



FP103

PNP Epitaxial Planar Silicon Transistor/
Composite Schottky Barrier Diode

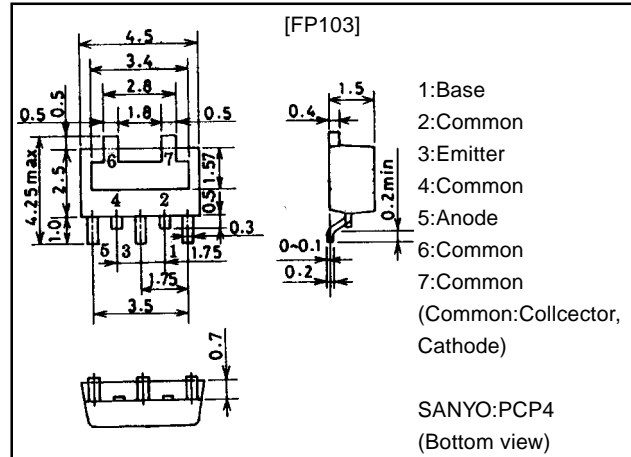
DC-DC Converter Applications

Features

- Composite type with a PNP transistor and a Schottky barrier diode contained in one package, facilitating high-density mounting.
- The FP103 is formed with 2chips, one being equivalent to the 2SB1121 and the other the SB07-03C, placed in one package.

Package Dimensions

unit:mm
2088A



Specifications

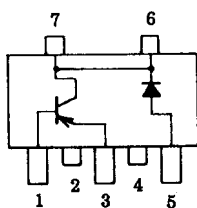
Absolute Maximum Ratings at Ta = 25°C

| Parameter | Symbol | Conditions | Ratings | Unit |
|---|-----------|--|-------------|------|
| [TR] | | | | |
| Collector-to-Base Voltage | V_{CB0} | | -30 | V |
| Collector-to-Emitter Voltage | V_{CEO} | | -25 | V |
| Emitter-to-Base Voltage | V_{EBO} | | -6 | V |
| Collector Current | I_C | | -2 | A |
| Collector Current (Pulse) | I_{CP} | | -5 | A |
| Base Current | I_B | | -400 | mA |
| Collector Dissipation | P_C | Mounted on ceramic board (250mm ² ×0.8mm) | 1.3 | 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 | | 700 | mA |
| Surge Forward Current | I_{FSM} | 50Hz sine wave, 1cycle | 5 | A |
| Junction Temperature | T_J | | -55 to +125 | °C |
| Storage Temperature | T_{stg} | | -55 to +125 | °C |

Marking: 103

Continued on next page.

Electrical Connection



- 1:Base
2:Common
3:Emitter
4:Common
5:Anode
6:Common
7:Common
(Common:Collector, Cathode)
(Top view)

FP103

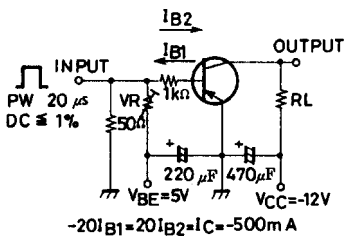
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Electrical Characteristics at Ta=25°C

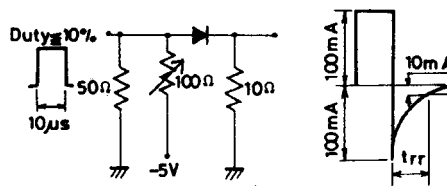
| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---------------------------|---------------|--|---------|-------|------|---------|
| | | | min | typ | max | |
| [TR] | | | | | | |
| Collector Cutoff Current | I_{CBO} | $V_{CB}=-20V, I_E=0$ | | | -0.1 | μA |
| Emitter Cutoff Current | I_{EBO} | $V_{EB}=-4V, I_C=0$ | | | -0.1 | μA |
| DC Current Gain | h_{FE1} | $V_{CE}=-2V, I_C=-100mA$ | 140 | | 560 | |
| | h_{FE2} | $V_{CE}=-2V, I_C=-1.5A$ | 65 | | | |
| Gain-Bandwidth Product | f_T | $V_{CE}=-10V, I_C=-50mA$ | | 150 | | MHz |
| Output Capacitance | C_{ob} | $V_{CB}=-10V, f=1MHz$ | | 32 | | pF |
| C-E Saturation Voltage | $V_{CE(sat)}$ | $I_C=-1.5A, I_B=-75mA$ | | -0.35 | -0.6 | V |
| B-E Saturation Voltage | $V_{BE(sat)}$ | $I_C=-1.5A, I_B=-75mA$ | | -0.85 | -1.2 | V |
| C-B Breakdown Voltage | $V_{(BR)CBO}$ | $I_C=-10\mu A, I_E=0$ | -30 | | | V |
| C-E Breakdown Voltage | $V_{(BR)CEO}$ | $I_C=-1mA, R_{BE}=\infty$ | -25 | | | V |
| E-B Breakdown Voltage | $V_{(BR)EBO}$ | $I_E=-10\mu A, I_C=0$ | -6 | | | V |
| Turn-ON Time | t_{on} | See specified Test Circuit | | 60 | | ns |
| Storage Time | t_{stg} | See specified Test Circuit | | 350 | | ns |
| Fall Time | t_f | See specified Test Circuit | | 25 | | ns |
| [SBD] | | | | | | |
| Reverse Voltage | V_R | $I_R=300\mu A$ | 30 | | | V |
| Forward Voltage | V_F | $I_F=700mA$ | | | 0.55 | V |
| Reverse Current | I_R | $V_R=15V$ | | | 80 | μA |
| Interterminal Capacitance | C | $V_R=10V, f=1MHz$ | | 28 | | pF |
| Reverse Recovery Time | t_{rr} | $I_F=I_R=100mA$, See specified Test Circuit | | | 10 | ns |
| Thermal Resistance | R_{thj-a} | Mounted on ceramic board (250mm ² ×0.8mm) | | 120 | | °C/W |

