



SANYO Semiconductors

## DATA SHEET

An ON Semiconductor Company

# MCH3144 — PNP Epitaxial Planar Silicon Transistor

## DC / DC Converter Applications

### Applicaitions

- Relay drivers, lamp drivers, motor drivers, flash

### Features

- Adoption of MBIT processes
- Low collector-to-emitter saturation voltage
- Ultrasmall package permitting applied sets to be small and slim (mounting height : 0.85mm)
- High allowable power dissipation
- Large current capacity
- High-speed switching

### Specifications

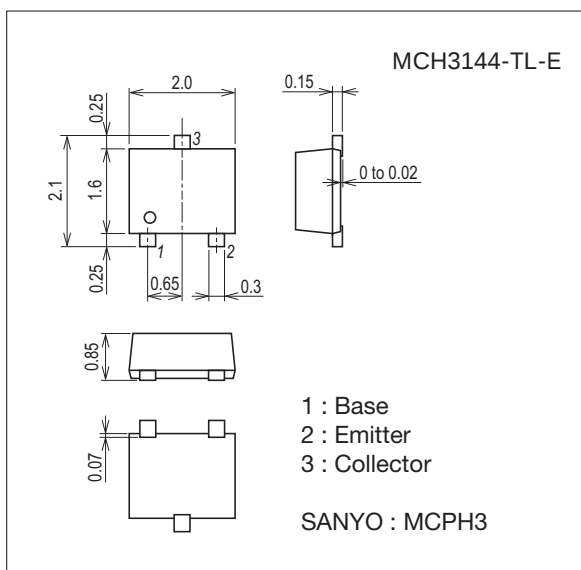
Absolute Maximum Ratings at Ta=25°C

| Parameter                    | Symbol           | Conditions                                                    | Ratings     | Unit |
|------------------------------|------------------|---------------------------------------------------------------|-------------|------|
| Collector-to-Base Voltage    | V <sub>CBO</sub> |                                                               | -30         | V    |
| Collector-to-Emitter Voltage | V <sub>CEO</sub> |                                                               | -30         | V    |
| Emitter-to-Base Voltage      | V <sub>EBO</sub> |                                                               | -5          | V    |
| Collector Current            | I <sub>C</sub>   |                                                               | -2          | A    |
| Collector Current (Pulse)    | I <sub>CP</sub>  |                                                               | -5          | A    |
| Base Current                 | I <sub>B</sub>   |                                                               | -400        | mA   |
| Collector Dissipation        | P <sub>C</sub>   | When mounted on ceramic substrate (600mm <sup>2</sup> ×0.8mm) | 0.8         | W    |
| Junction Temperature         | T <sub>J</sub>   |                                                               | 150         | °C   |
| Storage Temperature          | T <sub>stg</sub> |                                                               | -55 to +150 | °C   |

### Package Dimensions

unit : mm (typ)

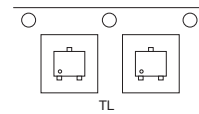
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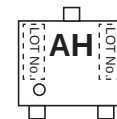
### Product & Package Information

- Package : MCPH3
- JEITA, JEDEC : SC-70, SOT-323
- Minimum Packing Quantity : 3,000 pcs./reel

