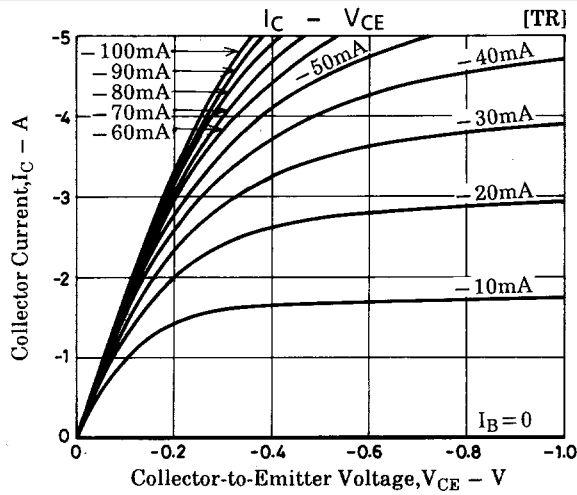
| Parameter                 | Symbol               | Conditions                                                        | Ratings |      |      | Unit |
|---------------------------|----------------------|-------------------------------------------------------------------|---------|------|------|------|
|                           |                      |                                                                   | min     | typ  | max  |      |
| [TR]                      |                      |                                                                   |         |      |      |      |
| Collector Cutoff Current  | I <sub>CBO</sub>     | V <sub>CB</sub> =−20V, I <sub>E</sub> =0                          |         |      | −500 | nA   |
| Emitter Cutoff Current    | I <sub>EBO</sub>     | V <sub>EB</sub> =−4V, I <sub>C</sub> =0                           |         |      | −500 | nA   |
| DC Current Gain           | h <sub>FE1</sub>     | V <sub>CE</sub> =−2V, I <sub>C</sub> =−500mA                      | 140     |      | 400  |      |
|                           | h <sub>FE2</sub>     | V <sub>CE</sub> =−2V, I <sub>C</sub> =−4A                         | 60      |      |      |      |
| Gain-Bandwidth Product    | f <sub>T</sub>       | V <sub>CE</sub> =−5V, I <sub>C</sub> =−200mA                      |         | 320  |      | MHz  |
| Output Capacitance        | C <sub>ob</sub>      | V <sub>CE</sub> =−10V, f=1MHz                                     |         | 60   |      | pF   |
| C-E Saturation Voltage    | V <sub>CE(sat)</sub> | I <sub>C</sub> =−3A, I <sub>B</sub> =−60mA                        |         | −250 | −500 | mV   |
| B-E Saturation Voltage    | V <sub>BE(sat)</sub> | I <sub>C</sub> =−3A, I <sub>B</sub> =−60mA                        |         | −1.0 | −1.3 | V    |
| C-B Breakdown Voltage     | V <sub>(BR)CBO</sub> | I <sub>C</sub> =−10μA, I <sub>E</sub> =0                          | −25     |      |      | V    |
| C-E Breakdown Voltage     | V <sub>(BR)CEO</sub> | I <sub>E</sub> =−1mA, R <sub>BE</sub> =∞                          | −20     |      |      | V    |
| E-B Breakdown Voltage     | V <sub>(BR)EBO</sub> | I <sub>E</sub> =−10μA, I <sub>C</sub> =0                          | −5      |      |      | V    |
| Turn-ON Time              | t <sub>on</sub>      | See sepcified Test Circuit                                        |         | 40   |      | ns   |
| Storage Time              | t <sub>stg</sub>     | See sepcified Test Circuit                                        |         | 200  |      | ns   |
| Fall Time                 | t <sub>f</sub>       | See sepcified Test Circuit                                        |         | 10   |      | ns   |
| [SBD] (Value per element) |                      |                                                                   |         |      |      |      |
| Reverse Voltage           | V <sub>R</sub>       | I <sub>R</sub> =500μA                                             | 30      |      |      | V    |
| Forward Voltage           | V <sub>F</sub>       | I <sub>F</sub> =2A                                                |         |      | 0.55 | V    |
| Reverse Current           | I <sub>R</sub>       | V <sub>R</sub> =15V                                               |         |      | 100  | μA   |
| Interterminal Capacitance | C                    | V <sub>R</sub> =10V, f=1MHz                                       |         | 70   |      | pF   |
| Reverse Recovery Time     | trr                  | I <sub>F</sub> =I <sub>R</sub> =100mA, See specified Test Circuit |         |      | 20   | ns   |
| Thermal Resistance        | R <sub>thj-a</sub>   | Mounted on ceramic board (750mm²×0.8mm)                           |         | 85   |      | °C/W |

