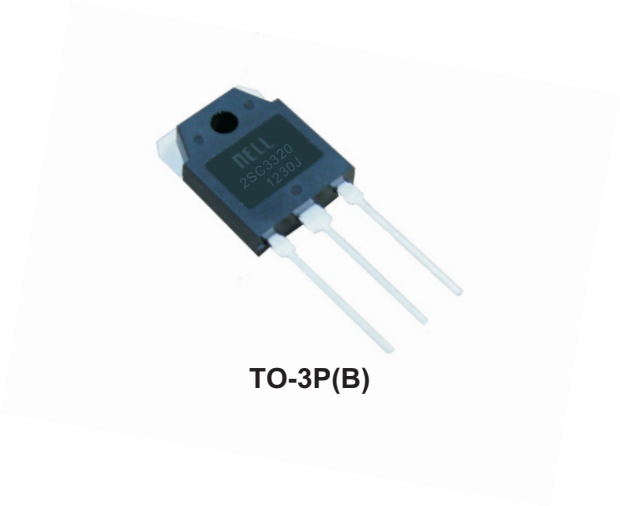
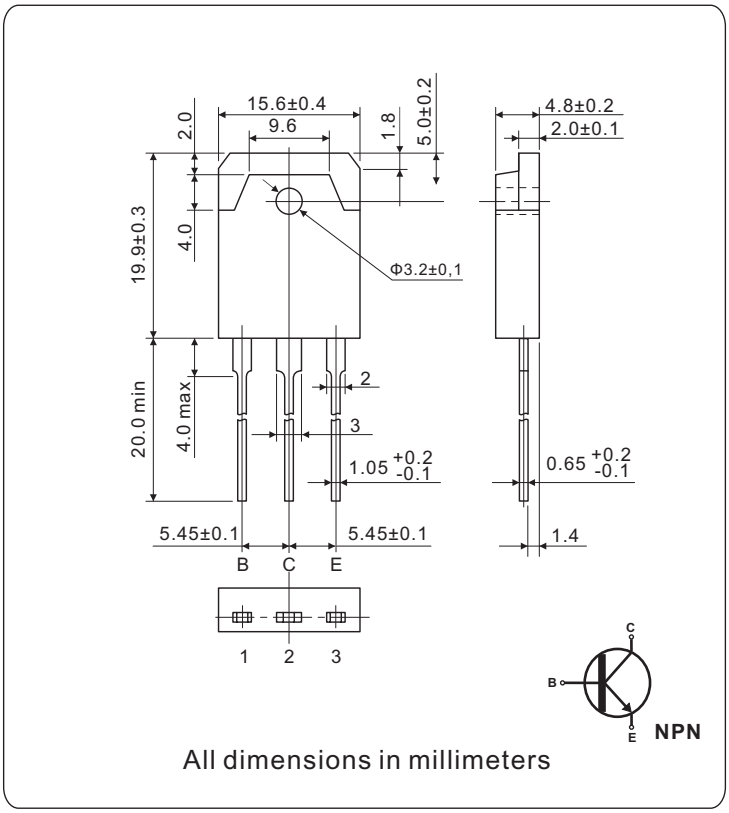
# Silicon NPN triple diffusion planar transistor
# (High voltage switching transistor)
# 15A/400V/150W



TO-3P(B)




All dimensions in millimeters

## FEATURES

- High-speed switching
- High collector to base voltage, $V_{CBO}$
- Satisfactory linearity of foward current transfer ratio $h_{FE}$
- TO-3P package which can be installed to the heat sink with one screw

## APPLICATIONS

- Switching regulator and general purpose
- Ultrasonic generators
- High frequency inverters
- General purpose power amplifiers

## ABSOLUTE MAXIMUM RATINGS ($T_C$ = 25°C)

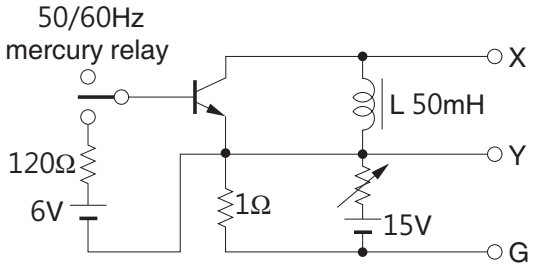
| SYMBOL | PARAMETER | | VALUE | UNIT |
|---|---|---|---|---|
| $V_{CBO}$ | Collector to base voltage | | 500 | V |
| $V_{CEO}$ | Collector to emitter voltage | | 400 | |
| $V_{CEO(SUS)}$ | | | 400 | |
| $V_{EBO}$ | Emitter to base voltage | | 7 | |
| $I_C$ | Collector current | | 15 | A |
| $I_B$ | Base current | | 5 | |
| $P_C$ | Collector power dissipation | $T_C$= 25°C | 150 | W |
| $T_j$ | Junction temperature | | 150 | °C |
| $T_{stg}$ | Storage temperature | | -55 to 150 | |

