

TRIPLE DIFFUSED PLANER TYPE  
HIGH VOLTAGE,HIGH SPEED SWITCHING

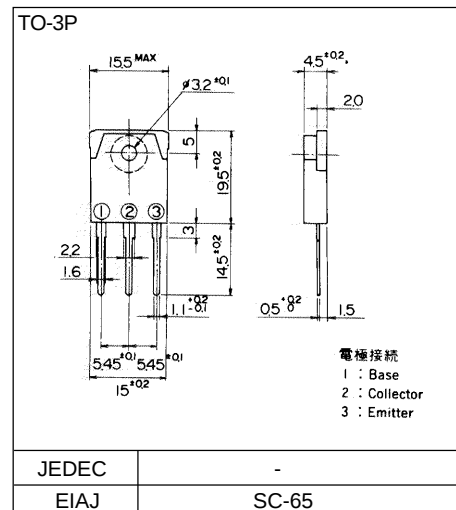
## Features

- High voltage,High speed switching
- High reliability

## Applications

- Switching regulators
- Ultrasonic generators
- High frequency inverters
- General purpose power amplifiers

## Outline Drawings



## Maximum ratings and characteristics

### Absolute maximum ratings (T<sub>c</sub>=25°C unless otherwise specified)

| Item                           | Symbol                | Ratings     | Unit |
|--------------------------------|-----------------------|-------------|------|
| Collector-Base voltage         | V <sub>CB0</sub>      | 500         | V    |
| Collector-Emitter voltage      | V <sub>CEO</sub>      | 400         | V    |
| Collector-Emitter voltage      | V <sub>CEO(SUS)</sub> | 400         | V    |
| Emitter-Base voltage           | V <sub>EB0</sub>      | 7           | V    |
| Collector current              | I <sub>C</sub>        | 15          | A    |
| Base current                   | I <sub>B</sub>        | 5           | A    |
| Collector power dissipation    | P <sub>C</sub>        | 80          | W    |
| Operating junction temperature | T <sub>j</sub>        | +150        | °C   |
| Storage temperature            | T <sub>stg</sub>      | -65 to +150 | °C   |

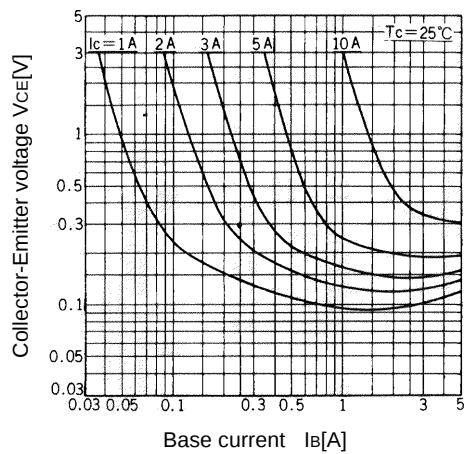
### Electrical characteristics (T<sub>c</sub> =25°C unless otherwise specified)

| Item                                 | Symbol                | Test Conditions                                | Min. | Typ. | Max. | Units |
|--------------------------------------|-----------------------|------------------------------------------------|------|------|------|-------|
| Collector-Base voltage               | V <sub>CB0</sub>      | I <sub>CBO</sub> = 1mA                         | 500  |      |      | V     |
| Collector-Emitter voltage            | V <sub>CEO</sub>      | I <sub>CEO</sub> = 10mA                        | 400  |      |      | V     |
| Collector-Emitter voltage            | V <sub>CEO(SUS)</sub> | I <sub>C</sub> = 0.2A                          | 400  | -    |      | V     |
| Emitter-Base voltage                 | V <sub>EB0</sub>      | I <sub>EBO</sub> = 1mA                         | 7    | -    |      | V     |
| Collector-Base leakage current       | I <sub>CBO</sub>      | V <sub>CB0</sub> = 500V                        |      | -    | 1.0  | mA    |
| Emitter-Base leakage current         | I <sub>EBO</sub>      | V <sub>EB0</sub> = 7V                          |      | -    | 1.0  | mA    |
| D.C. current gain                    | h <sub>FE</sub>       | I <sub>C</sub> = 6A, V <sub>CE</sub> = 5V      | 10   |      |      |       |
| Collector-Emitter saturation voltage | V <sub>CE(Sat)</sub>  | I <sub>C</sub> = 6A, I <sub>B</sub> = 1.2A     |      |      | 1.0  | V     |
| Base-Emitter saturation voltage      | V <sub>BE(Sat)</sub>  |                                                |      |      | 1.5  | V     |
| *1                                   | t <sub>on</sub>       | I <sub>C</sub> = 7.5A, I <sub>B1</sub> = 1.5A  |      |      | 0.5  | μs    |
| Switching time                       | t <sub>stg</sub>      | I <sub>B2</sub> = -3A, R <sub>L</sub> = 20 ohm |      |      | 1.5  | μs    |
|                                      | t <sub>f</sub>        | P <sub>w</sub> = 20 μs Duty=<2%                |      |      | 0.15 | μs    |