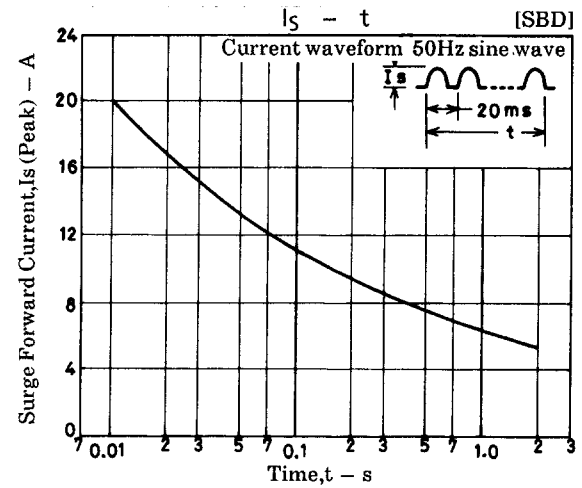
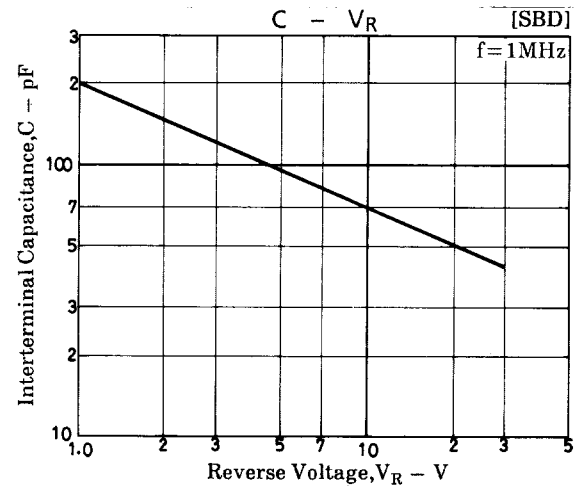
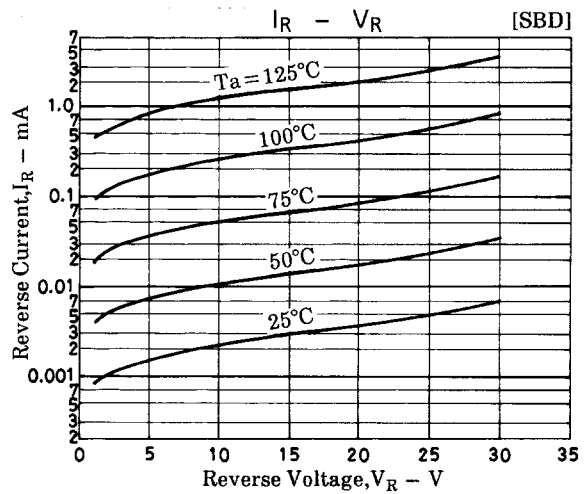
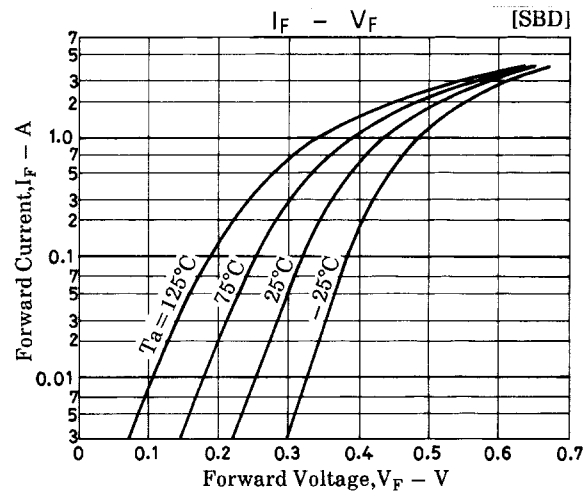
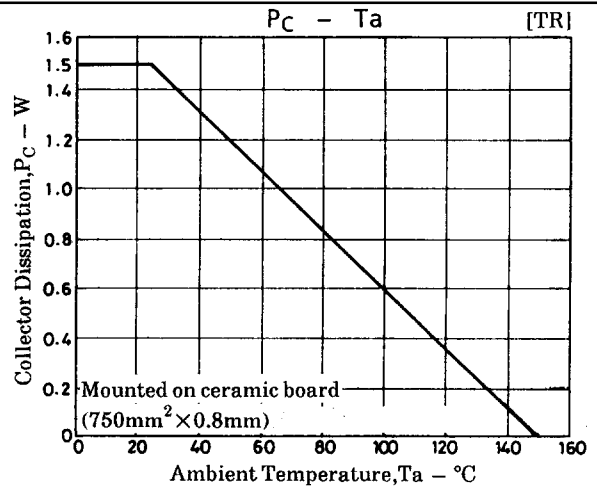
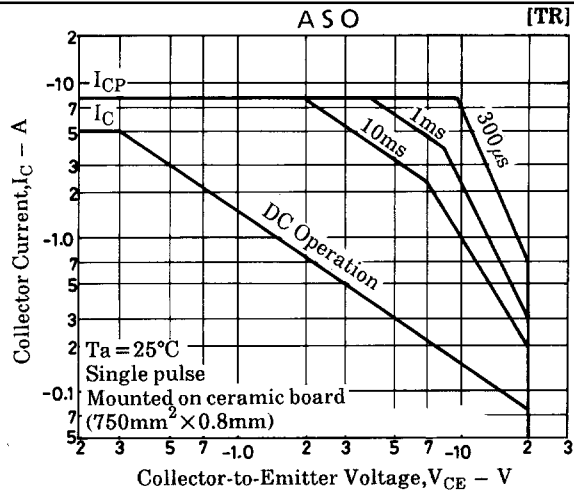
**Switching Time Test Circuit**



**Trr Test Circuit**







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