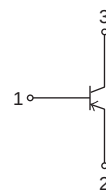
### Packing Type : TL



### Marking



### Electrical Connection

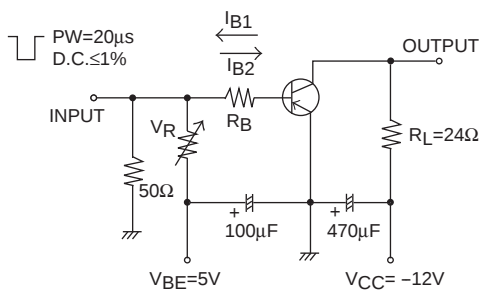


MCH3144

Electrical Characteristics at Ta=25°C

| Parameter                               | Symbol   | Conditions                  | Ratings |       |      | Unit |
|-----------------------------------------|----------|-----------------------------|---------|-------|------|------|
|                                         |          |                             | min     | typ   | max  |      |
| Collector Cutoff Current                | ICBO     | VCE=-30V, IE=0A             |         |       | -0.1 | μA   |
| Emitter Cutoff Current                  | IEBO     | VEB=-4V, IC=0A              |         |       | -0.1 | μA   |
| DC Current Gain                         | hFE      | VCE=-2V, IC=-100mA          | 200     |       | 560  |      |
| Gain-Bandwidth Product                  | fT       | VCE=-10V, IC=-300mA         |         | 440   |      | MHz  |
| Output Capacitance                      | Cob      | VCE=-10V, f=1MHz            |         | 17    |      | pF   |
| Collector-to-Emitter Saturation Voltage | VCE(sat) | IC=-1.5A, IB=-75mA          |         | -170  | -260 | mV   |
| Base-to-Emitter Saturation Voltage      | VBE(sat) | IC=-1.5A, IB=-75mA          |         | -0.94 | -1.2 | V    |
| Collector-to-Base Breakdown Voltage     | V(BR)CBO | IC=-10μA, IE=0A             | -30     |       |      | V    |
| Collector-to-Emitter Breakdown Voltage  | V(BR)CEO | IC=-1mA, RBE=∞              | -30     |       |      | V    |
| Emitter-to-Base Breakdown Voltage       | V(BR)EBO | IE=-10μA, IC=0A             | -5      |       |      | V    |
| Turn-ON Time                            | ton      | See specified Test Circuit. |         | 45    |      | ns   |
| Storage Time                            | tstg     |                             |         | 200   |      | ns   |
| Fall Time                               | tf       |                             |         | 23    |      | ns   |

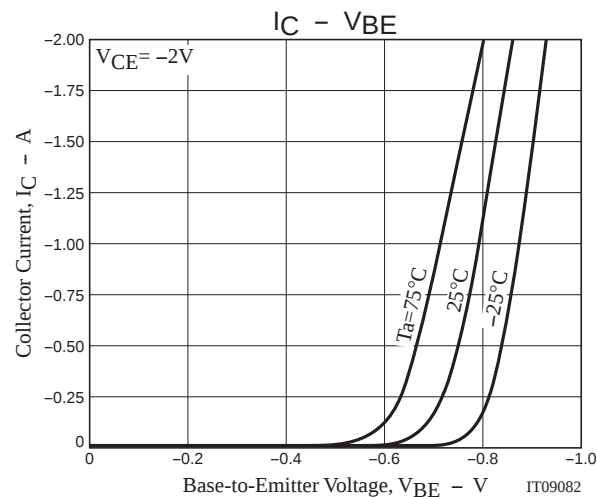
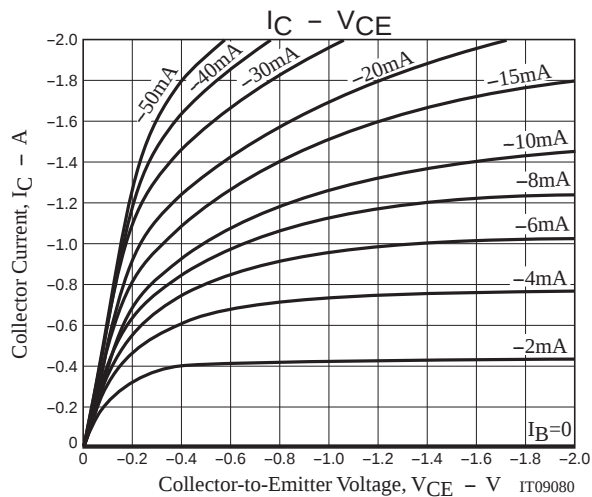
Switching Time Test Circuit

