Shantou Huashan Electronic Devices Co.,Ltd.

NPN SILICON TRANSISTOR

# HE13005

## HIGH VOLTAGE SWITCH MODE APPLICATION

High Speed Switching

Suitable for Switching Regulator and Montor Control

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

$T_{stg}$——Storage Temperature····· -65~150℃

$T_j$——Junction Temperature····· 150℃

$P_C$——Collector Dissipation ($T_c$=25℃) ····· 75W

$V_{CBO}$——Collector-Base Voltage····· 700V

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

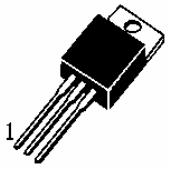
$V_{EBO}$——Emitter-Base Voltage····· 9V

$I_C$——Collector Current (DC) ····· 4A

$I_C$——Collector Current (Pulse) ····· 8A

$I_B$——Base Current·····2A

TO-220AB




1—Base，B

2—Collector，C

3—Emitter, E

## 电参数 ($T_a$=25℃)

| Symbol | Characteristics | Min | Typ | Max | Unit | Test Conditions |
|---|---|---|---|---|---|---|
| $BV_{CEO}$ | Collector-Emitter Breakdown Voltage | 400 | | | V | $I_C$=10mA, $I_B$=0 |
| $I_{EBO}$ | Emitter Cut-off Current | | | 1 | mA | $V_{EB}$=9V, $I_C$=0 |
| $H_{FE}$ (1) | DC Current Gain | 10 | | 40 | | $V_{CE}$=5V, $I_C$=10A |
| $H_{FE}$ (2) | | 8 | | 40 | | $V_{CE}$=5V, $I_C$=2A |
| $V_{CE(sat1)}$ | Collector- Emitter Saturation Voltage | | | 0.5 | V | $I_C$=1A, $I_B$=0.2A |
| $V_{CE(sat2)}$ | | | | 0.6 | V | $I_C$=2A, $I_B$=0.5A |
| $V_{CE(sat3)}$ | | | | 1 | V | $I_C$=4A, $I_B$=1A |
| $V_{BE(sat1)}$ | Base-Emitter Saturation Voltage | | | 1.2 | V | $I_C$=1A, $I_B$=0.2A |
| $V_{BE(sat2)}$ | | | | 1.6 | V | $I_C$=2A, $I_B$=0.5A |
| Cob | Output Capacitance | | 65 | | pF | $V_{CB}$=10V, f=0.1MHz |
| $f_T$ | Current Gain-Bandwidth Product | 4 | | | MHz | $V_{CE}$=10V, $I_C$=0.5A |
| $t_{ON}$ | Turn-On Time | | | 0.8 | μS | $V_{CC}$=125V, $I_C$=2A<br>$I_{B1}$=-$I_{B2}$=0.4A |
| $t_{STG}$ | Storage Time | | | 4 | μS | |
| $t_F$ | Fall Time | | | 0.9 | μS | |

