# STA406A

**NPN Darlington**

**With built-in avalanche diode**

**External dimensions Ⓓ ··· STA (10-pin)**

## Absolute maximum ratings

(Ta=25°C)

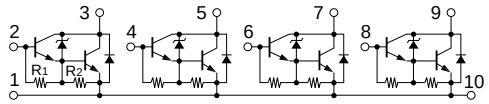
| Symbol | Ratings | Unit |
|---|---|---|
| $V_{CBO}$ | 60±10 | V |
| $V_{CEO}$ | 60±10 | V |
| $V_{EBO}$ | 6 | V |
| $I_C$ | 6 | A |
| $I_B$ | 1 | A |
| $P_T$ | 4 (Ta=25°C) | W |
| | 20 (Tc=25°C) | |
| $T_j$ | 150 | °C |
| $T_{stg}$ | –40 to +150 | °C |

## Electrical characteristics

(Ta=25°C)

| Symbol | Specification | | | Unit | Conditions |
|---|---|---|---|---|---|
| | min | typ | max | | |
| $I_{CBO}$ | | | 10 | μA | $V_{CB}$=50V |
| $I_{EBO}$ | | | 10 | mA | $V_{EB}$=6V |
| $V_{CEO}$ | 50 | 60 | 70 | V | $I_C$=50mA |
| $h_{FE}$ | 2000 | | 15000 | | $V_{CE}$=2V, $I_C$=3A |
| $V_{CE}$(sat) | | | 1.5 | V | $I_C$=3A, $I_B$=10mA |
| $V_{BE}$(sat) | | | 2.0 | V | |
| $E_{S/B}$ | 200 | | | mJ | $V_{CC}$≒20V, L=10mH, $I_C$=6.4A |

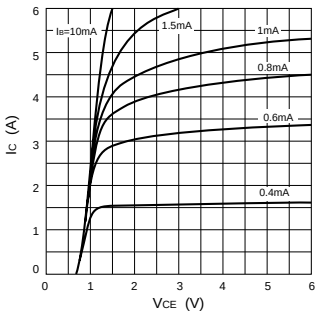
## ■Equivalent circuit diagram



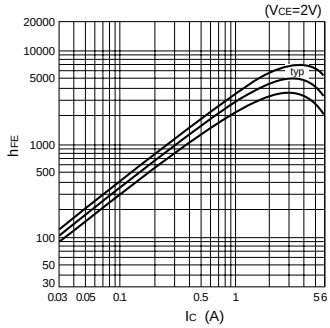

R1: 3kΩ typ R2: 150Ω typ

## Characteristic curves

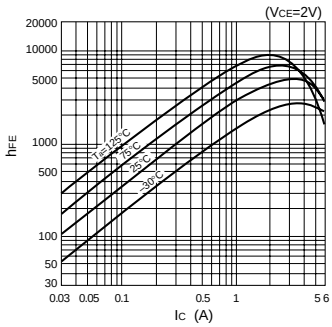
**$I_C$-$V_{CE}$ Characteristics (Typical)**



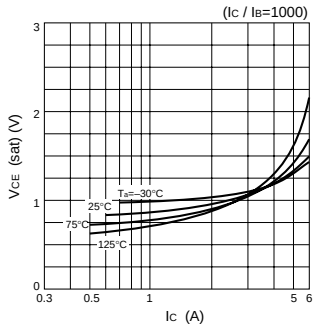

**$h_{FE}$-$I_C$ Characteristics (Typical)**



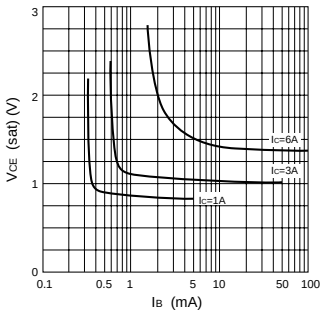

**$h_{FE}$-$I_C$ Temperature Characteristics (Typical)**



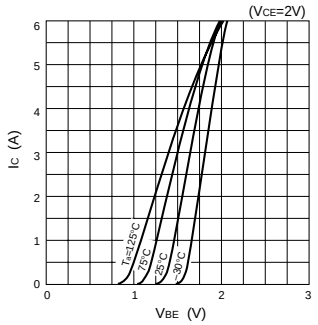

**$V_{CE}$(sat)-$I_C$ Temperature Characteristics (Typical)**



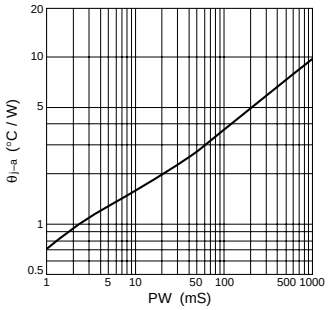

**$V_{CE}$(sat)-$I_B$ Characteristics (Typical)**



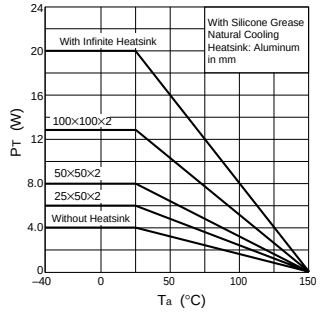

**$I_C$-$V_{BE}$ Temperature Characteristics (Typical)**




**$\theta_{j\text{-}a}$-PW Characteristics**




**$P_T$-$T_a$ Characteristics**




**Safe Operating Area (SOA)**