# STA305A

**PNP Darlington**
**3-phase motor drive**

External dimensions Ⓒ···STA (8-pin)

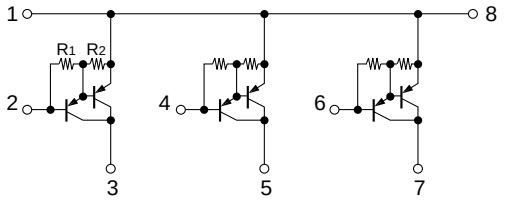
## Absolute maximum ratings (Ta=25°C)

| Symbol | Ratings | Unit |
|---|---|---|
| $V_{CBO}$ | –550 | V |
| $V_{CEO}$ | –550 | V |
| $V_{EBO}$ | –6 | V |
| $I_C$ | –1 | A |
| $I_{CP}$ | –2 (PW≤1ms, Du≤25%) | A |
| $I_B$ | –0.5 | A |
| $P_T$ | 3 (Ta=25°C) | W |
| | 15 (Tc=25°C) | |
| $T_j$ | 150 | °C |
| $T_{stg}$ | –40 to +150 | °C |

## Electrical characteristics (Ta=25°C)

| Symbol | Specification min | typ | max | Unit | Conditions |
|---|---|---|---|---|---|
| $I_{CBO}$ | | | –100 | μA | $V_{CB}$=–550V |
| $I_{EBO}$ | | –10 | –20 | mA | $V_{EB}$=–6V |
| $V_{CEO}$ | –550 | | | V | $I_C$=–100μA |
| $h_{FE}$ | 200 | 400 | 1000 | | $V_{CE}$=–4V, $I_C$=–500mA |
| $V_{CE}$(sat) | | –1.0 | –1.5 | V | $I_C$=–500mA, $I_B$=–10mA |
| $V_{BE}$(sat) | | –1.6 | –2.2 | V | |
| $t_{on}$ | | 0.7 | | μs | $V_{CC}$≒–200V, |
| $t_{stg}$ | | 13.0 | | μs | $I_C$=–500mA, |
| $t_f$ | | 2.5 | | μs | $I_{B1}$=–$I_{B2}$=–10mA |
| $f_T$ | | 15 | | MHz | $V_{CE}$=–12V, $I_E$=0.2A |
| $C_{ob}$ | | 48 | | pF | $V_{CB}$=–10V, f=1MHz |

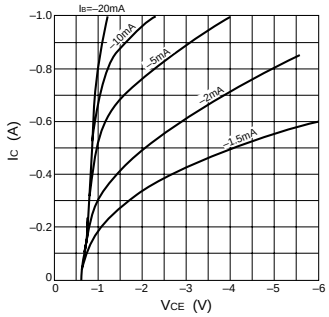
## ■Equivalent circuit diagram



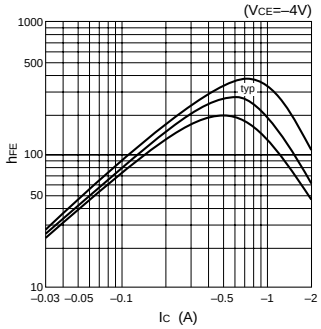

R1: 500Ω typ R2: 70Ω typ

## Characteristic curves

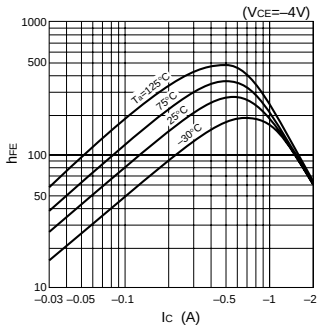
**$I_C$-$V_{CE}$ Characteristics (Typical)**



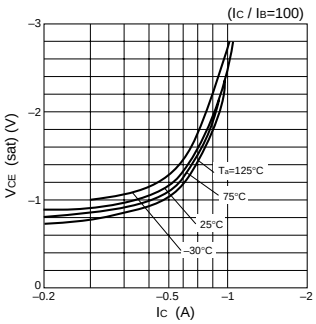

**$h_{FE}$-$I_C$ Characteristics (Typical)**



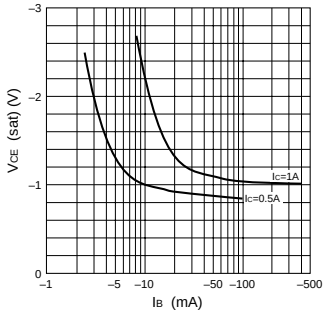

**$h_{FE}$-$I_C$ Temperature Characteristics (Typical)**



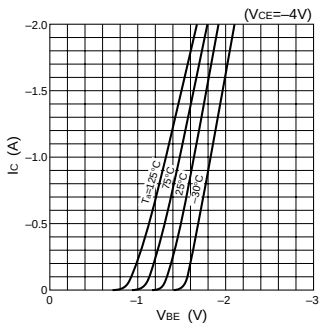

**$V_{CE}$(sat)-$I_C$ Temperature Characteristics (Typical)**



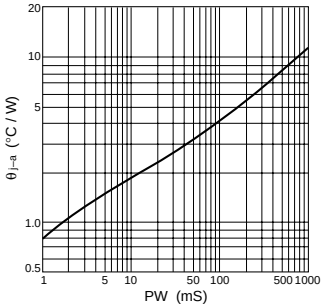

**$V_{CE}$(sat)-$I_B$ Characteristics (Typical)**



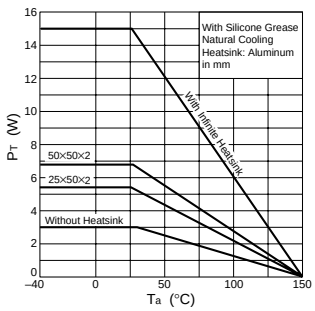

**$I_C$-$V_{BE}$ Temperature Characteristics (Typical)**




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




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




**Safe Operating Area (SOA)**