

**Features**

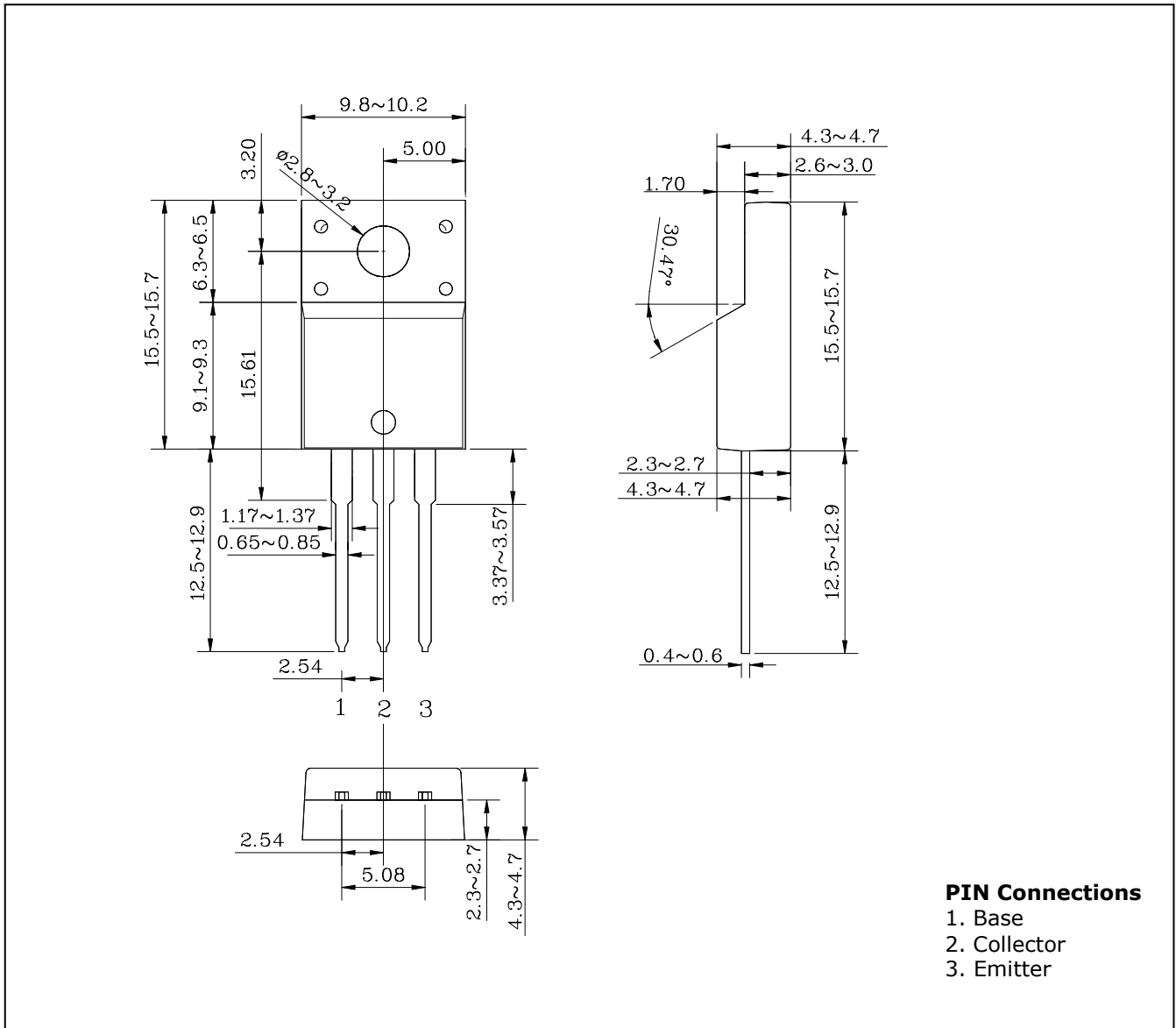
- High speed switching
- High Collector Voltage :  $V_{CBO} = 700V$
- Suitable for Switching Regulator and Motor Control

**Ordering Information**

Type NO.	Marking	Package Code
STD13007F	STD13007	TO-220F

**Outline Dimensions**

unit : mm



## Absolute maximum ratings

(Ta=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

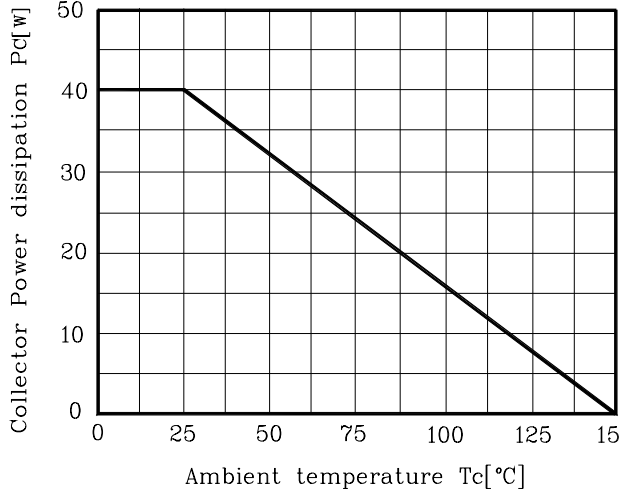
(Ta=25°C)

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	$\mu s$
Storage Time	$t_{stg}$		-	-	3	
Fall Time	$t_f$		-	-	0.7	

