



SANYO Semiconductors

# DATA SHEET

## MCH6731

PNP Epitaxial Planar Silicon Transistor

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.
- Ultrasmall package permitting applied sets to be small and slim (mounting height 0.85mm).

### Specifications

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

| Parameter                                 | Symbol           | Conditions   | Ratings     | Unit |
|---|------------------|--|-------------|------|
| [TR]                                      |                  |  |             |      |
| Collector-to-Base Voltage                 | V <sub>CBO</sub> |  | -15         | V    |
| Collector-to-Emitter Voltage              | V <sub>CEO</sub> |  | -12         | V    |
| Emitter-to-Base Voltage                   | V <sub>EBO</sub> |  | -5          | V    |
| Collector Current                         | I <sub>C</sub>   |  | -1          | A    |
| Collector Current (Pulse)                 | I <sub>CP</sub>  |  | -2          | A    |
| Collector Dissipation                     | P <sub>C</sub>   | Mounted on a ceramic board (600mm <sup>2</sup> X0.8mm) | 0.85        | W    |
| Junction Temperature                      | T <sub>J</sub>   |  | 150         | °C   |
| Storage Temperature                       | T <sub>stg</sub> |  | -55 to +125 | °C   |
| [SBD]                                     |                  |  |             |      |
| Repetitive Peak Reverse Voltage           | V <sub>RRM</sub> |  | 15          | V    |
| Non-repetitive Peak Reverse Surge Voltage | V <sub>RSM</sub> |  | 15          | V    |
| Average Output Current                    | I <sub>O</sub>   |  | 0.5         | A    |
| Surge Current                             | I <sub>FSM</sub> | 50Hz sine wave, 1 cycle                                | 2           | A    |
| Junction Temperature                      | T <sub>J</sub>   |  | -55 to +125 | °C   |
| Storage Temperature                       | T <sub>stg</sub> |  | -55 to +125 | °C   |

Marking : PF

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**SANYO Electric Co.,Ltd. Semiconductor Company**

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# MCH6731

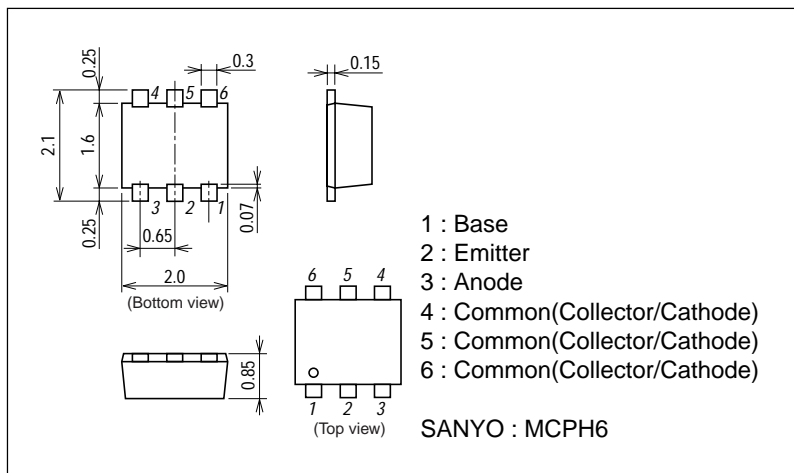
## Electrical Characteristics at Ta=25°C

