

## TRIPLE DIFFUSED PLANER TYPE HIGH SPEED SWITCHING

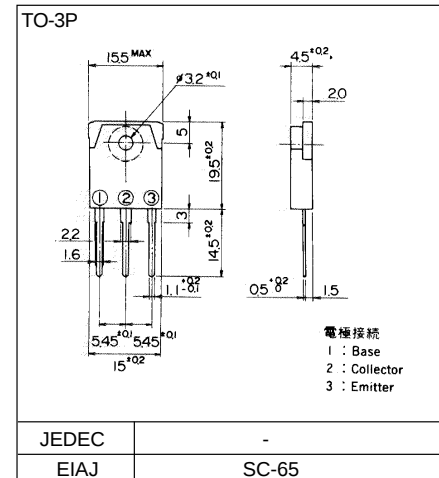
### Features

- High voltage, High speed switching
- Low saturation voltage
- High reliability

### Applications

- Switching regulators
- DC-DC convertor
- Solid State Relay
- General purpose power amplifiers

### Outline Drawings



### Maximum ratings and characteristics

#### Absolute maximum ratings ( $T_c=25^\circ\text{C}$ unless otherwise specified)

| Item                           | Symbol         | Ratings     | Unit             |
|--------------------------------|----------------|-------------|------------------|
| Collector-Base voltage         | $V_{CB0}$      | 250         | V                |
| Collector-Emitter voltage      | $V_{CE0}$      | 200         | V                |
| Collector-Emitter voltage      | $V_{CE0(SUS)}$ | 200         | V                |
| Emitter-Base voltage           | $V_{EB0}$      | 7           | V                |
| Collector current              | $I_C$          | 10          | A                |
| Base current                   | $I_B$          | 5           | A                |
| Collector power dissipation    | $P_C$          | 100         | W                |
| Operating junction temperature | $T_j$          | +150        | $^\circ\text{C}$ |
| Storage temperature            | $T_{stg}$      | -55 to +150 | $^\circ\text{C}$ |

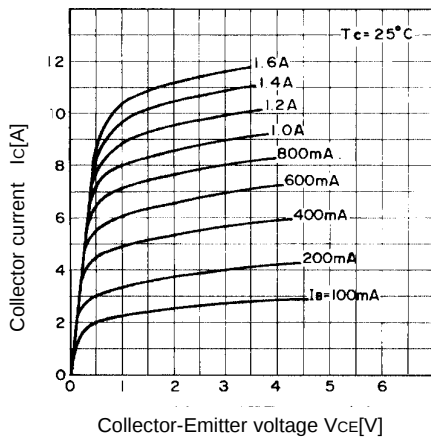
#### Electrical characteristics ( $T_c=25^\circ\text{C}$ unless otherwise specified)

| Item                                 | Symbol         | Test Conditions                                                                                              | Min. | Typ. | Max. | Units         |
|--------------------------------------|----------------|--------------------------------------------------------------------------------------------------------------|------|------|------|---------------|
| Collector-Base voltage               | $V_{CB0}$      | $I_{CB0} = 0.1\text{mA}$                                                                                     | 250  |      |      | V             |
| Collector-Emitter voltage            | $V_{CE0}$      | $I_{CE0} = 10\text{mA}$                                                                                      | 200  |      |      | V             |
| Collector-Emitter voltage            | $V_{CE0(SUS)}$ | $I_C = 1\text{A}$                                                                                            | 200  | -    |      | V             |
| Emitter-Base voltage                 | $V_{EB0}$      | $I_{EB0} = 0.1\text{mA}$                                                                                     | 7    | -    |      | V             |
| Collector-Base leakage current       | $I_{CB0}$      | $V_{CB0} = 250\text{V}$                                                                                      |      | -    | 0.1  | mA            |
| Emitter-Base leakage current         | $I_{EB0}$      | $V_{EB0} = 7\text{V}$                                                                                        |      | -    | 0.1  | mA            |
| D.C. current gain                    | $h_{FE}$       | $I_C = 2\text{A}, V_{CE} = 5\text{V}$                                                                        | 20   |      | 60   |               |
| Collector-Emitter saturation voltage | $V_{CE(Sat)}$  | $I_C = 2\text{A}, I_B = 0.8\text{A}$                                                                         |      |      | 0.2  | V             |
| Base-Emitter saturation voltage      | $V_{BE(Sat)}$  | $I_C = 5\text{A}, I_B = 1\text{A}$                                                                           |      |      | 1.1  | V             |
| *1                                   | $t_{on}$       | $I_C = 6\text{A}, I_{B1} = -I_{B2} = 1.2\text{A}$<br>$R_L = 10\text{ ohm}, P_w = 20\mu\text{s}$ Duty= $<2\%$ |      |      | 0.8  | $\mu\text{s}$ |
| Switching time                       | $t_{stg}$      |                                                                                                              |      |      | 2.0  | $\mu\text{s}$ |
|                                      | $t_f$          |                                                                                                              |      |      | 0.5  | $\mu\text{s}$ |