Switching Time Test Circuit

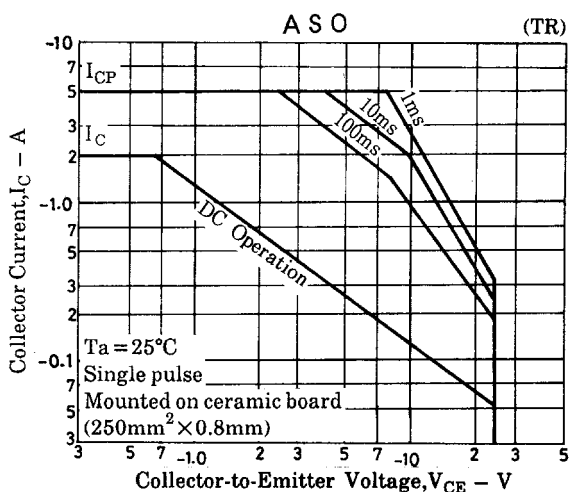
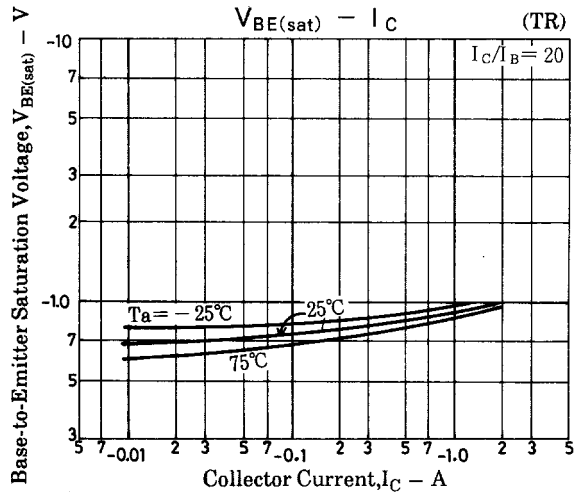
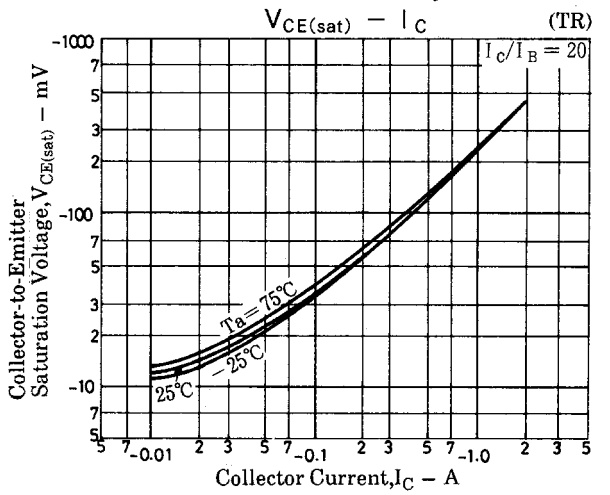
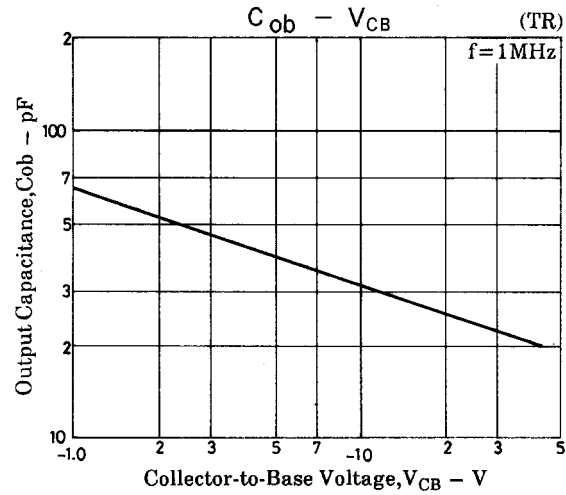
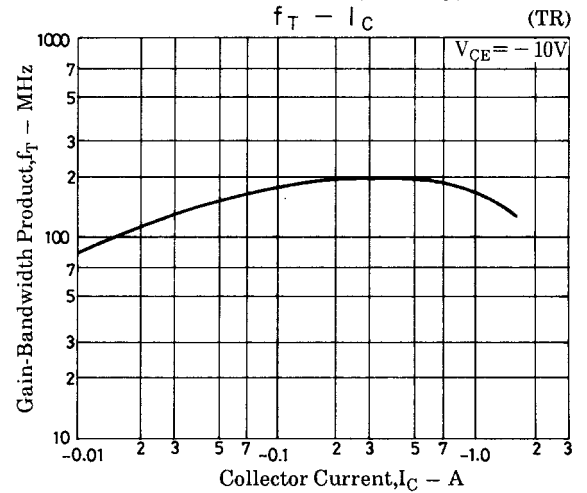