| Parameter                               | Symbol        | Conditions                                    | Ratings |      |      | Unit    |
|---|---------------|---|---------|------|------|---------|
|   |               |   | min     | typ  | max  |         |
| [TR]                                    |               |   |         |      |      |         |
| Collector Cutoff Current                | $I_{CBO}$     | $V_{CB}=-12V, I_E=0$                          |         |      | -0.1 | $\mu A$ |
| Emitter Cutoff Current                  | $I_{EBO}$     | $V_{EB}=-4V, I_C=0$                           |         |      | -0.1 | $\mu A$ |
| DC Current Gain                         | $h_{FE}$      | $V_{CE}=-2V, I_C=-10mA$                       | 300     |      | 700  |         |
| Gain-Bandwidth Product                  | $f_T$         | $V_{CE}=-2V, I_C=-50mA$                       |         | 450  |      | MHz     |
| Output Capacitance                      | $C_{ob}$      | $V_{CB}=-10V, f=1MHz$                         |         | 6    |      | pF      |
| Collector-to-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=-400mA, I_B=-20mA$                       |         | -120 | -180 | mV      |
| Base-to-Emitter Saturation Voltage      | $V_{BE(sat)}$ | $I_C=-400mA, I_B=-20mA$                       |         | -0.9 | -1.2 | V       |
| Collector-to-Base Breakdown Voltage     | $V_{(BR)CBO}$ | $I_C=-10\mu A, I_E=0$                         | -15     |      |      | V       |
| Collector-to-Emitter Breakdown Voltage  | $V_{(BR)CEO}$ | $I_C=-1mA, R_{BE}=\infty$                     | -12     |      |      | V       |
| Emitter-to-Base Breakdown Voltage       | $V_{(BR)EBO}$ | $I_E=-10\mu A, I_C=0$                         | -5      |      |      | V       |
| Turn-ON Time                            | $t_{on}$      | See specified Test Circuit.                   |         | 30   |      | ns      |
| Storage Time                            | $t_{stg}$     | See specified Test Circuit.                   |         | 75   |      | ns      |
| Fall Time                               | $t_f$         | See specified Test Circuit.                   |         | 15   |      | ns      |
| [Di]                                    |               |   |         |      |      |         |
| Reverse Voltage                         | $V_R$         | $I_R=0.5mA$                                   | 12      |      |      | V       |
| Forward Voltage                         | $V_F$         | $I_F=0.5A$                                    |         | 0.40 | 0.45 | V       |
| Reverse Current                         | $I_R$         | $V_R=6V$                                      |         |      | 90   | $\mu A$ |
| Interterminal Capacitance               | $C$           | $V_R=10V, f=1MHz$                             |         | 13   |      | pF      |
| Reverse Recovery Time                   | $t_{rr}$      | $I_F=I_R=100mA$ , See specified Test Circuit. |         |      | 10   | ns      |

