

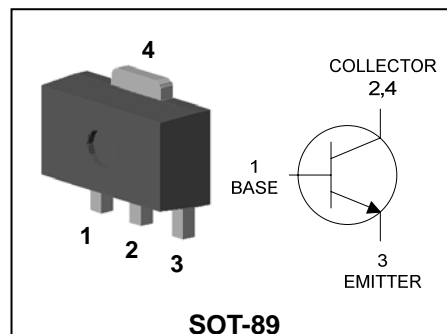
## Applications

- Power amplifier application
- High current switching application

## Features

- Low saturation voltage:  $V_{CE(sat)}=0.15V$  Typ.  
@  $I_C=1A$ ,  $I_B=50mA$
- Large collector current capacity:  $I_C=2A$
- Small and compact SMD type package
- Complementary pair with STA3250F

## PIN Connection



## Ordering Information

| Type NO. | Marking    | Package Code |
|----------|------------|--------------|
| STC4250F | HW2<br>YWW | SOT-89       |

HW2: DEVICE CODE, YWW(Y : Year code, WW : Weekly code)

## Absolute Maximum Ratings

[ $T_a=25^\circ C$ ]

| Characteristic              | Symbol    | Rating  | Unit       |
|-----------------------------|-----------|---------|------------|
| Collector-base voltage      | $V_{CBO}$ | 50      | V          |
| Collector-emitter voltage   | $V_{CEO}$ | 50      | V          |
| Emitter-base voltage        | $V_{EBO}$ | 5       | V          |
| Collector current           | $I_C$     | 2       | A          |
| Base current                | $I_B$     | 0.4     | A          |
| Collector Power dissipation | $P_C$     | 0.5     | W          |
|                             | $P_C^*$   | 1       | W          |
| Junction temperature        | $T_J$     | 150     | $^\circ C$ |
| Storage temperature range   | $T_{stg}$ | -55~150 | $^\circ C$ |

※ Device mounted on ceramic substrate ( $250mm^2 \times 0.8t$ )

## Electrical Characteristics

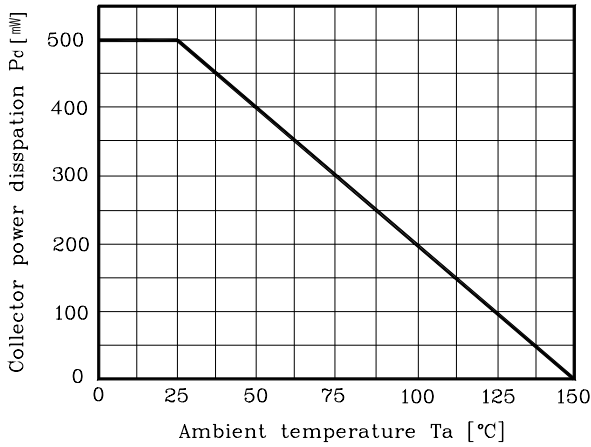
[Ta=25°C]

| Characteristic                       | Symbol        | Test Condition              | Min. | Typ. | Max. | Unit    |    |
|--------------------------------------|---------------|-----------------------------|------|------|------|---------|----|
| Collector-emitter breakdown voltage  | $BV_{CEO}$    | $I_C=10mA, I_B=0$           | 50   | -    | -    | V       |    |
| Collector cut-off current            | $I_{CBO}$     | $V_{CB}=50V, I_E=0$         | -    | -    | 0.1  | $\mu A$ |    |
| Emitter cut-off current              | $I_{EBO}$     | $V_{EB}=5V, I_C=0$          | -    | -    | 0.1  | $\mu A$ |    |
| DC current gain                      | $h_{FE}$      | $V_{CE}=2V, I_C=0.5A^*$     | 120  | -    | 240  |         |    |
|                                      | $h_{FE}$      | $V_{CE}=2V, I_C=1.5A^*$     | 40   | -    | -    |         |    |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C=1A, I_B=0.05A^*$       | -    | -    | 0.35 | V       |    |
| Base-emitter saturation voltage      | $V_{BE(sat)}$ | $I_C=1A, I_B=0.05A^*$       | -    | -    | 1.2  | V       |    |
| Transition frequency                 | $f_T$         | $V_{CE}=2V, I_C=50mA$       | -    | 240  | -    | MHz     |    |
| Collector output capacitance         | $C_{ob}$      | $V_{CB}=10V, I_E=0, f=1MHz$ | -    | 15   | -    | pF      |    |
| Switching Time                       | Turn-on Time  | $t_{on}$                    |      | -    | 100  | -       | nS |
|                                      | Storage Time  | $t_{stg}$                   |      | -    | 300  | -       |    |
|                                      | Fall Time     | $t_f$                       |      | -    | 50   | -       |    |