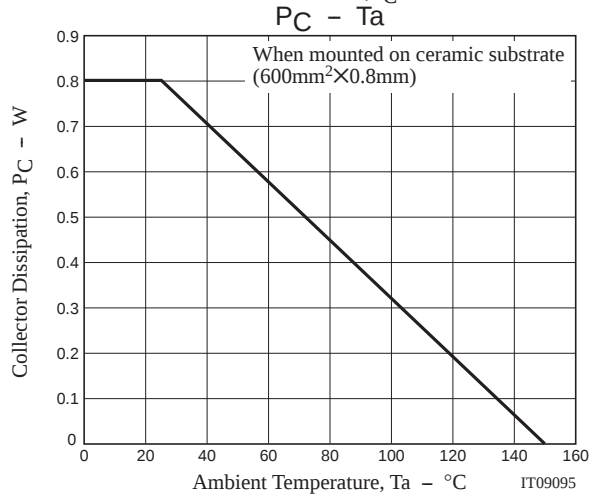
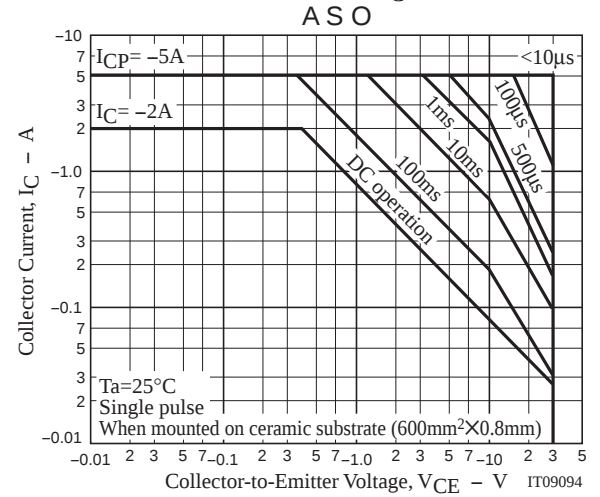
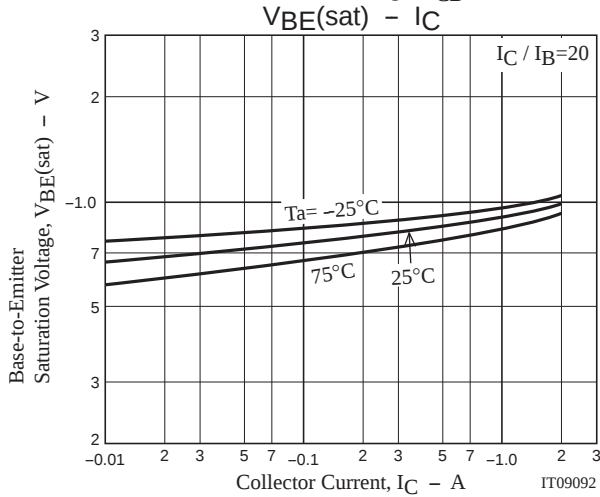
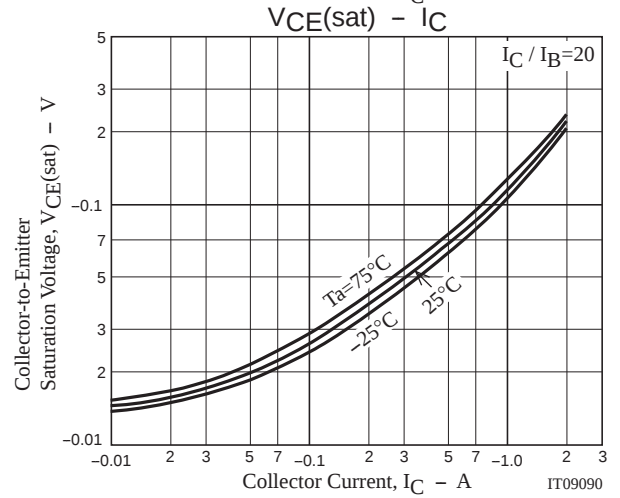
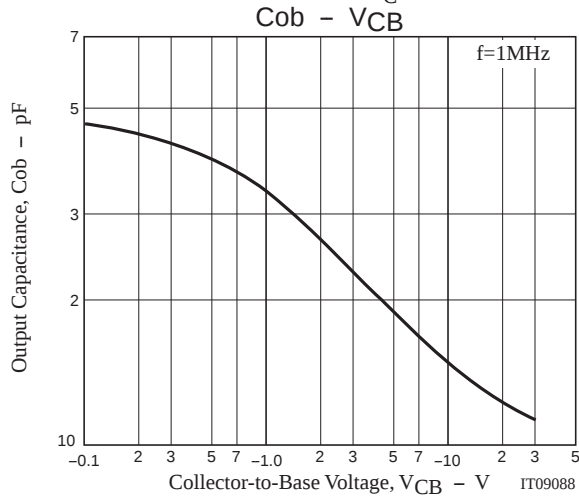
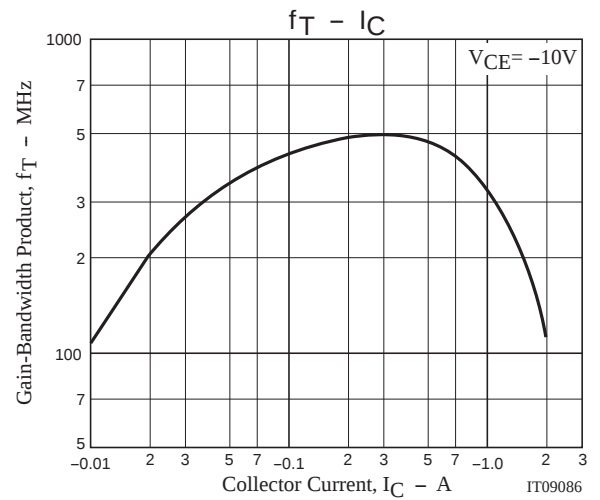
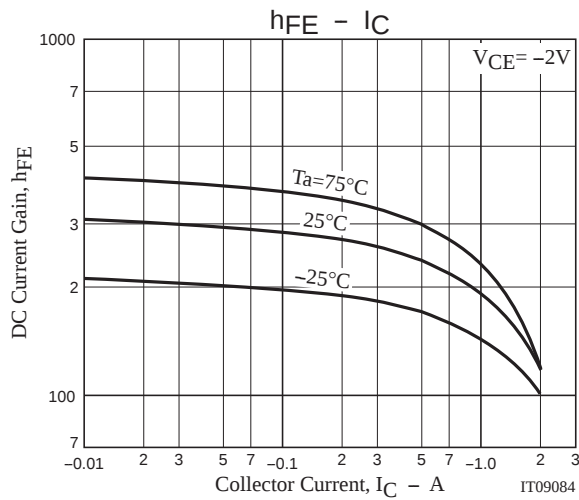