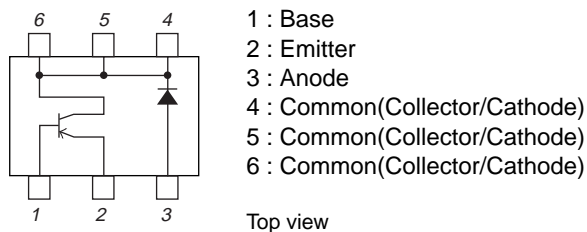
## Package Dimensions

unit : mm

2191A

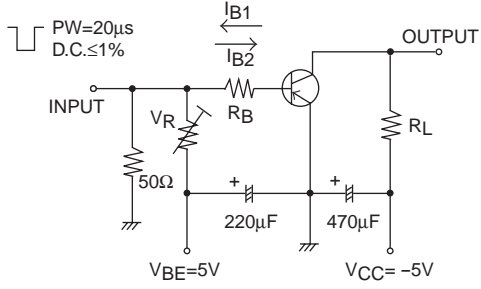


## Electrical Connection



Switching Time Test Circuit

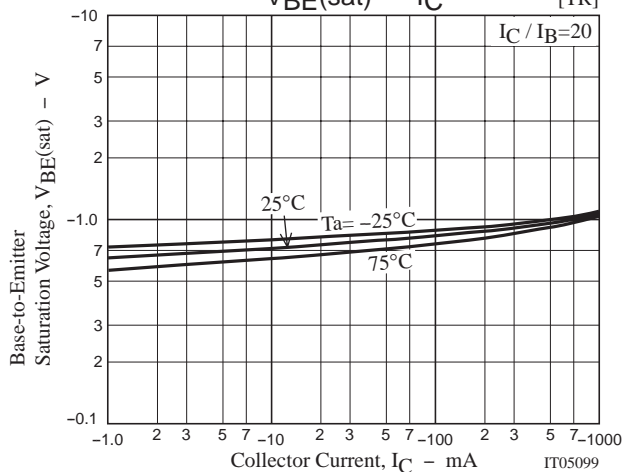
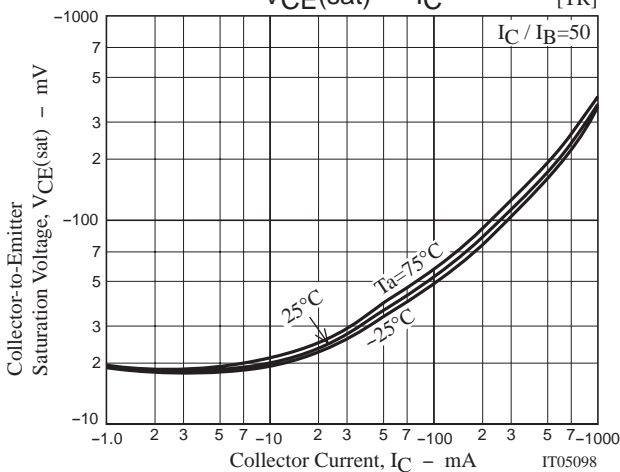
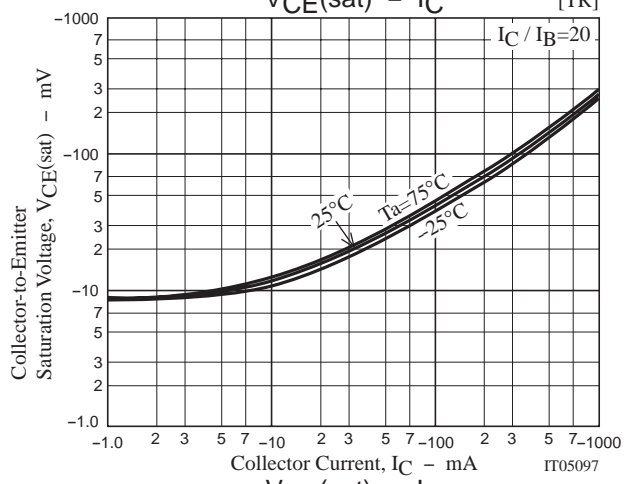
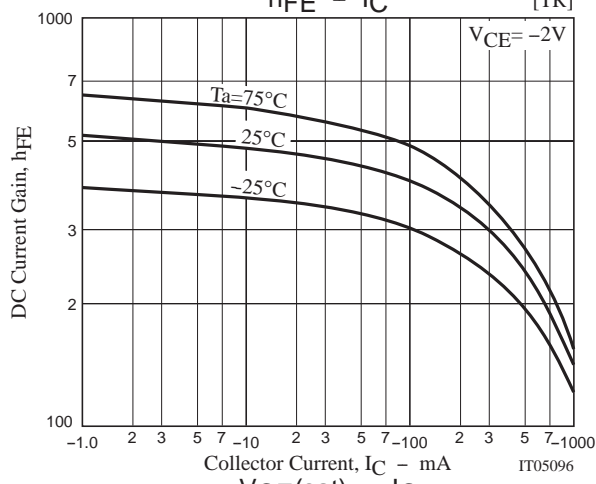
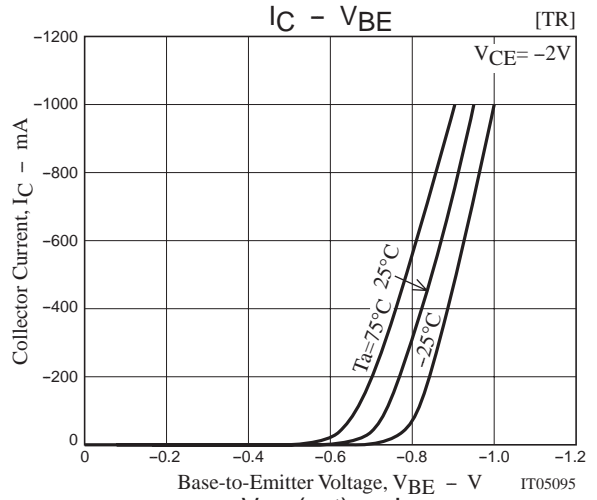
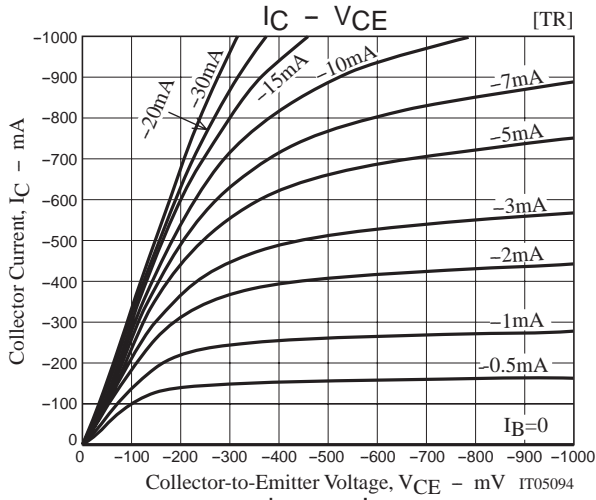