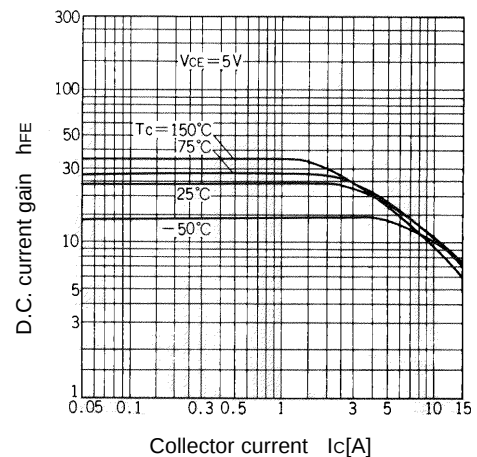
### Thermal characteristics

| Item               | Symbol               | Test Conditions  | Min. | Typ. | Max. | Units |
|--------------------|----------------------|------------------|------|------|------|-------|
| Thermal resistance | R <sub>th(j-c)</sub> | Junction to case |      |      | 1.56 | °C/W  |

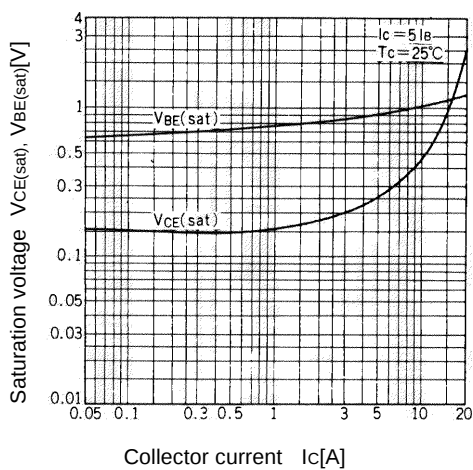
## Characteristics



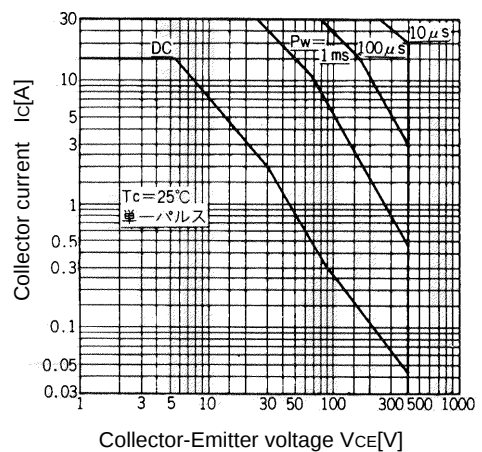
Collector Output Characteristics



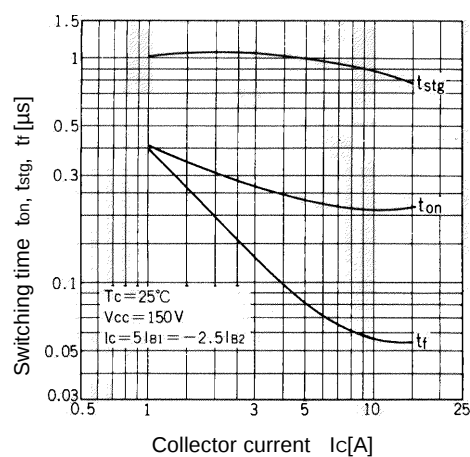
DC Current Gain



Base and Collector Saturation Voltage



Safe Operating Area



Switching Time

### \*1 Switching Time Test Circuit

