

Features

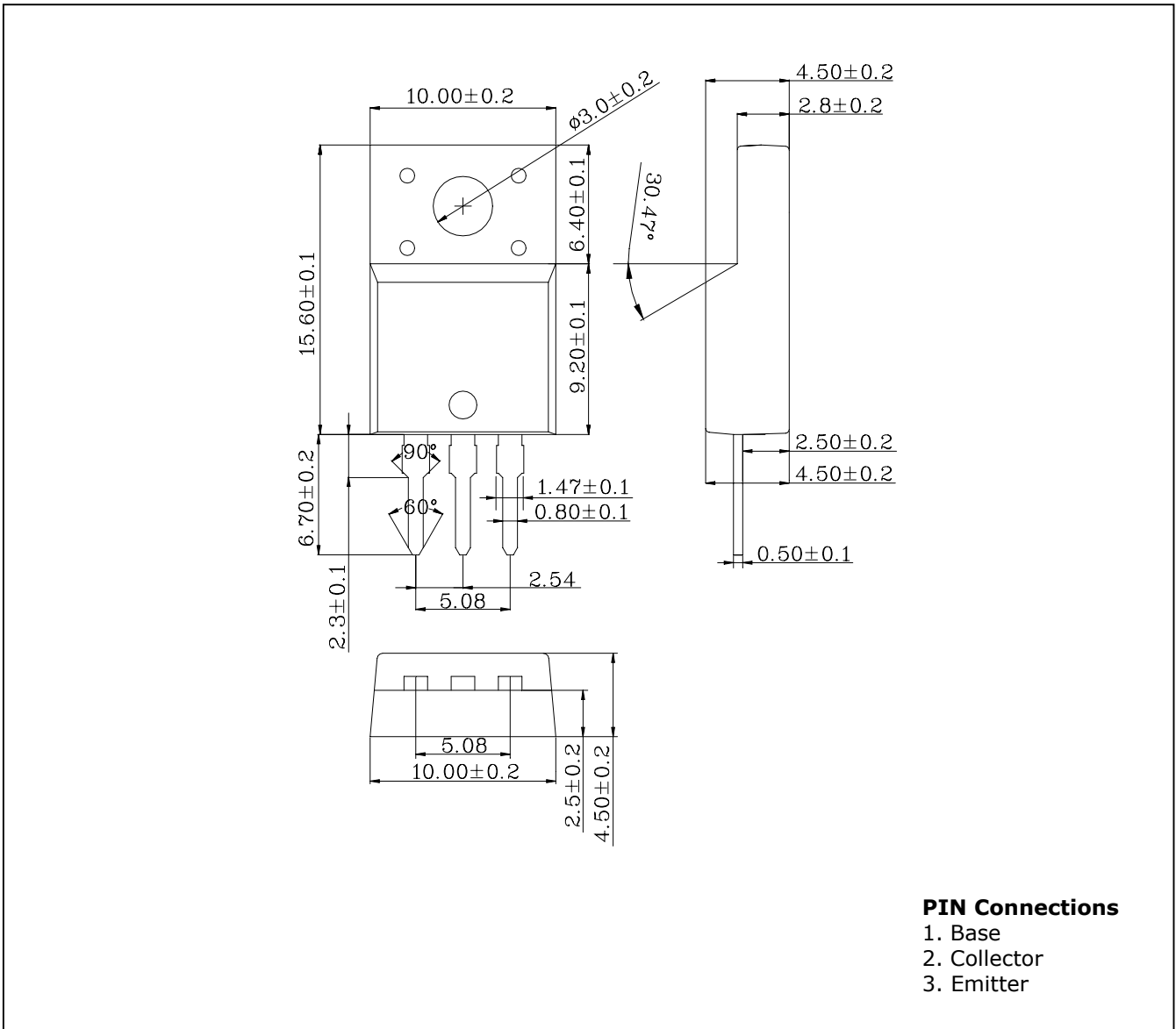
- High speed switching
- High Collector Voltage : $V_{CBO} = 700V$
- Suitable for Switching Regulator and Motor Control

Ordering Information

| Type NO. | Marking | Package Code |
|------------|----------|--------------|
| STD13007FC | STD13007 | TO-220F-3SL |

Outline Dimensions

unit : mm



Absolute maximum ratings

(Tc=25°C)

| Characteristic | Symbol | Rating | Unit |
|---------------------------------------|-----------|---------|------|
| Collector-Base voltage | V_{CBO} | 700 | V |
| Collector-Emitter voltage | V_{CEO} | 400 | V |
| Emitter-base voltage | V_{EBO} | 9 | V |
| Collector current (DC) | I_C | 8 | A |
| Collector current (Pulse) | I_{CM} | 16 | A |
| Base current (DC) | I_B | 4 | A |
| Collector Power dissipation (Tc=25°C) | P_C | 40 | W |
| Junction temperature | T_j | 150 | °C |
| Storage temperature | T_{stg} | -55~150 | °C |

