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# MCH3106

## Bipolar Transistor -12V, -3A, Low $V_{CE(sat)}$ , PNP Single MCPH3

### Applicaitions

- Relay drivers, lamp drivers, motor drivers, flash

### Features

- Adoption of MBIT processes
- Low collector-to-emitter saturation voltage
- Ultrasmall package facilitates miniaturization in end products (mounting height : 0.85mm)
- High allowable power dissipation
- Large current capacity
- High-speed switching

### Specifications

Absolute Maximum Ratings at  $T_a=25^\circ\text{C}$ 

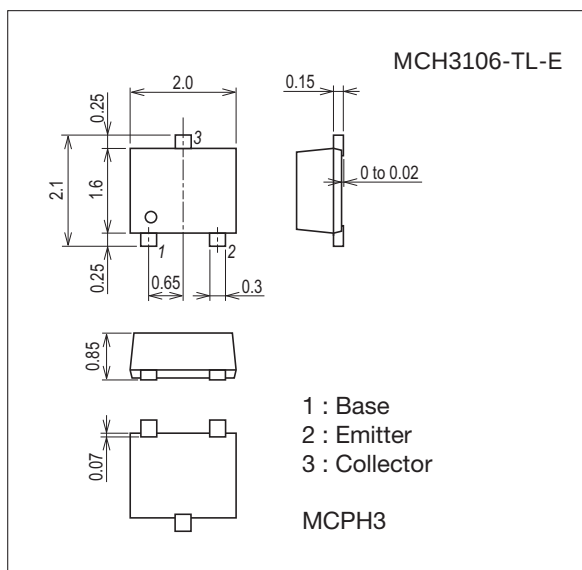
| Parameter                    | Symbol    | Conditions                                                    | Ratings     | Unit |
|------------------------------|-----------|---------------------------------------------------------------|-------------|------|
| Collector-to-Base Voltage    | $V_{CBO}$ |                                                               | -15         | V    |
| Collector-to-Emitter Voltage | $V_{CEO}$ |                                                               | -12         | V    |
| Emitter-to-Base Voltage      | $V_{EBO}$ |                                                               | -5          | V    |
| Collector Current            | $I_C$     |                                                               | -3          | A    |
| Collector Current (Pulse)    | $I_{CP}$  |                                                               | -5          | A    |
| Base Current                 | $I_B$     |                                                               | -600        | mA   |
| Collector Dissipation        | $P_C$     | When mounted on ceramic substrate (600mm <sup>2</sup> ×0.8mm) | 0.9         | W    |
| Junction Temperature         | $T_J$     |                                                               | 150         | °C   |
| Storage Temperature          | $T_{stg}$ |                                                               | -55 to +150 | °C   |

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

### Package Dimensions

unit : mm (typ)

