Shantou Huashan Electronic Devices Co.,Ltd.

NPN SILICON TRANSISTOR

# HE13002

## APPLICATIONS

High Voltage switching And Speed Switching

## ABSOLUTE MAXIMUM RATINGS ($T_a$=25℃)

$T_{stg}$——Storage Temperature…… -55~150℃

$T_j$——Junction Temperature……150℃

$P_C$——Collector Dissipation……1W

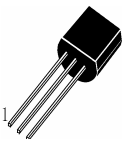
$V_{CBO}$——Collector-Base Voltage……600V

$V_{CEO}$——Collector-Emitter Voltage……400V

$V_{EBO}$——Emitter-Base Voltage……9V

$I_C$——Collector Current……1A

TO-92



1—Emitter，E
2—Collector，C
3—Base，B

## ELECTRICAL CHARACTERISTICS ($T_a$=25℃)

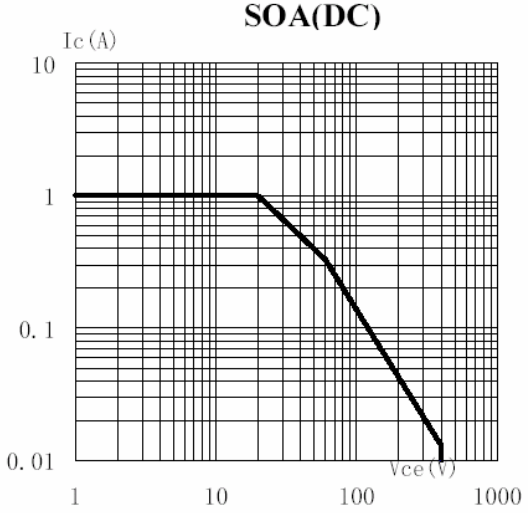
| Symbol | Characteristics | Min | Typ | Max | Unit | Test Conditions |
|---|---|---|---|---|---|---|
| $BV_{CBO}$ | Collector-Base Breakdown Voltage | 600 | | | V | $I_C$=1mA, $I_E$=0 |
| $BV_{CEO}$ | Collector-Emitter Breakdown Voltage | 400 | | | V | $I_C$=10mA, $I_B$=0 |
| $BV_{EBO}$ | Emitter-Base Breakdown Voltage | 9 | | | V | $I_E$=1mA，$I_C$=0 |
| $I_{CBO}$ | Collector Cut-off Current | | | 10 | μA | $V_{CB}$=500V, $I_E$=0 |
| $I_{EBO}$ | Emitter-Base Cut-off Current | | | 10 | μA | $V_{EB}$=9V, $I_C$=0 |
| $H_{FE}$ | DC Current Gain | 10 | | 40 | | $V_{CE}$=10V, $I_C$=0.1A |
| $V_{CE(sat1)}$ | Collector- Emitter Saturation Voltage | | | 0.5 | V | $I_C$=0.2A, $I_B$=40mA |
| $V_{CE(sat2)}$ | Collector- Emitter Saturation Voltage | | | 1.0 | V | $I_C$=0.5A, $I_B$=100mA |
| $V_{CE(sat3)}$ | Collector- Emitter Saturation Voltage | | | 3 | V | $I_C$=0.8A, $I_B$=200mA |
| $V_{BE(sat)}$ | Base-Emitter Saturation Voltage | | | 1.2 | V | $I_C$=0.5A, $I_B$=100mA |
| $f_T$ | Current Gain-Bandwidth Product | 8 | | | MHz | $V_{CE}$=10V, $I_C$=0.1A,f=1MHz |
| $t_{ON}$ | Turn-On Time | | | 1.1 | μS | $V_{CC}$=125V, $I_C$=1A |
| $t_{STG}$ | Storage Time | | | 4.0 | μS | $I_{B1}$=-$I_{B2}$=0.2A |
| $t_F$ | Fall Time | | | 0.7 | μS | $R_L$=125Ω |