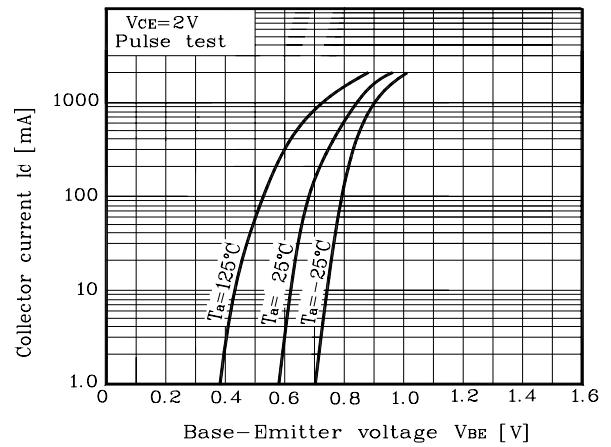
\*: Pulse test:  $t_p \leq 300\mu s$ , Duty cycle  $\leq 2\%$

## Electrical Characteristic Curves

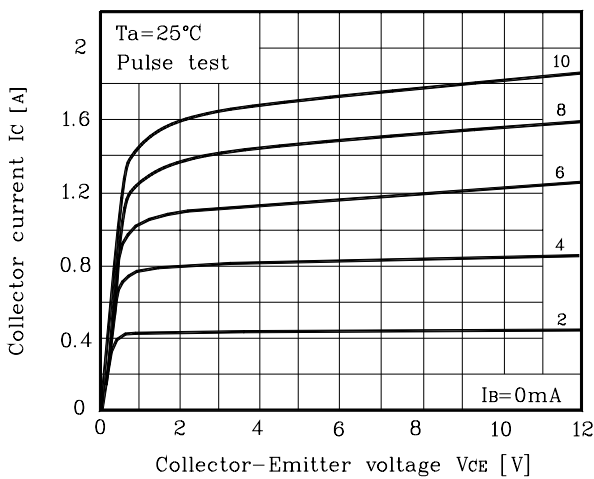
**Fig. 1**  $P_C - T_a$



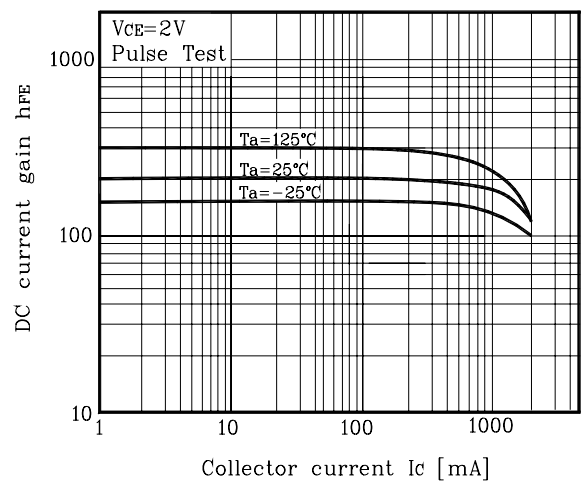
**Fig. 2**  $I_C - V_{BE}$



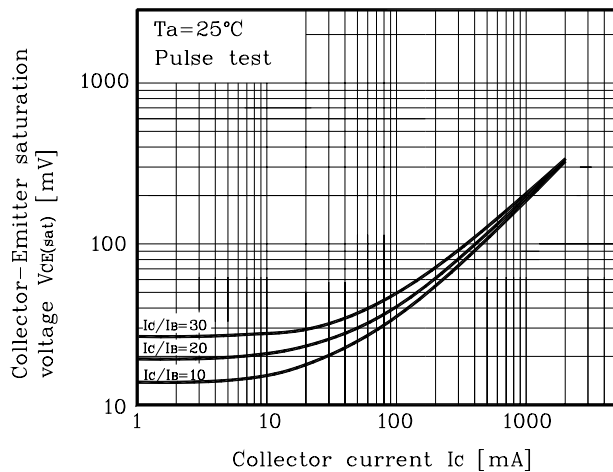
**Fig. 3**  $I_C - V_{CE}$



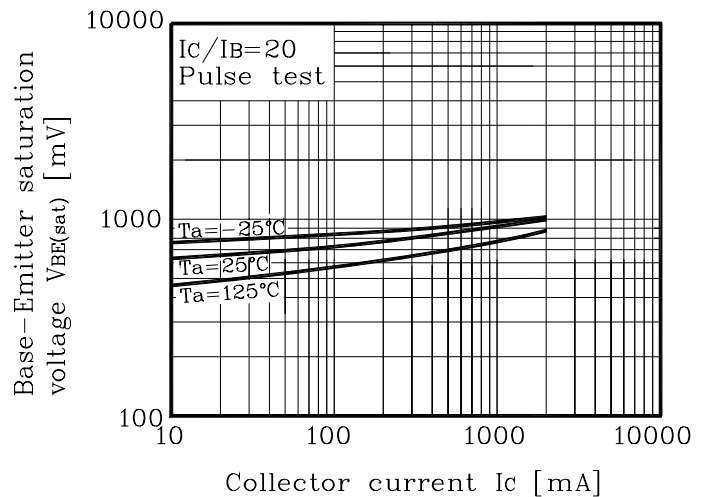
**Fig. 4**  $h_{FE} - I_C$



**Fig. 5**  $V_{CE(sat)} - I_C$



**Fig. 6**  $V_{BE(sat)} - I_C$



Electrical Characteristic Curves

Fig. 7  $C_{ob} - V_{CB}$