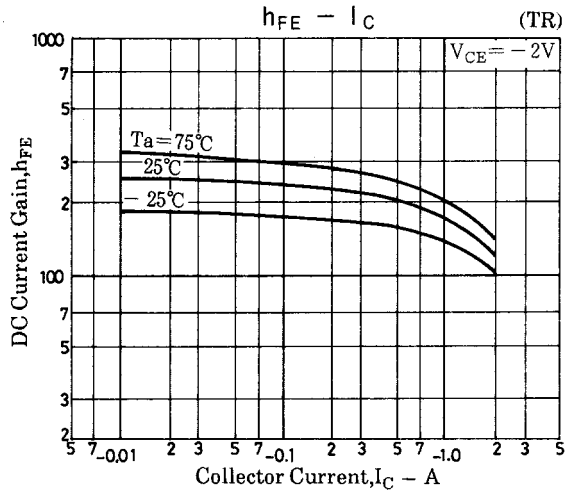
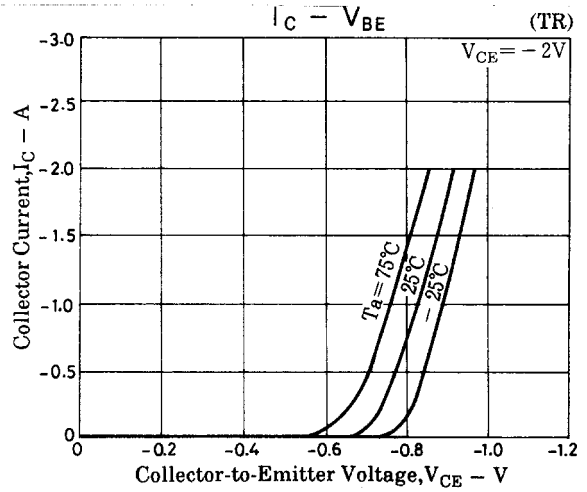
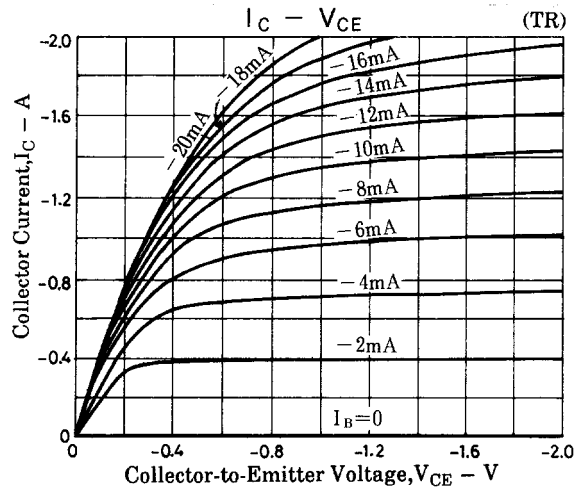
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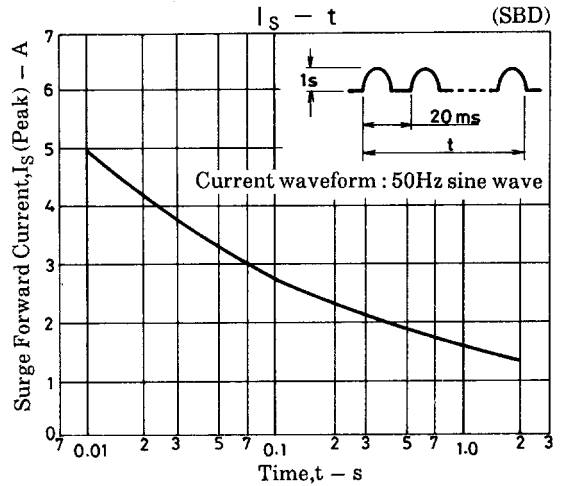