## $h_{FE}$ Classification

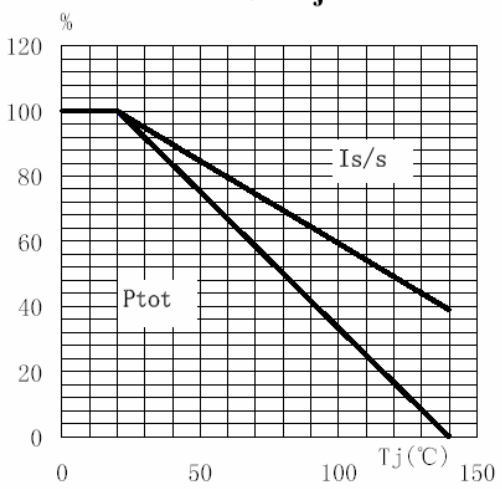
| H1 | H2 | H3 | H4 | H5 |
|---|---|---|---|---|
| 10-16 | 14-21 | 19-26 | 24-31 | 29-40 |

# HE13002

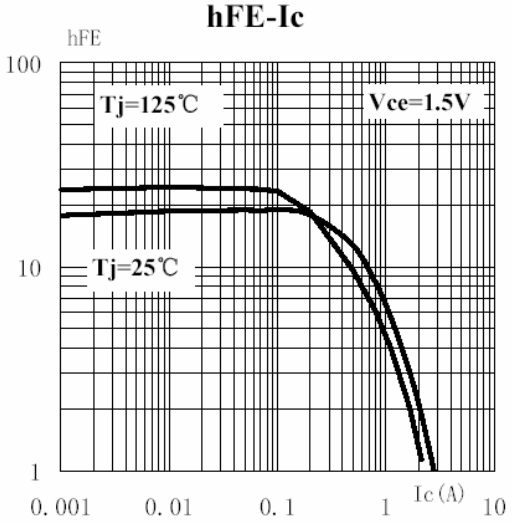
**SOA(DC)**




**Pc∝Tj**




**hFE-Ic**

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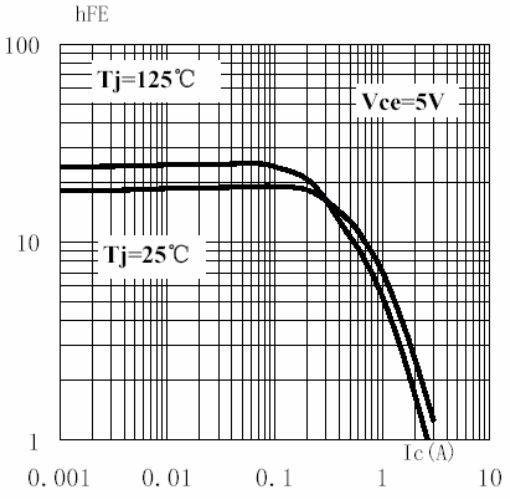
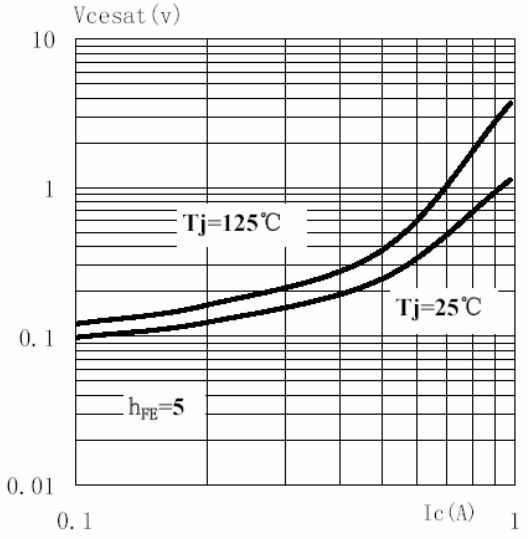



**Vcesat-Ic**




**Vbesat-Ic**