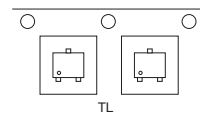
7019A-004



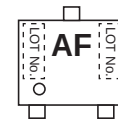
### Product & Package Information

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

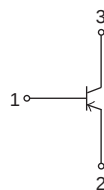
### Packing Type : TL



### Marking



### Electrical Connection

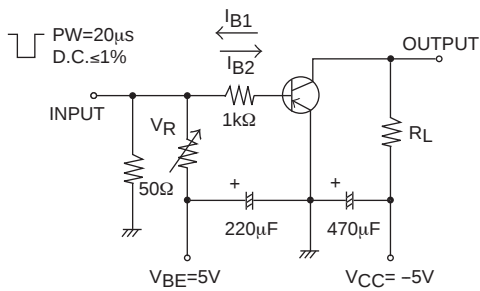


MCH3106

Electrical Characteristics at Ta=25°C

| Parameter                               | Symbol   | Conditions                  | Ratings |       |      | Unit |
|-----------------------------------------|----------|-----------------------------|---------|-------|------|------|
|                                         |          |                             | min     | typ   | max  |      |
| Collector Cutoff Current                | ICBO     | VCE=-12V, IE=0A             |         |       | -0.1 | μA   |
| Emitter Cutoff Current                  | IEBO     | VEB=-4V, IC=0A              |         |       | -0.1 | μA   |
| DC Current Gain                         | hFE      | VCE=-2V, IC=-500mA          | 200     |       | 560  |      |
| Gain-Bandwidth Product                  | fT       | VCE=-2V, IC=-500mA          |         | 280   |      | MHz  |
| Output Capacitance                      | Cob      | VCE=-10V, f=1MHz            |         | 36    |      | pF   |
| Collector-to-Emitter Saturation Voltage | VCE(sat) | IC=-1.5A, IB=-30mA          |         | -110  | -165 | mV   |
| Base-to-Emitter Saturation Voltage      | VBE(sat) | IC=-1.5A, IB=-30mA          |         | -0.85 | -1.2 | V    |
| Collector-to-Base Breakdown Voltage     | V(BR)CBO | IC=-10μA, IE=0A             | -15     |       |      | V    |
| Collector-to-Emitter Breakdown Voltage  | V(BR)CEO | IC=-1mA, RBE=∞              | -12     |       |      | V    |
| Emitter-to-Base Breakdown Voltage       | V(BR)EBO | IE=-10μA, IC=0A             | -5      |       |      | V    |
| Turn-On Time                            | ton      | See specified Test Circuit. |         | 30    |      | ns   |
| Storage Time                            | tstg     |                             |         | 90    |      | ns   |
| Fall Time                               | tf       |                             |         | 10    |      | ns   |