$I_C=20I_{B1}= -20I_{B2}= -500\text{mA}$

Ordering Information

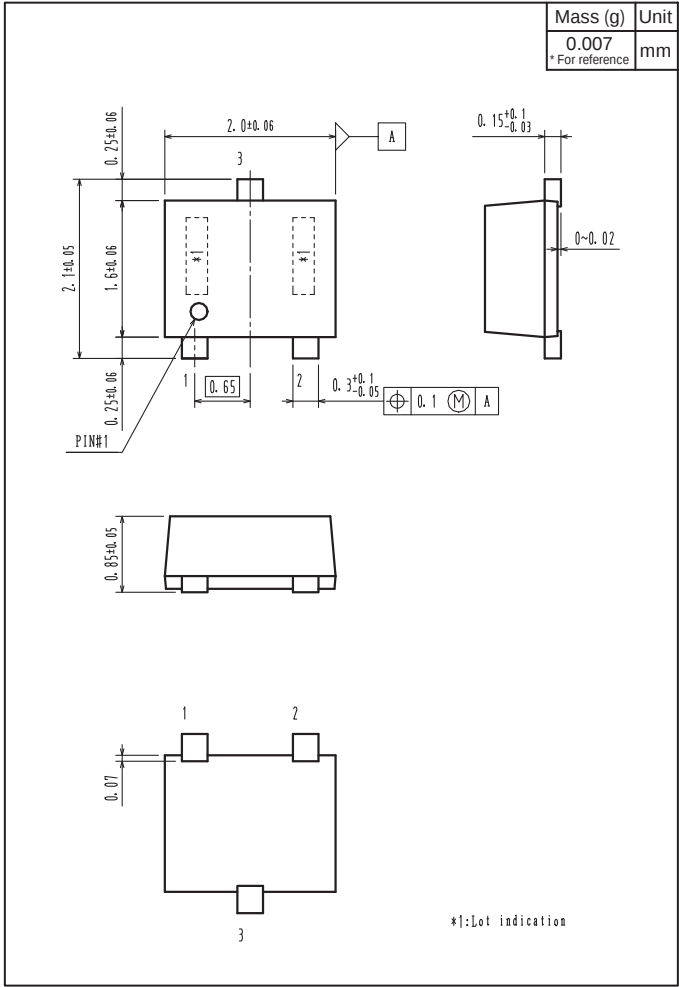
| Device       | Package | Shipping       | memo    |
|--------------|---------|----------------|---------|
| MCH3144-TL-E | MCPH3   | 3,000pcs./reel | Pb Free |



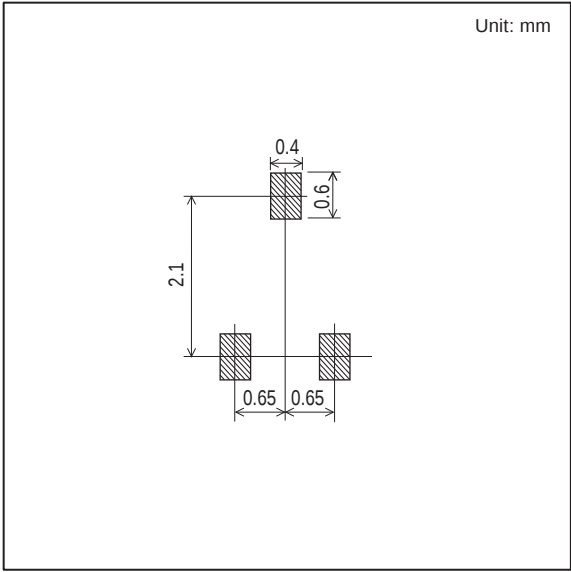




Outline Drawing  
MCH3144-TL-E



Land Pattern Example



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