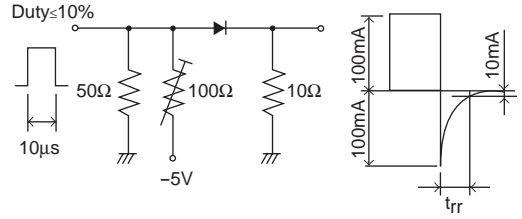
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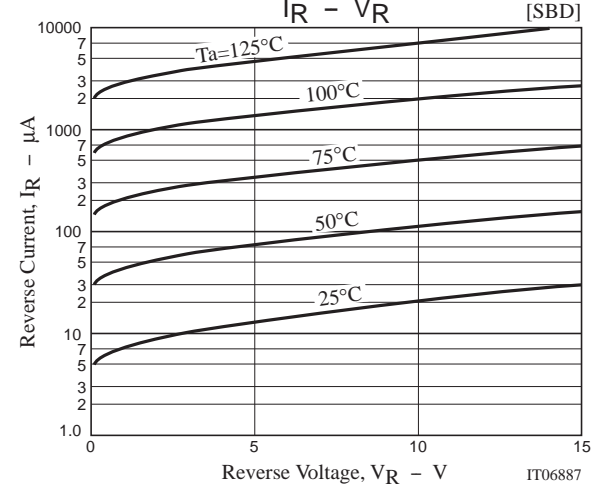
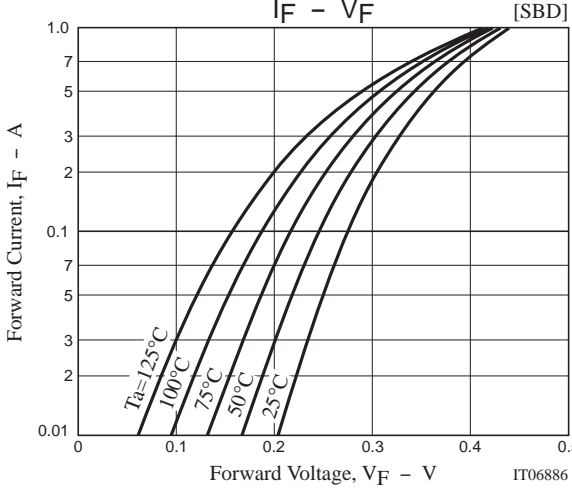
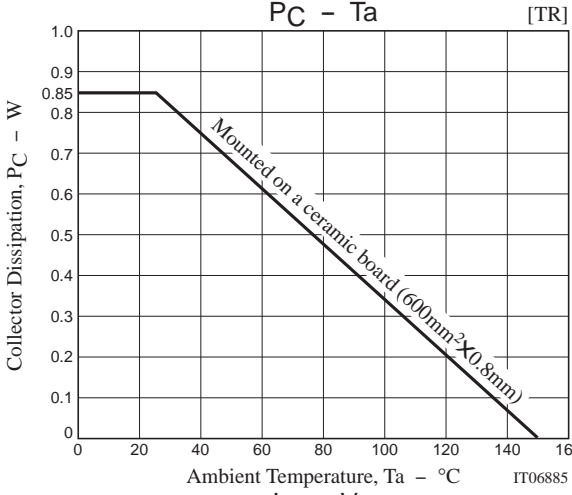
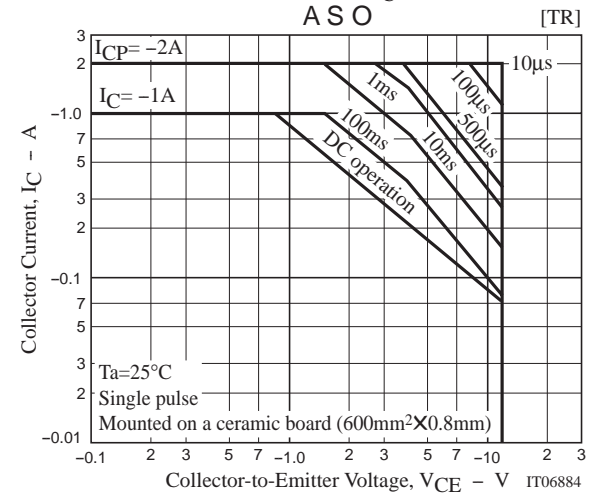
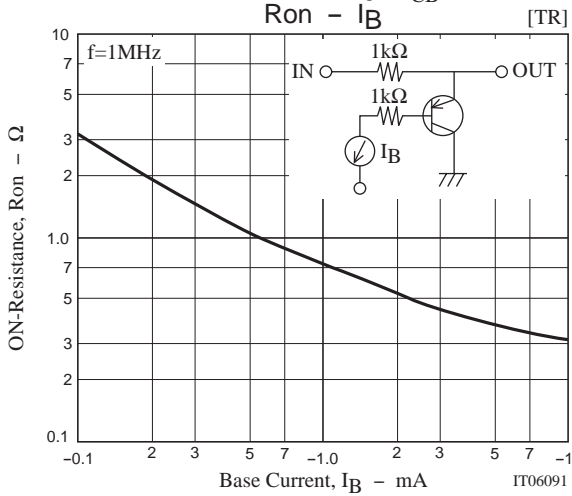
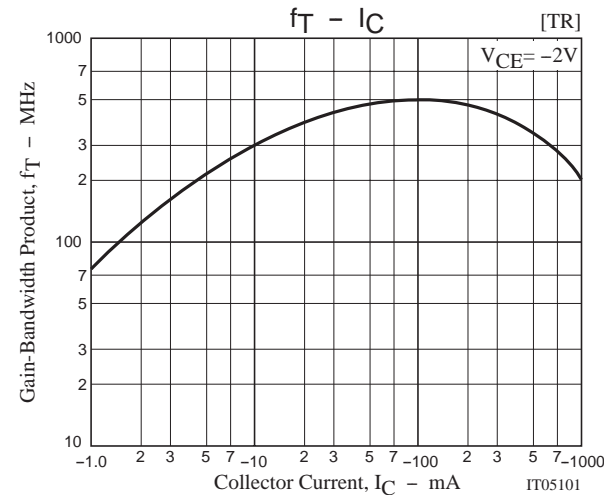
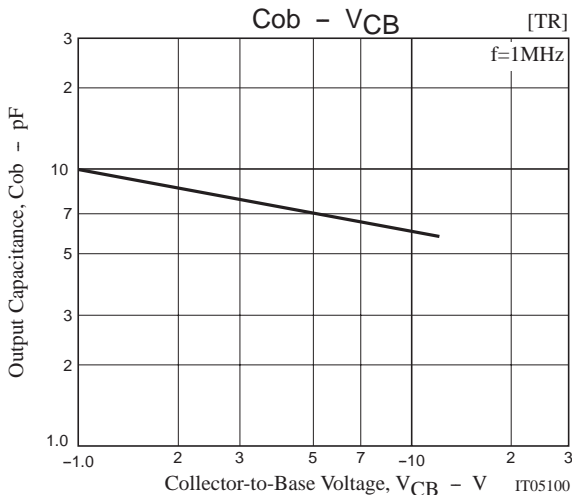
$I_C = 20I_{B1} = -20I_{B2} = -400\text{mA}$

