# STA475A

**NPN Darlington**
**With built-in avalanche diode**

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

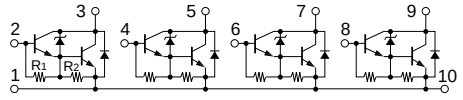
## Absolute maximum ratings (Ta=25°C)

| Symbol | Ratings | Unit |
|---|---|---|
| $V_{CBO}$ | 100±15 | V |
| $V_{CEO}$ | 100±15 | V |
| $V_{EBO}$ | 6 | V |
| $I_C$ | 2 | A |
| $I_{CP}$ | 4 (PW≤1ms, Du≤25%) | A |
| $I_B$ | 0.5 | A |
| $P_T$ | 4 (Ta=25°C) | W |
| | 20 (Tc=25°C) | |
| Tj | 150 | °C |
| Tstg | –40 to +150 | °C |

## Electrical characteristics (Ta=25°C)

| Symbol | Specification | | | Unit | Conditions |
|---|---|---|---|---|---|
| | min | typ | max | | |
| $I_{CBO}$ | | | 10 | μA | $V_{CB}$=85V |
| $I_{EBO}$ | | | 5 | mA | $V_{EB}$=6V |
| $V_{CEO}$ | 85 | 100 | 115 | V | $I_C$=10mA |
| $h_{FE}$ | 2000 | 5000 | 12000 | | $V_{CE}$=4V, $I_C$=1A |
| $V_{CE}$(sat) | | | 1.5 | V | $I_C$=1A, $I_B$=2mA |
| $V_{BE}$(sat) | | | 2.2 | V | |
| $V_{FEC}$ | | | 1.8 | V | $I_{FEC}$=1A |
| ton | | 0.6 | | μs | $V_{CC}$≒30V, |
| tstg | | 3.0 | | μs | $I_C$=1A, |
| tf | | 1.0 | | μs | $I_{B1}$=–$I_{B2}$=2mA |

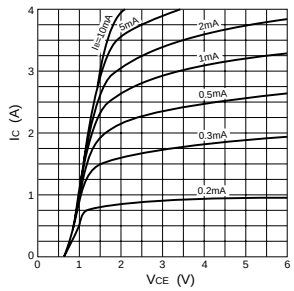
## ■Equivalent circuit diagram



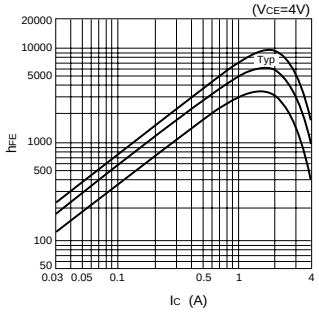

R1: 4kΩ typ R2: 150Ω typ

## Characteristic curves

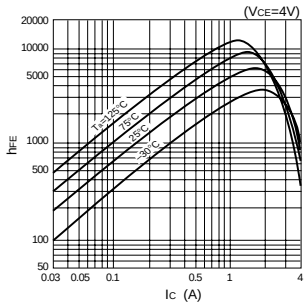
**$I_C$-$V_{CE}$ Characteristics (Typical)**



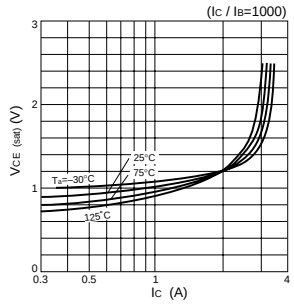

**$h_{FE}$-$I_C$ Characteristics (Typical)**



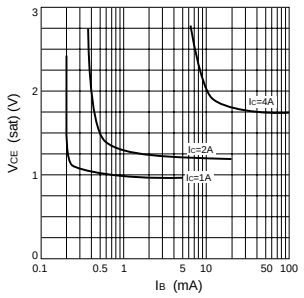

**$h_{FE}$-$I_C$ Temperature Characteristics (Typical)**



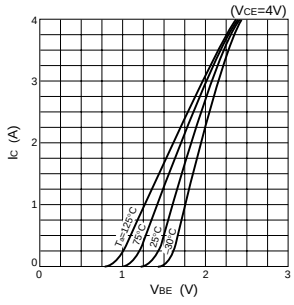

**$V_{CE}$(sat)-$I_C$ Temperature Characteristics (Typical)**



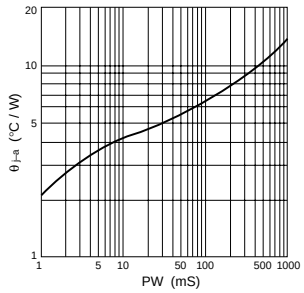

**$V_{CE}$(sat)-$I_B$ Characteristics (Typical)**



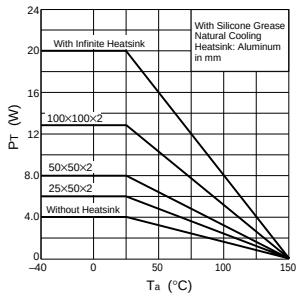

**$I_C$-$V_{BE}$ Temperature Characteristics (Typical)**




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




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




**Safe Operating Area (SOA)**