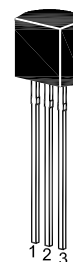


# ST 13001

## NPN Silicon Epitaxial Planar Transistor

for high voltage and high speed switching applications



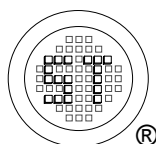
1. Emitter 2. Collector 3. Base  
TO-92 Plastic Package

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

| Parameter                 | Symbol    | Value         | Unit             |
|---------------------------|-----------|---------------|------------------|
| Collector Base Voltage    | $V_{CBO}$ | 500           | V                |
| Collector Emitter Voltage | $V_{CEO}$ | 400           | V                |
| Emitter Base Voltage      | $V_{EBO}$ | 9             | V                |
| Collector Current (DC)    | $I_C$     | 0.3           | A                |
| Total Power Dissipation   | $P_{tot}$ | 0.75          | W                |
| Junction Temperature      | $T_j$     | 150           | $^\circ\text{C}$ |
| Storage Temperature Range | $T_{stg}$ | - 55 to + 150 | $^\circ\text{C}$ |

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

| Parameter                                                                                     | Symbol        | Min. | Max. | Unit          |
|-----------------------------------------------------------------------------------------------|---------------|------|------|---------------|
| DC Current Gain<br>at $V_{CE} = 10\text{ V}$ , $I_C = 0.25\text{ mA}$                         | $h_{FE}$      | 5    | -    | -             |
| at $V_{CE} = 20\text{ V}$ , $I_C = 20\text{ mA}$                                              | $h_{FE}$      | 10   | 40   | -             |
| Collector Base Cutoff Current<br>at $V_{CB} = 500\text{ V}$                                   | $I_{CBO}$     | -    | 100  | $\mu\text{A}$ |
| Collector Emitter Cutoff Current<br>at $V_{CE} = 400\text{ V}$                                | $I_{CEO}$     | -    | 200  | $\mu\text{A}$ |
| Emitter Base Cutoff Current<br>at $V_{EB} = 9\text{ V}$                                       | $I_{EBO}$     | -    | 100  | $\mu\text{A}$ |
| Collector Base Breakdown Voltage<br>at $I_C = 100\text{ }\mu\text{A}$                         | $V_{(BR)CBO}$ | 500  | -    | V             |
| Collector Emitter Breakdown Voltage<br>at $I_C = 1\text{ mA}$                                 | $V_{(BR)CEO}$ | 400  | -    | V             |
| Emitter Base Breakdown Voltage<br>at $I_E = 100\text{ }\mu\text{A}$                           | $V_{(BR)EBO}$ | 9    | -    | V             |
| Collector Emitter Saturation Voltage<br>at $I_C = 50\text{ mA}$ , $I_B = 10\text{ mA}$        | $V_{CE(sat)}$ | -    | 0.5  | V             |
| Base Emitter Saturation Voltage<br>at $I_C = 50\text{ mA}$ , $I_B = 10\text{ mA}$             | $V_{BE(sat)}$ | -    | 1.2  | V             |
| Transition Frequency<br>at $V_{CE} = 20\text{ V}$ , $I_C = 20\text{ mA}$ , $f = 1\text{ MHz}$ | $f_T$         | 8    | -    | MHz           |
| Storage Time<br>at UI9600, $I_C = 100\text{ mA}$                                              | $t_s$         | -    | 3    | $\mu\text{s}$ |
| Fall Time<br>at UI9600, $I_C = 100\text{ mA}$                                                 | $t_f$         | -    | 1    | $\mu\text{s}$ |



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ISO/TS 18949 : 2002  
Certificate No. 05103



ISO14001 : 2004  
Certificate No. 7116



ISO 9001 : 2008  
Certificate No. 0508088



BS-OHSAS 18001 : 2007  
Certificate No. 7116



IECQ QC 080000  
Certificate No. PCC08000484

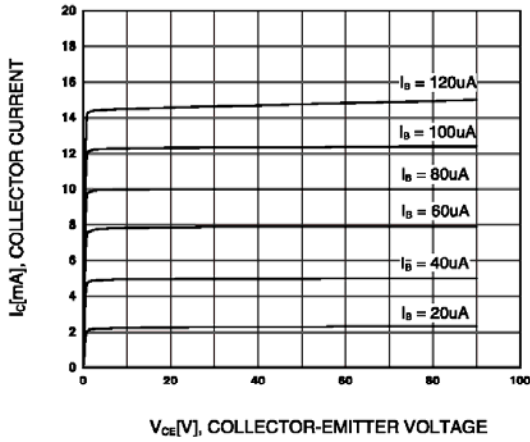


Figure 1. Static Characteristic

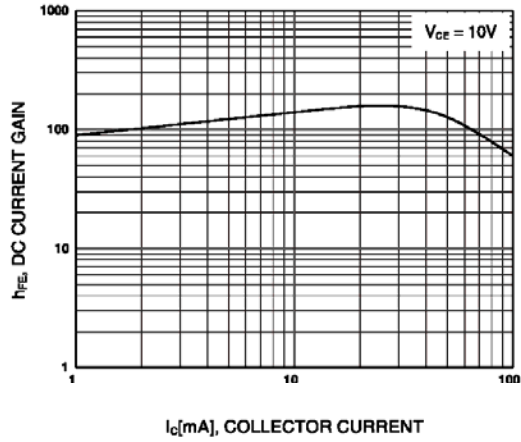


Figure 2. DC current Gain

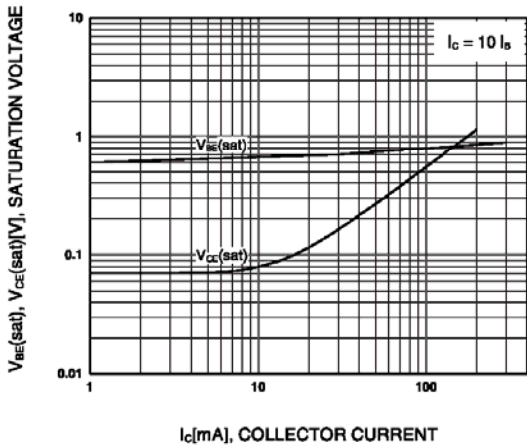


Figure 3. Base-Emitter Saturation Voltage  
Collector-Emmitter Saturation Voltage

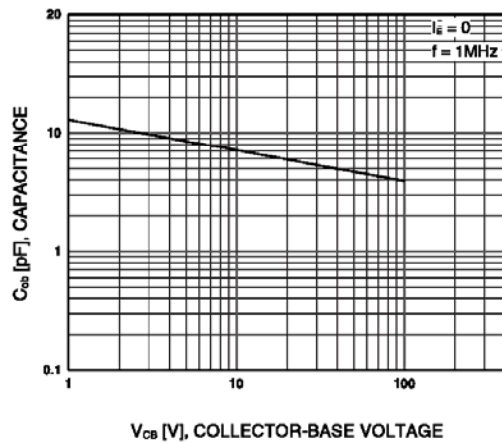
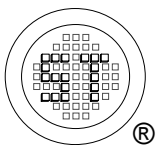


Figure 4. Collector Output Capacitance



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