

# NPN general purpose transistor

## SST6838

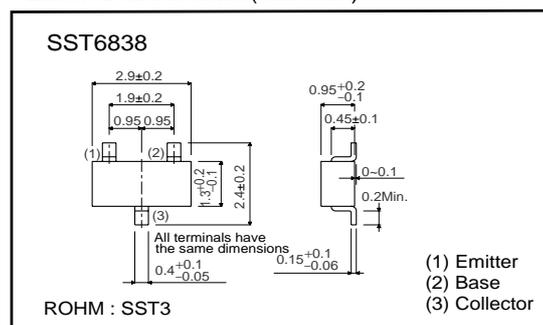
### ●Features

- 1)  $V_{CE0}$  minimum is 40V ( $I_C = 1\text{mA}$ )
- 2) Complements the SST6839.

### ●Package, marking and packaging specifications

|                              |         |
|------------------------------|---------|
| Part No.                     | SST6838 |
| Packaging type               | SST3    |
| Marking                      | RBR     |
| Code                         | T116    |
| Basic ordering unit (pieces) | 3000    |

### ●External dimensions (Unit : mm)



### ●Absolute maximum ratings ( $T_a=25^\circ\text{C}$ )

| Parameter                   | Symbol    | Limits      | Unit             |
|-----------------------------|-----------|-------------|------------------|
| Collector-base voltage      | $V_{CBO}$ | 50          | V                |
| Collector-emitter voltage   | $V_{CEO}$ | 40          | V                |
| Emitter-base voltage        | $V_{EBO}$ | 5           | V                |
| Collector current           | $I_C$     | 0.2         | A                |
| Collector power dissipation | $P_C$     | 0.2         | W                |
| Junction temperature        | $T_j$     | 150         | $^\circ\text{C}$ |
| Storage temperature         | $T_{stg}$ | -55 to +150 | $^\circ\text{C}$ |

### ●Electrical characteristics ( $T_a=25^\circ\text{C}$ )

| Parameter                            | Symbol        | Min. | Typ. | Max. | Unit          | Conditions  |
|--------------------------------------|---------------|------|------|------|---------------|---|
| Collector-base breakdown voltage     | $V_{CBO}$     | 50   | -    | -    | V             | $I_C=10\mu\text{A}$ ( $T_a=-40^\circ\text{C}$ to $+125^\circ\text{C}$ )               |
| Collector-emitter breakdown voltage  | $V_{CEO}$     | 40   | -    | -    | V             | $I_C=1\text{mA}$ ( $T_a=-40^\circ\text{C}$ to $+125^\circ\text{C}$ )                  |
| Collector cutoff current             | $I_{CBO}$     | -    | -    | 0.5  | $\mu\text{A}$ | $V_{CB}=30\text{V}$ ( $T_a=85^\circ\text{C}$ )  |
|                                      |               | -    | -    | 5    |               | $V_{CB}=30\text{V}$ ( $T_a=125^\circ\text{C}$ )                                       |
| Emitter cutoff current               | $I_{EBO}$     | -    | -    | 0.5  | $\mu\text{A}$ | $V_{EB}=4\text{V}$ ( $T_a=85^\circ\text{C}$ )   |
|                                      |               | -    | -    | 5    |               | $V_{EB}=4\text{V}$ ( $T_a=125^\circ\text{C}$ )  |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | -    | -    | 0.4  | V             | $I_C/I_B=50\text{mA}/5\text{mA}$ ( $T_a=25^\circ\text{C}$ )                           |
|                                      |               | -    | -    | 0.5  |               | $I_C/I_B=10\text{mA}/0.2\text{mA}$ ( $T_a=85^\circ\text{C}$ )                         |
|                                      |               | -    | -    | 0.7  |               | $I_C/I_B=10\text{mA}/0.2\text{mA}$ ( $T_a=125^\circ\text{C}$ )                        |
| DC current transfer ratio            | $h_{FE1}$     | 200  | -    | -    | -             | $V_{CE}/I_C=5\text{V}/1\text{mA}$ ( $T_a=-40^\circ\text{C}$ to $+25^\circ\text{C}$ )  |
|                                      |               | -    | -    | 800  |               | $V_{CE}/I_C=5\text{V}/1\text{mA}$ ( $T_a=85^\circ\text{C}$ )                          |
|                                      |               | -    | -    | 1000 |               | $V_{CE}/I_C=5\text{V}/1\text{mA}$ ( $T_a=125^\circ\text{C}$ )                         |
| DC current transfer ratio            | $h_{FE2}$     | 150  | -    | -    | -             | $V_{CE}/I_C=5\text{V}/10\text{mA}$ ( $T_a=-40^\circ\text{C}$ to $+25^\circ\text{C}$ ) |
| Transition frequency                 | $f_T$         | 50   | 180  | -    | MHz           | $V_{CE}=12\text{V}$ , $I_C=2\text{mA}$ , $f=100\text{MHz}$ ( $T_a=25^\circ\text{C}$ ) |
| Collector output capacitance         | $C_{ob}$      | -    | 2    | 3.5  | pF            | $V_{CB}=12\text{V}$ , $f=1\text{MHz}$ ( $T_a=25^\circ\text{C}$ )                      |
| Emitter input capacitance            | $C_{ib}$      | -    | 17   | -    | pF            | $V_{EB}=0.5\text{V}$ , $f=1\text{MHz}$ ( $T_a=25^\circ\text{C}$ )                     |

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●Electrical characteristic curves