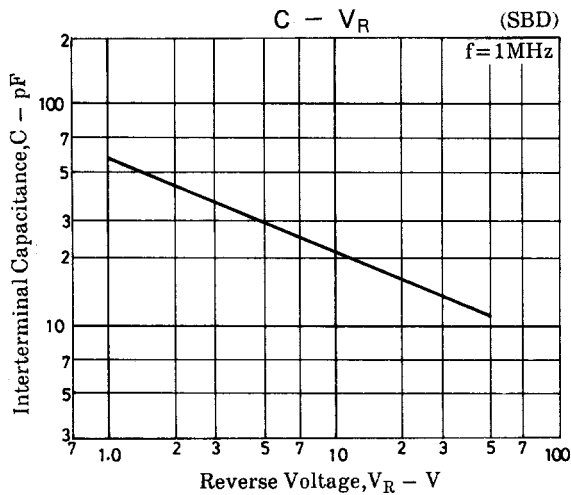
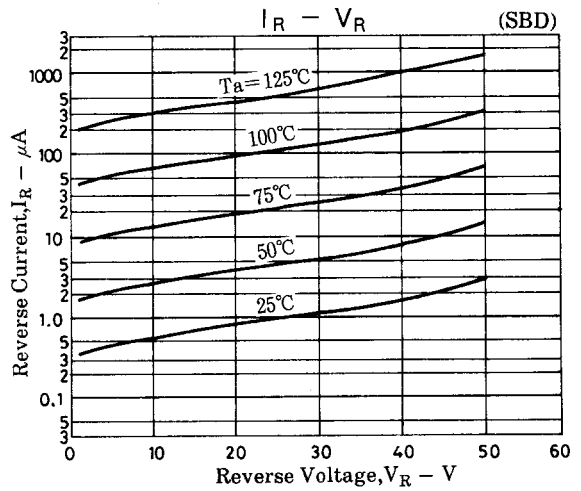
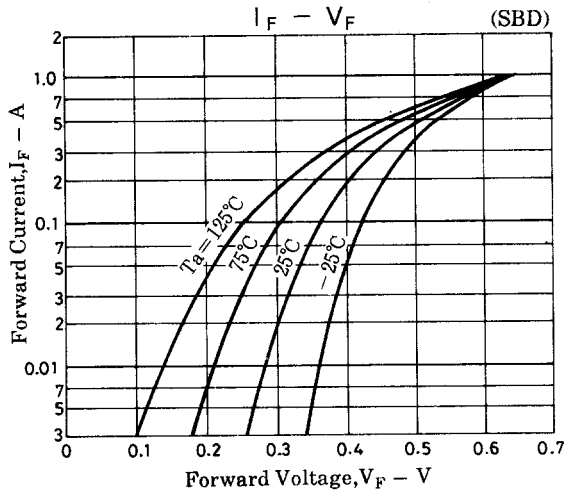
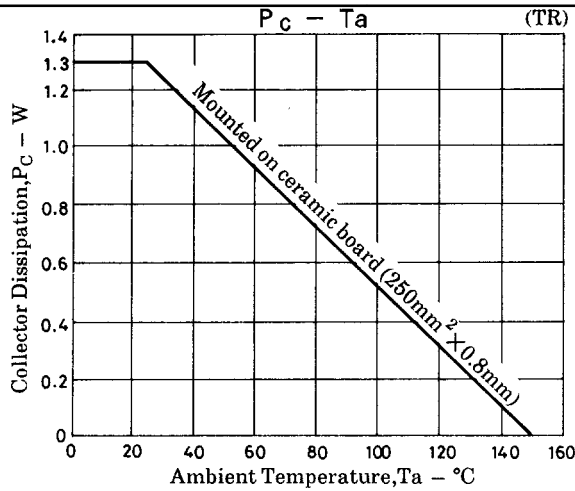
(SBD)



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