## THERMAL RESISTANCE

| SYMBOL | PARAMETER | VALUE | UNIT |
|---|---|---|---|
| $R_{th(j-c)}$ | Thermal resistance, Junction to case (MAX.) | 1.55 | °C/W |

| ELECTRICAL CHARACTERISTICS ($T_C$ = 25°C) | | | | | |
|---|---|---|---|---|---|
| **SYMBOL** | **PARAMETER** | **CONDITIONS** | **MIN** | **MAX** | **UNIT** |
| $V_{CEO}$ | Collector to emitter voltage | $I_{CEO}$ = 10mA | 400 | | V |
| $V_{CEO(SUS)}$* | | $I_C$ = 0.2A, L = 50mH | | | |
| $V_{CBO}$ | Collector to base voltage | $I_{CBO}$ = 1mA | 500 | | |
| $V_{EBO}$ | Emitter to base voltage | $I_{EBO}$ = 1mA | 7 | | |
| $I_{CBO}$ | Collector cutoff current | $V_{CBO}$ = 500V, $I_E$ = 0 | | 1 | mA |
| $I_{EBO}$ | Emitter cutoff current | $V_{EBO}$ = 7V, $I_C$ = 0 | | 1 | |
| $h_{FE}$ | Forward current transfer ratio | $V_{CE}$ = 5V, $I_C$ = 6A | 10 | | |
| $V_{CE(sat)}$ | Collector to emitter saturation voltage | $I_C$ = 6A, $I_B$ = 1.2A | | 1 | V |
| $V_{BE(sat)}$ | Base to emitter saturation voltage | $I_C$ = 6A, $I_B$ = 1.2A | | 1.5 | |
| $t_{on}$ | Turn-on time | $I_C$ = 7.5A, $I_{B1}$ = 1.5A, $I_{B2}$ = -3A<br>$R_L$ = 20Ω, $P_W$ = 20μs,<br>Duty ≤ 2% | | 0.5 | μA |
| $t_{stg}$ | Storage time | | | 1.5 | |
| $t_f$ | Fall time | | | 0.15 | |

*$V_{CEO(sus)}$ Test circuit




- Switching time test circuit

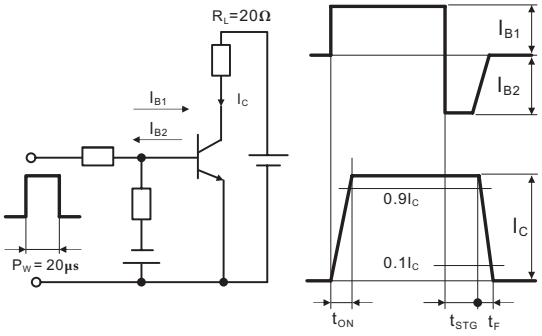


**Fig.1 Collector output characteristics**

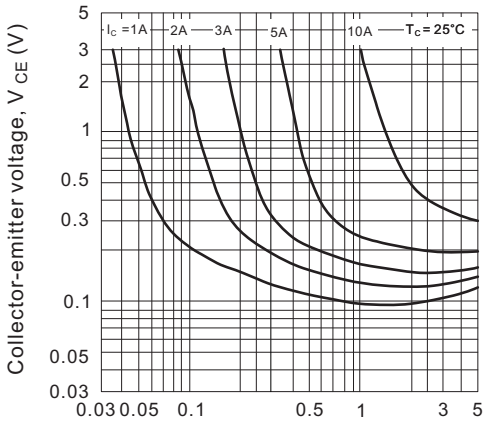



**Fig.2 Base and collector saturation voltage**

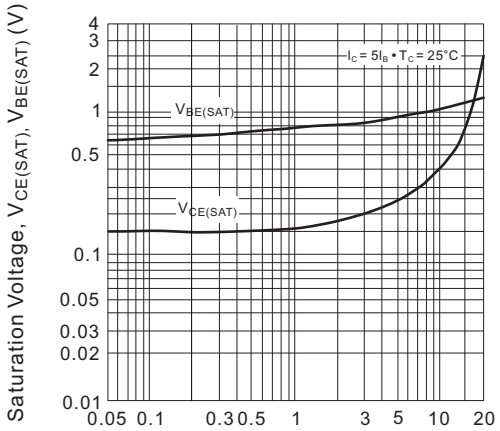



**Fig.3 Switching time**

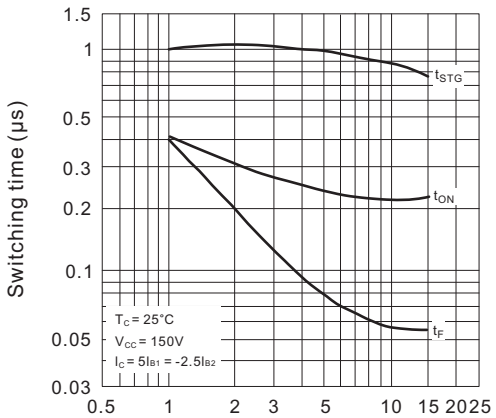



**Fig.4 $H_{FE}$-$I_C$ Characteristics**

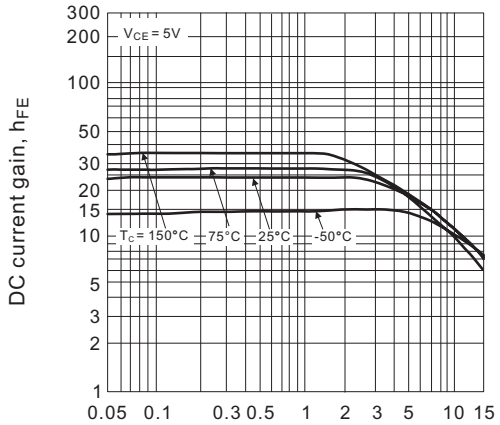



**Fig.5 Safe operation area**