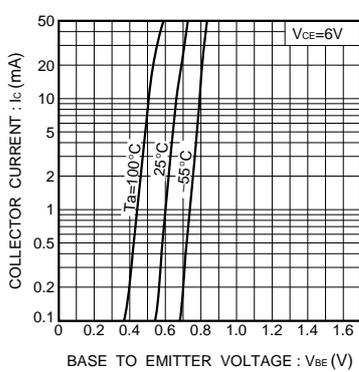


Fig.1 Grounded emitter propagation characteristics

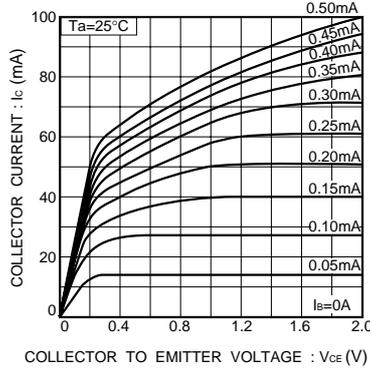


Fig.2 Grounded emitter output characteristics ( I )

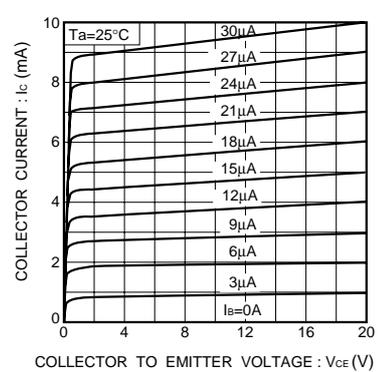


Fig.3 Grounded emitter output characteristics ( II )

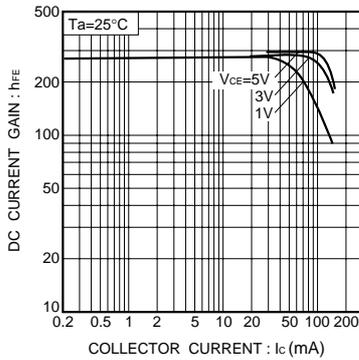


Fig.4 DC current gain vs. collector current ( I )

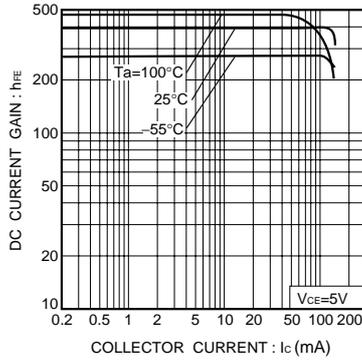


Fig.5 DC current gain vs. collector current ( II )

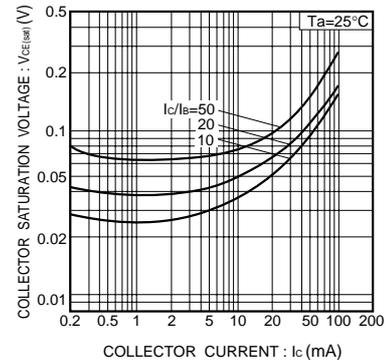


Fig.6 Collector-emitter saturation voltage vs. collector current

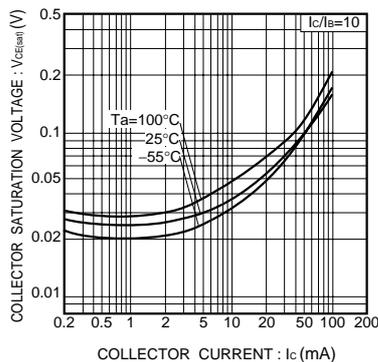


Fig.7 Collector-emitter saturation voltage vs. collector current ( I )

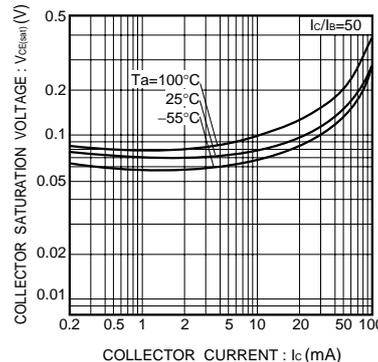


Fig.8 Collector-emitter saturation voltage vs. collector current ( II )

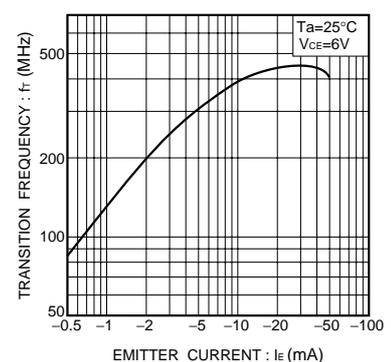


Fig.9 Gain bandwidth product vs. emitter current

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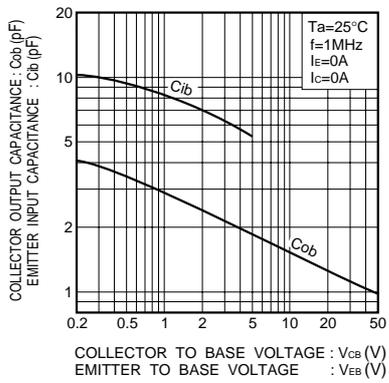


Fig.10 Collector output capacitance vs. collector-base voltage  
Emitter input capacitance vs. emitter-base voltage

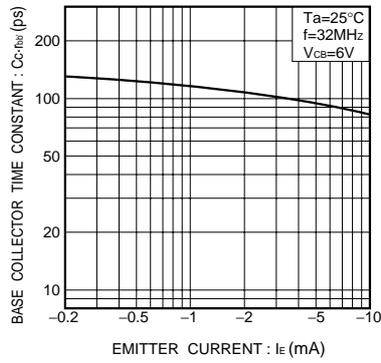


Fig.11 Base-collector time constant vs. emitter current

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