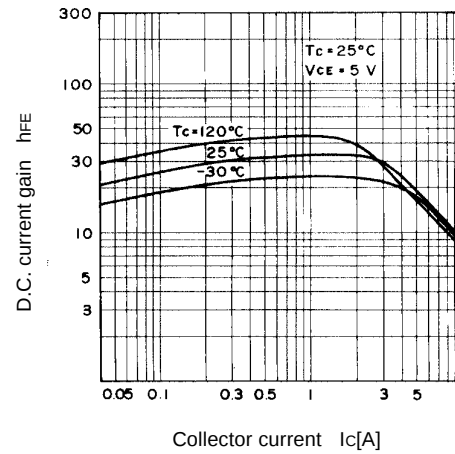
#### Thermal characteristics

| Item               | Symbol        | Test Conditions  | Min. | Typ. | Max. | Units              |
|--------------------|---------------|------------------|------|------|------|--------------------|
| Thermal resistance | $R_{th(j-c)}$ | Junction to case |      |      | 1.25 | $^\circ\text{C/W}$ |

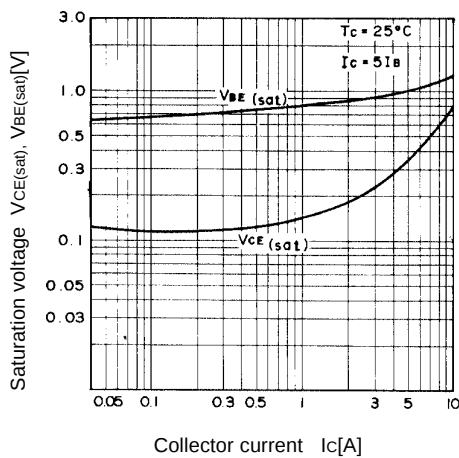
Characteristics



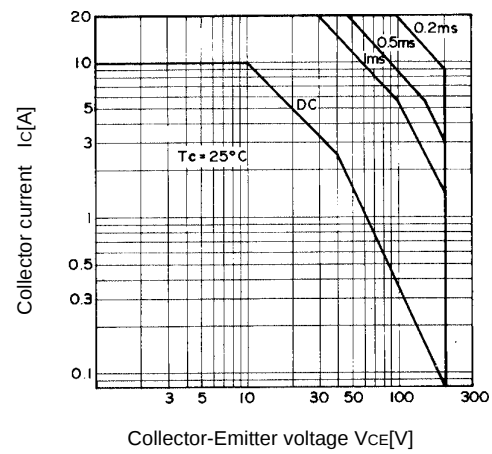
Collector Output Characteristics



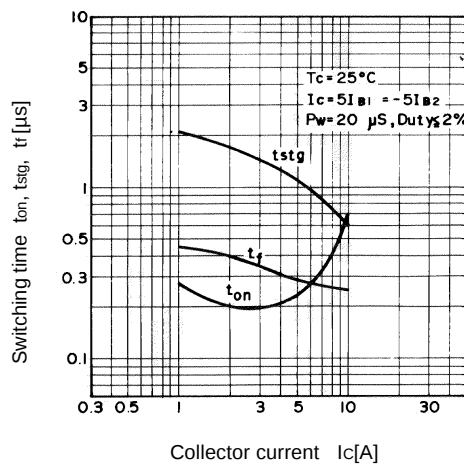
DC Current Gain



Base and Collector Saturation Voltage



Safe Operating Area



Switching Time

\*1 Switching Time Test Circuit