Electrical Characteristics

(Tc=25°C)

| Characteristic | Symbol | Test Condition | Min. | Typ. | Max. | Unit |
|--------------------------------------|-----------------|--|------|------|------|---------|
| Collector-Emitter sustaining voltage | $BV_{CEO(sus)}$ | $I_C=10mA, I_B=0$ | 400 | - | - | V |
| Emitter cut-off current | I_{EBO} | $V_{EB}=9V, I_C=0$ | - | - | 1 | mA |
| DC Current gain | h_{FE}^* | $I_C=2A, V_{CE}=5V$ | 8 | - | 60 | |
| | | $I_C=5A, V_{CE}=5V$ | 5 | - | 30 | |
| Collector-Emitter saturation voltage | $V_{CE(sat)}^*$ | $I_C=2A, I_B=0.4A$ | - | - | 1 | V |
| | | $I_C=5A, I_B=1A$ | - | - | 2 | |
| | | $I_C=8A, I_B=2A$ | - | - | 3 | |
| Base-Emitter saturation voltage | $V_{BE(sat)}^*$ | $I_C=2A, I_B=0.4A$ | - | - | 1.2 | V |
| | | $I_C=5A, I_B=1A$ | - | - | 1.6 | |
| Transition frequency | f_T | $V_{CE}=10V, I_C=0.5A, f=1MHz$ | - | 14 | - | MHz |
| Output capacitance | C_{ob} | $V_{CB}=10V, I_E=0, f=0.1MHz$ | - | 80 | - | pF |
| Turn on Time | t_{on} | $V_{CC}=125V, I_C=5A$ $I_{B1}=-I_{B2}=1A$ | - | - | 1.6 | μs |
| Storage Time | t_{stg} | | - | - | 3 | |
| Fall Time | t_f | | - | - | 0.7 | |

* Pulse test: $PW \leq 300 \mu s$, Duty cycle $\leq 2\%$.