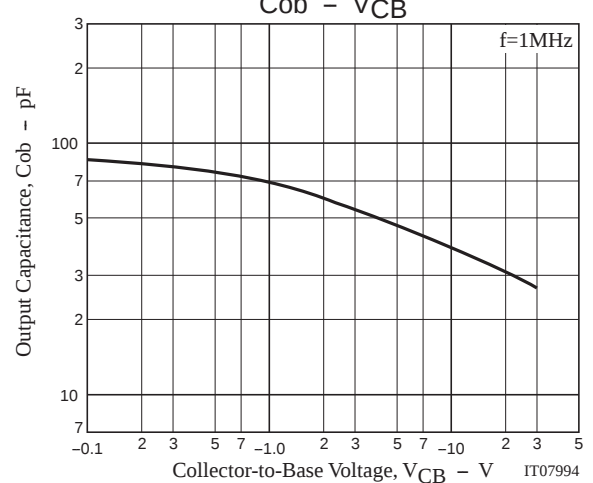
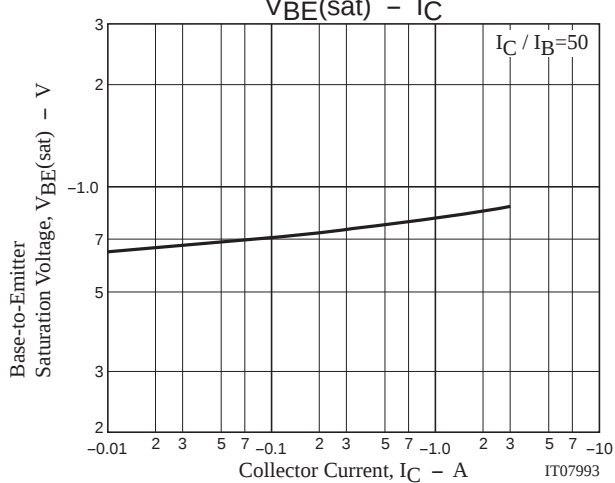
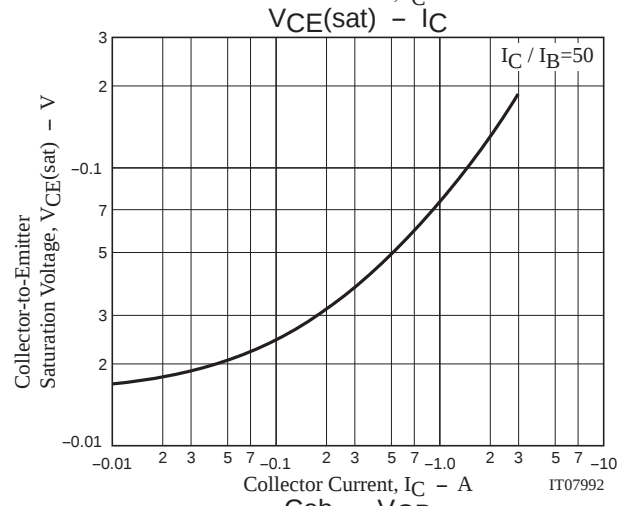
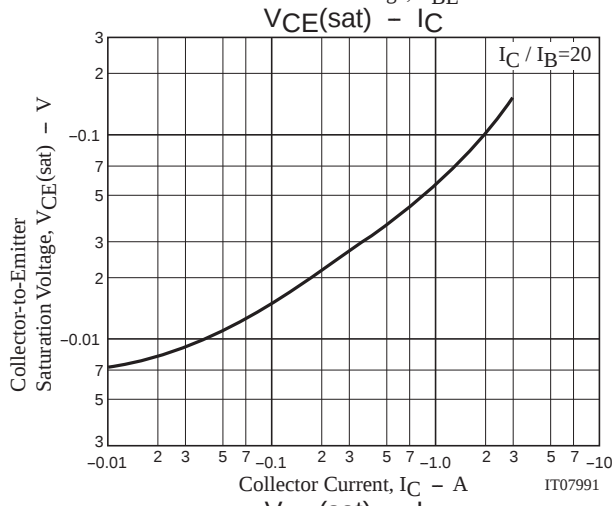
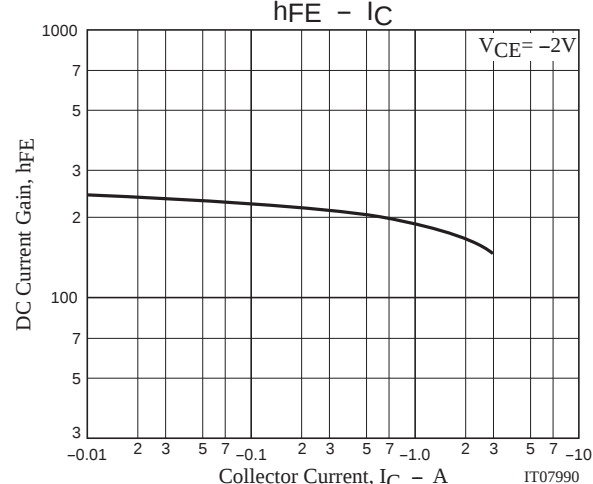
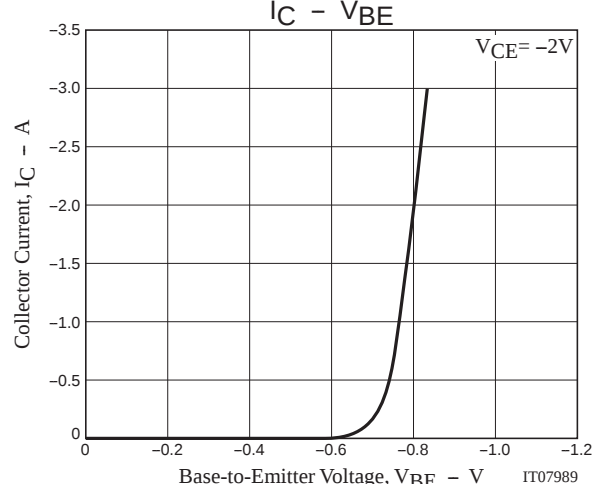
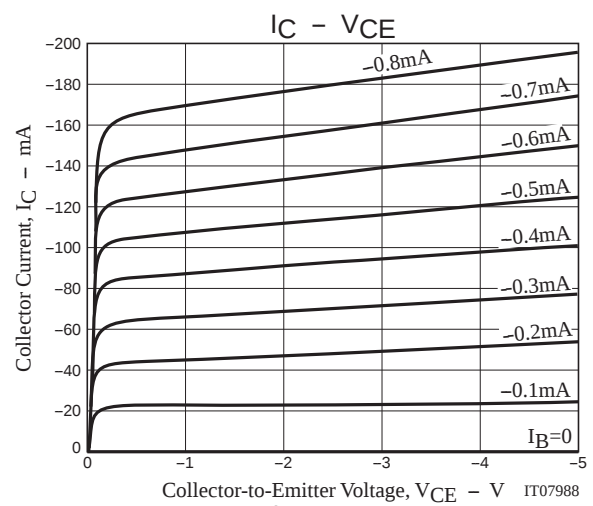
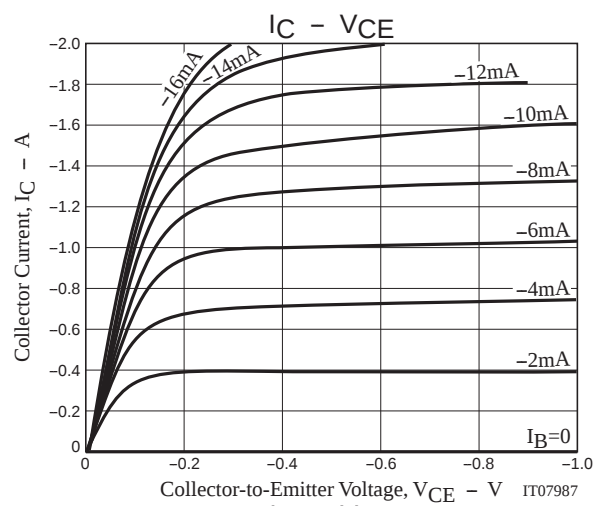
Switching Time Test Circuit

