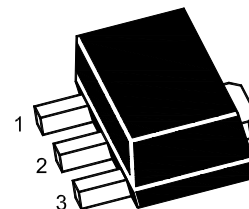


### NPN Silicon Epitaxial Planar Transistor



1.Base 2.Collector 3.Emitter  
SOT-89 Plastic Package

#### Absolute Maximum Ratings ( $T_a = 25^\circ\text{C}$ )

| Parameter                                       | Symbol    | Value                  | Unit             |
|-------------------------------------------------|-----------|------------------------|------------------|
| Collector Base Voltage                          | $V_{CBO}$ | 60                     | V                |
| Collector Emitter Voltage                       | $V_{CEO}$ | 60                     | V                |
| Emitter Base Voltage                            | $V_{EBO}$ | 6                      | V                |
| Collector Current                               | $I_C$     | 2                      | A                |
| Peak Collector Current ( $P_W = 10\text{ ms}$ ) | $I_{CP}$  | 6                      | A                |
| Total Power Dissipation                         | $P_{tot}$ | 0.5<br>2 <sup>1)</sup> | W                |
| Junction Temperature                            | $T_j$     | 150                    | $^\circ\text{C}$ |
| Storage Temperature Range                       | $T_{stg}$ | - 55 to + 150          | $^\circ\text{C}$ |

<sup>1)</sup> When mounted on a 40 x 40 x 0.7 mm ceramic board.

#### Characteristics at $T_a = 25^\circ\text{C}$

| Parameter                                                                                                              | Symbol        | Min. | Typ. | Max. | Unit |
|------------------------------------------------------------------------------------------------------------------------|---------------|------|------|------|------|
| DC Current Gain<br>at $V_{CE} = 2\text{ V}$ , $I_C = 500\text{ mA}$<br>at $V_{CE} = 2\text{ V}$ , $I_C = 1.5\text{ A}$ | $h_{FE}$      | 120  | -    | 270  | -    |
|                                                                                                                        | $h_{FE}$      | 45   | -    | -    | -    |
| Collector Base Cutoff Current<br>at $V_{CB} = 50\text{ V}$                                                             | $I_{CBO}$     | -    | -    | 100  | nA   |
| Emitter Base Cutoff Current<br>at $V_{EB} = 5\text{ V}$                                                                | $I_{EBO}$     | -    | -    | 100  | nA   |
| Collector Base Breakdown Voltage<br>at $I_C = 50\text{ }\mu\text{A}$                                                   | $V_{(BR)CBO}$ | 60   | -    | -    | V    |
| Collector Emitter Breakdown Voltage<br>at $I_C = 1\text{ mA}$                                                          | $V_{(BR)CEO}$ | 60   | -    | -    | V    |
| Emitter Base Breakdown Voltage<br>at $I_E = 50\text{ }\mu\text{A}$                                                     | $V_{(BR)EBO}$ | 6    | -    | -    | V    |
| Collector Emitter Saturation Voltage<br>at $I_C = 1\text{ A}$ , $I_B = 50\text{ mA}$                                   | $V_{CE(sat)}$ | -    | -    | 0.35 | V    |
| Transition Frequency<br>at $V_{CE} = 2\text{ V}$ , $-I_E = 500\text{ mA}$ , $f = 100\text{ MHz}$                       | $f_T$         | -    | 120  | -    | MHz  |
| Collector Output Capacitance<br>at $V_{CB} = 10\text{ V}$ , $f = 1\text{ MHz}$                                         | $C_{ob}$      | -    | 21   | -    | pF   |

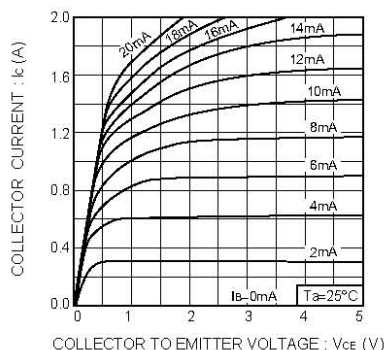


Fig.1 Grounded emitter output characteristics

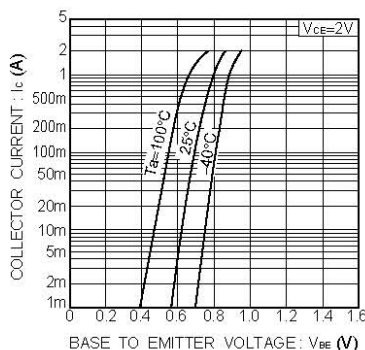


Fig.2 Grounded emitter propagation characteristics

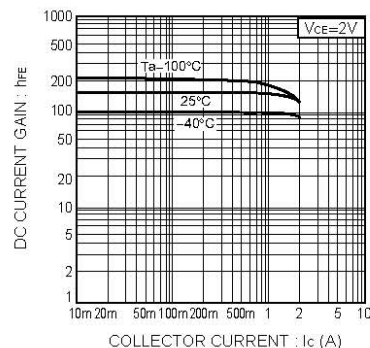


Fig.3 DC current gain vs. collector current ( I )

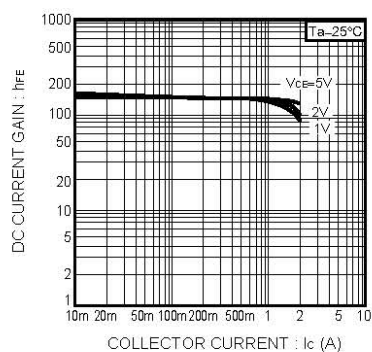


Fig.4 DC current gain vs. collector current ( II )

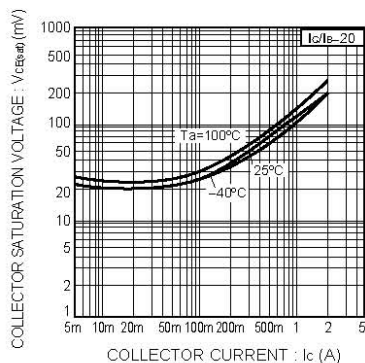


Fig.5 Collector-emitter saturation voltage vs. collector current ( I )

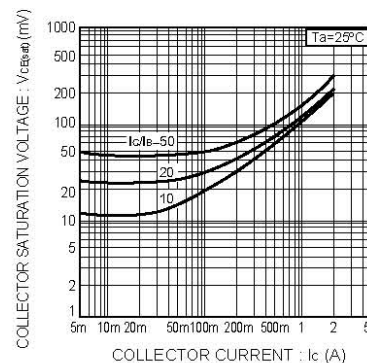


Fig.6 Collector-emitter saturation voltage vs. collector current ( II )