$t_{rr}$  Specified Circuit

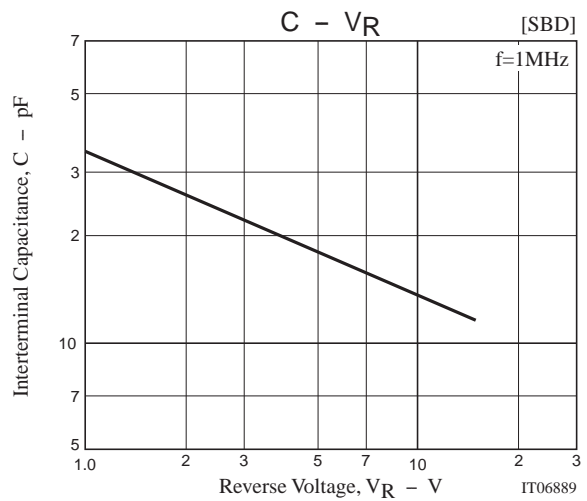
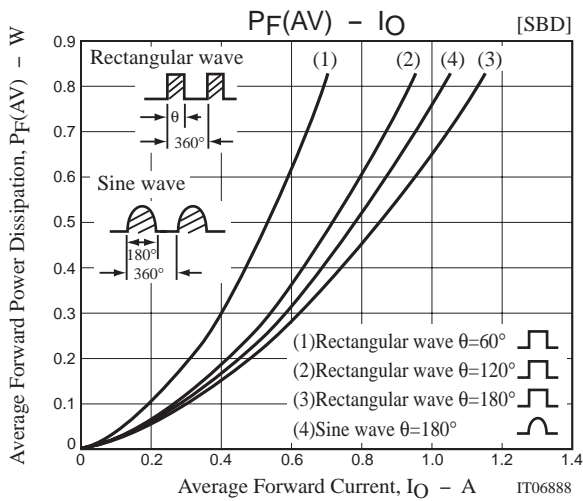
[Di]



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