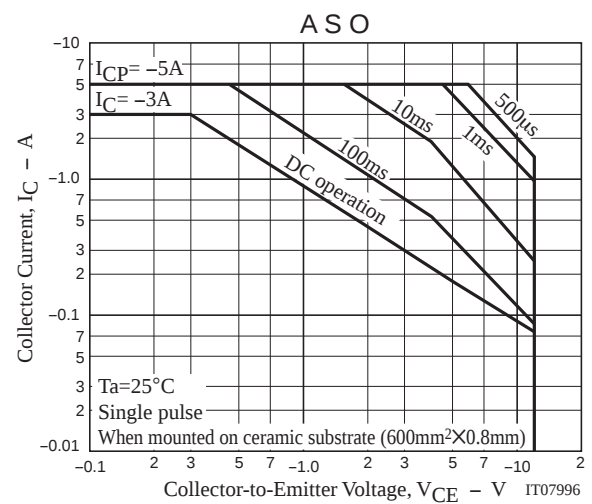
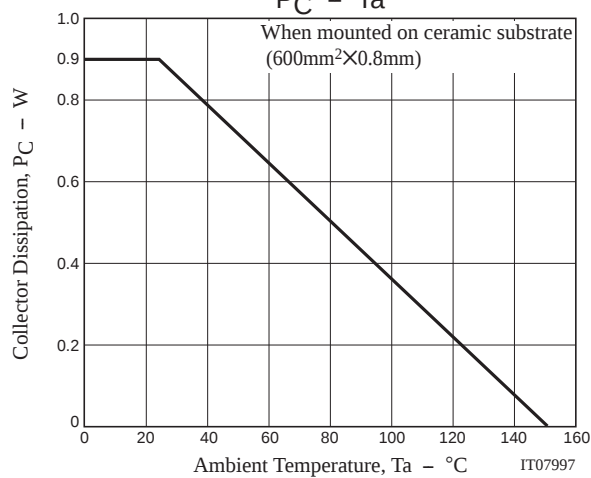
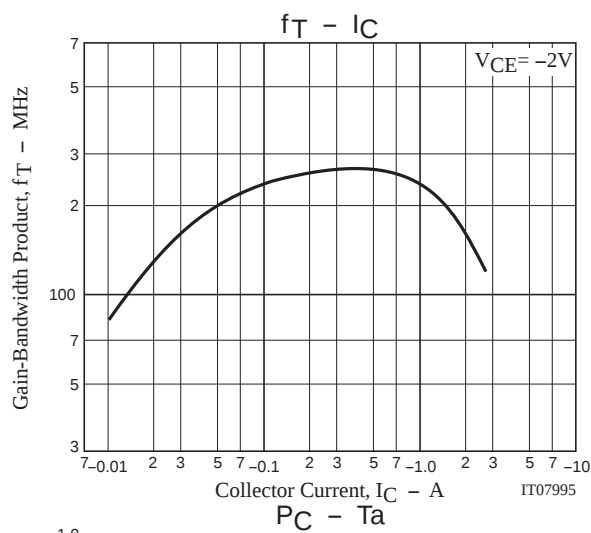