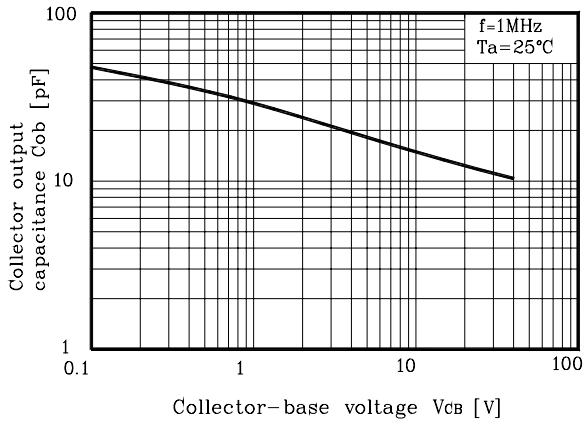
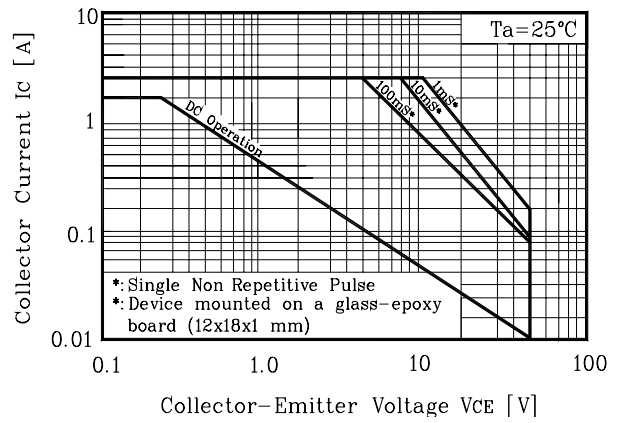
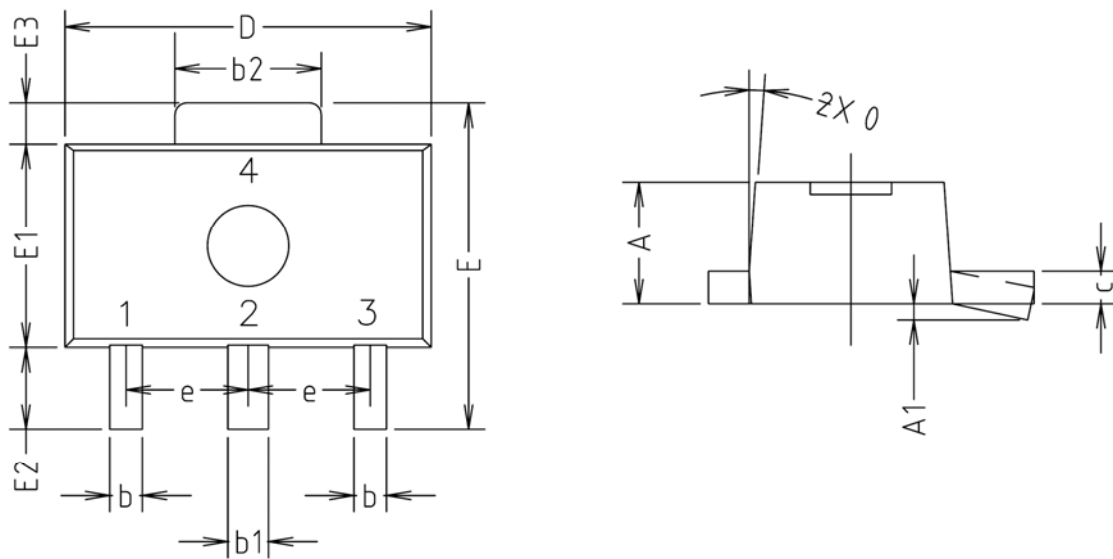


Fig. 8 Safe Operating Area

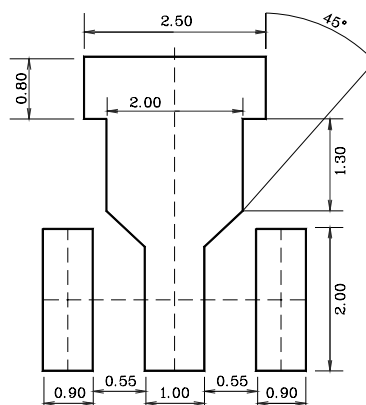


## Outline Dimension(mm)



| SYMBOL | MILLIMETERS |         |         | NOTE |
|--------|-------------|---------|---------|------|
|        | MINIMUM     | NOMINAL | MAXIMUM |      |
| A      | 1.40        | 1.50    | 1.60    |      |
| A1     | 0.00        | —       | 0.10    |      |
| b      | 0.38        | 0.42    | 0.48    |      |
| b1     | 0.48        | 0.52    | 0.58    |      |
| b2     | 1.79        | 1.82    | 1.87    |      |
| c      | 0.40        | 0.42    | 0.46    |      |
| D      | 4.40        | 4.50    | 4.70    |      |
| E      | 3.70        | 4.00    | 4.30    |      |
| E1     | 2.40        | 2.50    | 2.70    |      |
| E2     | 0.80        | 1.00    | 1.20    |      |
| E3     | 0.40        | 0.50    | 0.60    |      |
| e      | 1.50 TYP.   |         |         |      |
| θ      | 4° TYP.     |         |         |      |

※Recommend PCB solder land [Unit: mm]



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