**$h_{FE}$ Classification： H1 (10--16) H2 (14--21) H3 (19--26) H4 (24--31) H5 (29--40)**

# HE13005

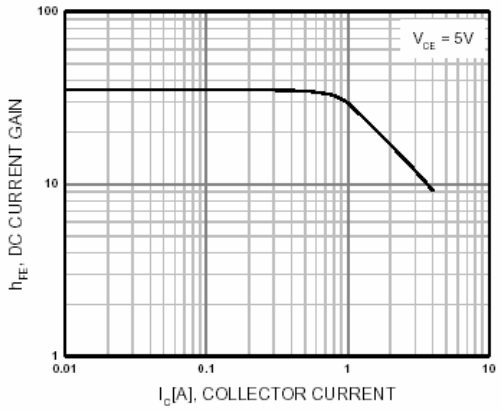



Figure 1. DC current Gain

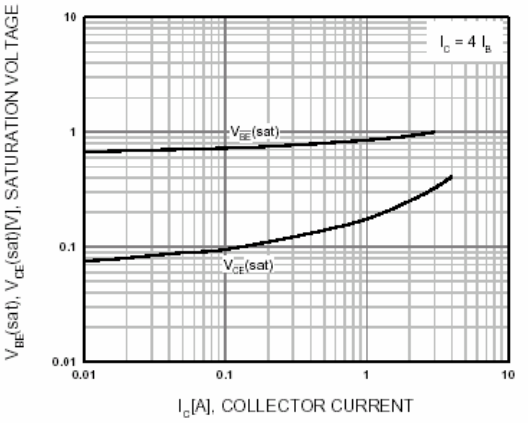



Figure 2. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

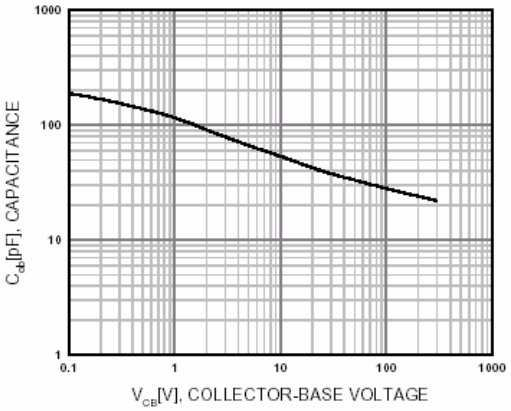



Figure 3. Collector Output Capacitance

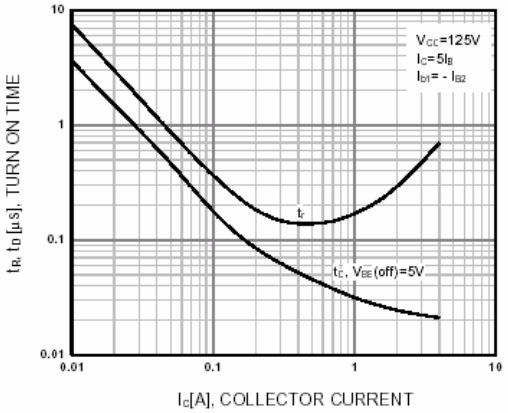



Figure 4. Turn On Time

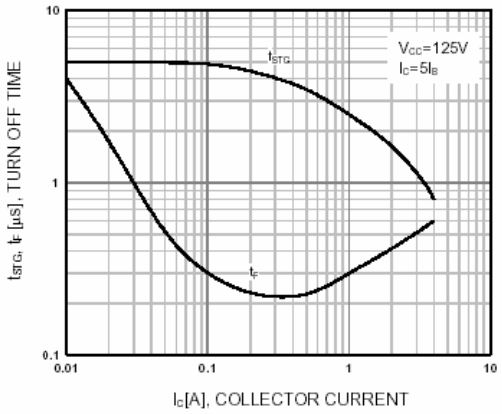



Figure 5. Turn Off Time

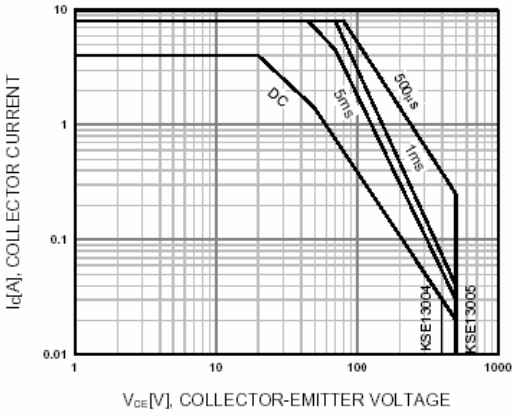



Figure 6. Safe Operating Area

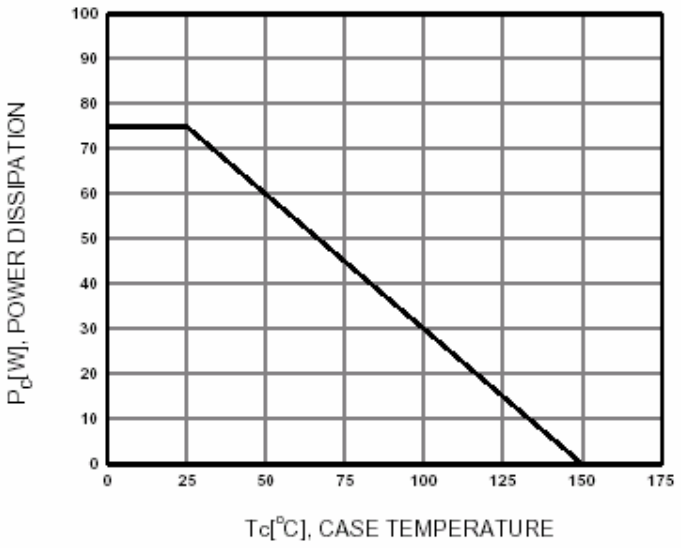



**Figure 7. Power Derating**