$I_C=20I_{B2}=-20I_{B1}=-1.5A$

Ordering Information

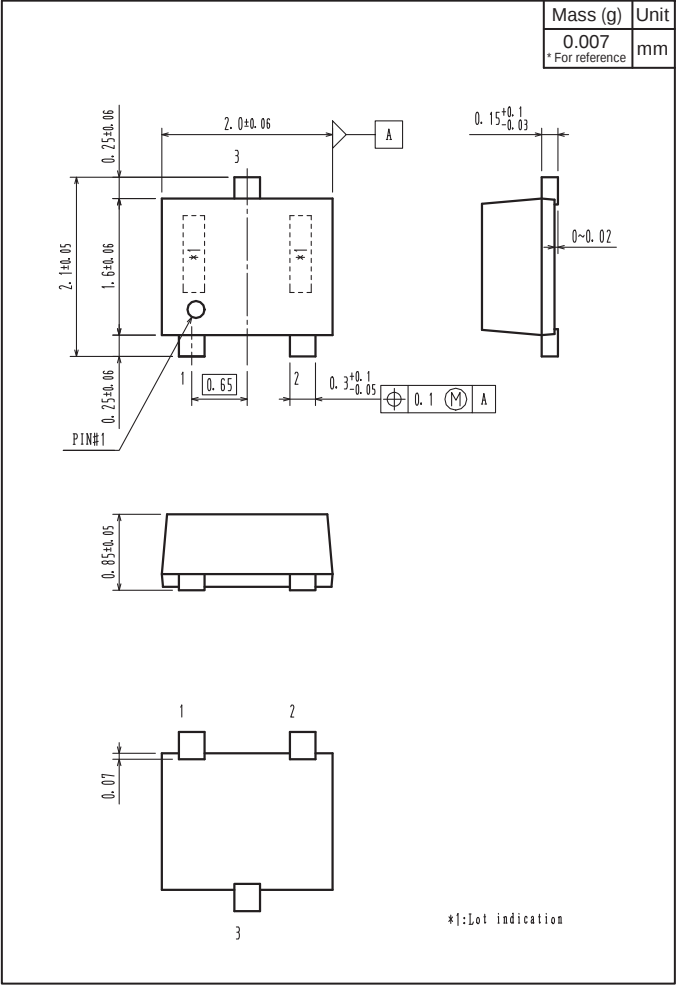
| Device       | Package | Shipping       | memo    |
|--------------|---------|----------------|---------|
| MCH3106-TL-E | MCPH3   | 3,000pcs./reel | Pb Free |



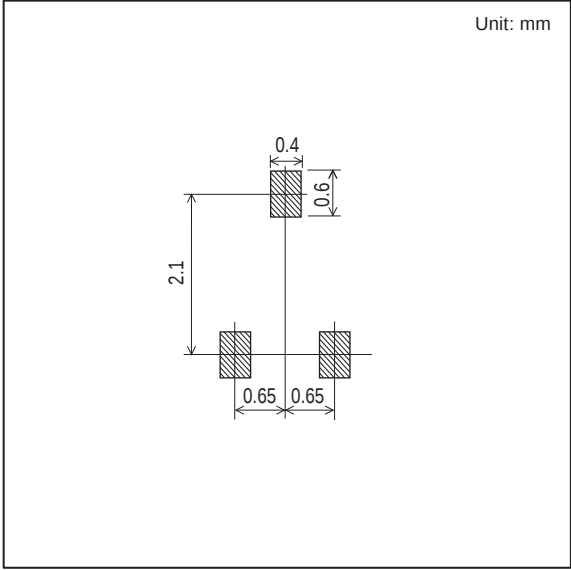




Outline Drawing  
MCH3106-TL-E



Land Pattern Example



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