Electrical Characteristic Curves

Fig. 1 $P_C - T_C$

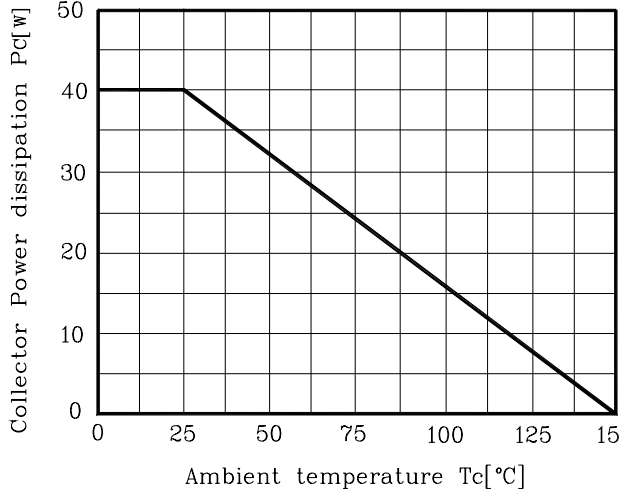


Fig. 2 $V_{BE(sat)}, V_{CE(sat)} - I_C$

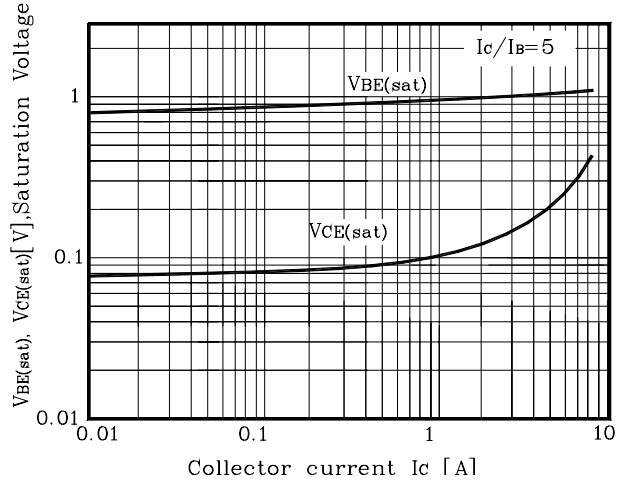


Fig. 3 $h_{FE} - I_C$

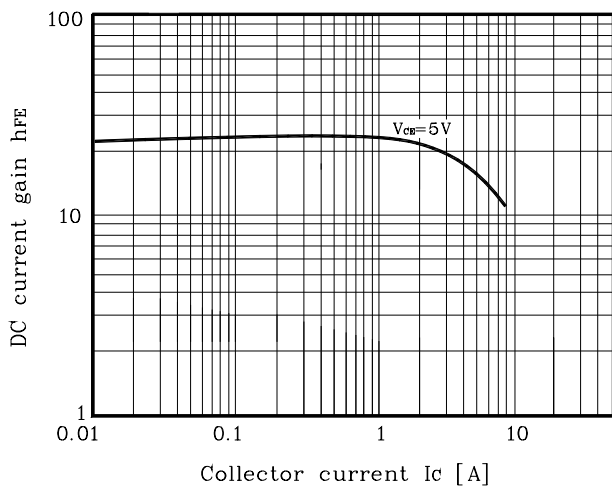


Fig. 4 $t_r, t_{stg} - I_C$

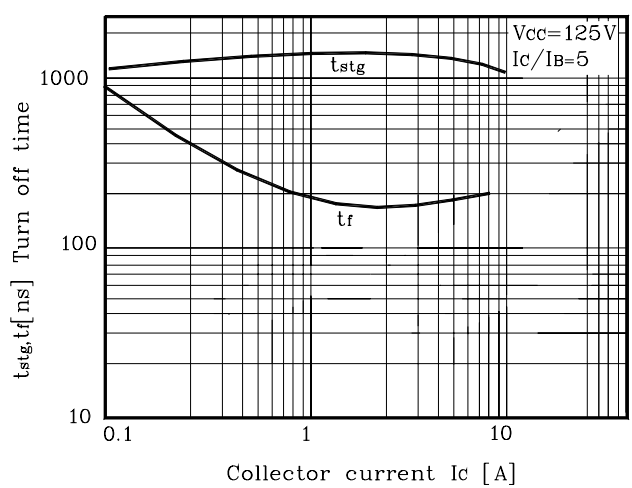


Fig. 5 $t_d, t_r - I_C$

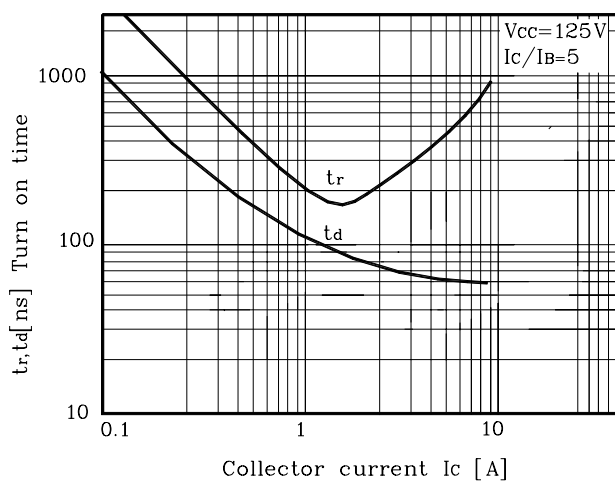


Fig. 6 $C_{ob} - V_{CB}$

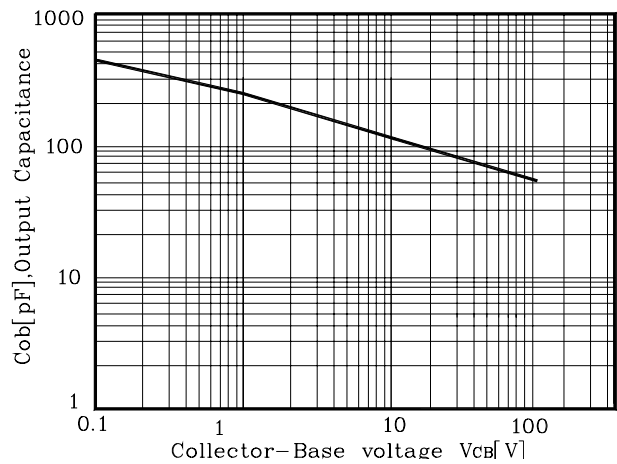
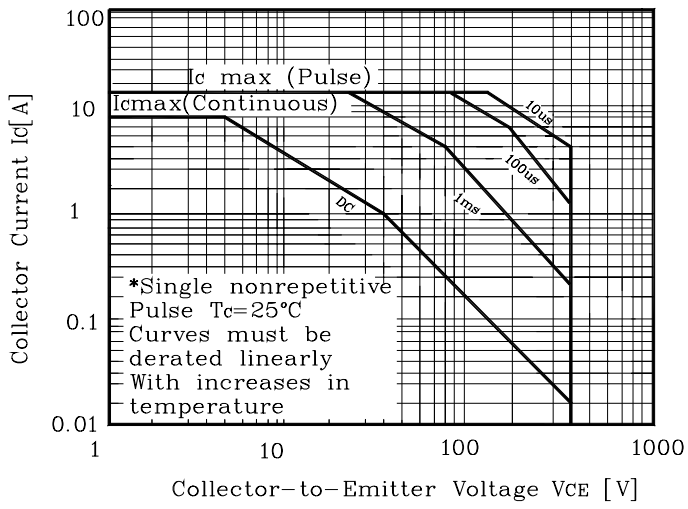


Fig. 7 Safe Operating Area



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