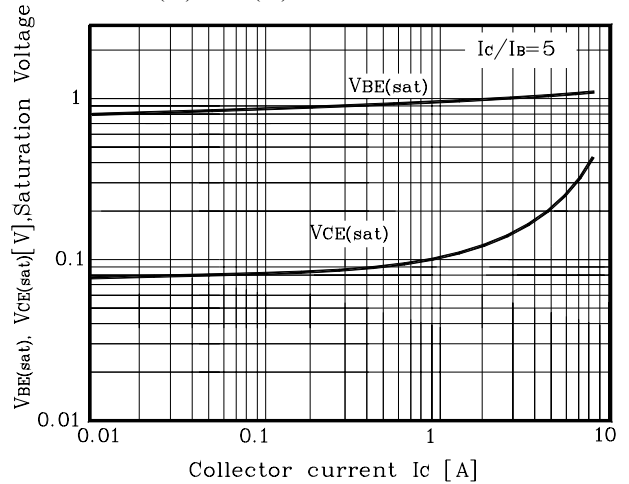
\* Pulse test:  $PW \leq 300 \mu s$ , Duty cycle  $\leq 2\%$ .

## Electrical Characteristic Curves

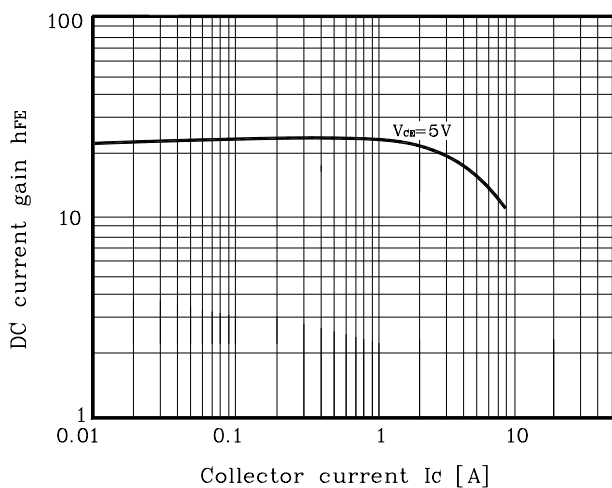
**Fig. 1  $P_C - T_C$**



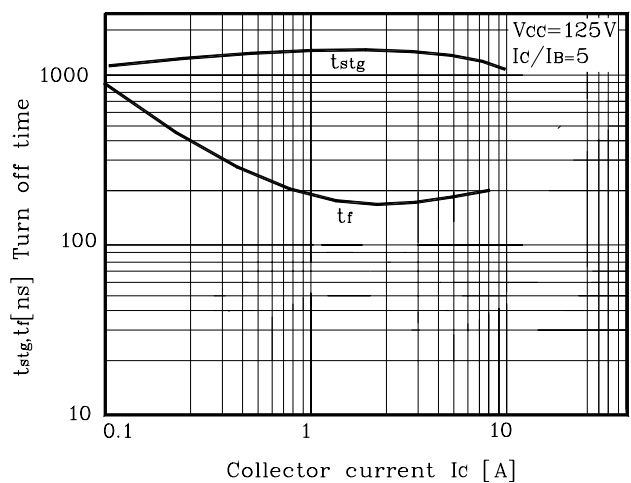
**Fig. 2  $V_{BE(sat)}, V_{CE(sat)} - I_C$**



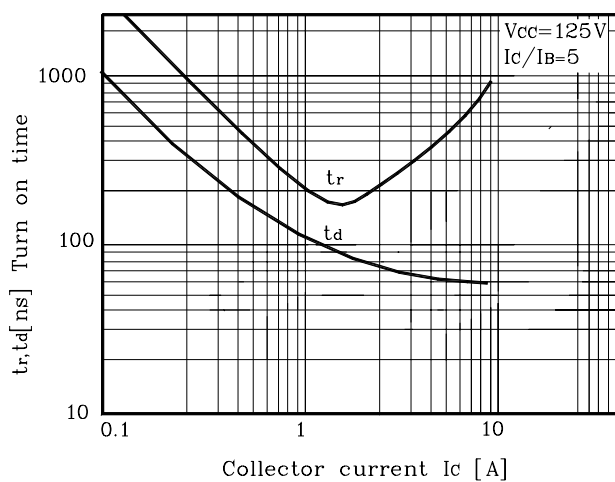
**Fig. 3  $h_{FE} - I_C$**



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



**Fig. 5  $t_d, t_r - I_C$**



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

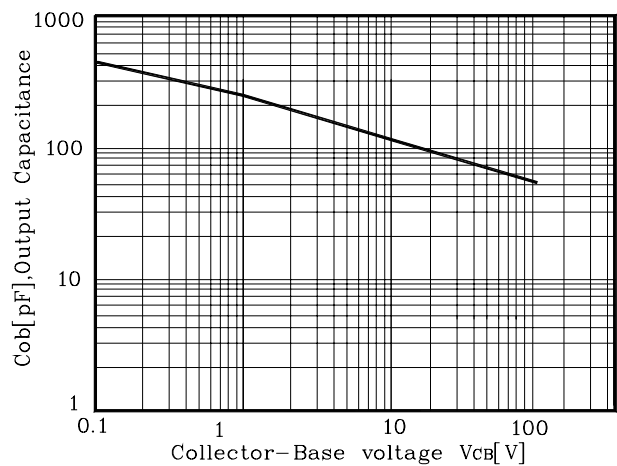
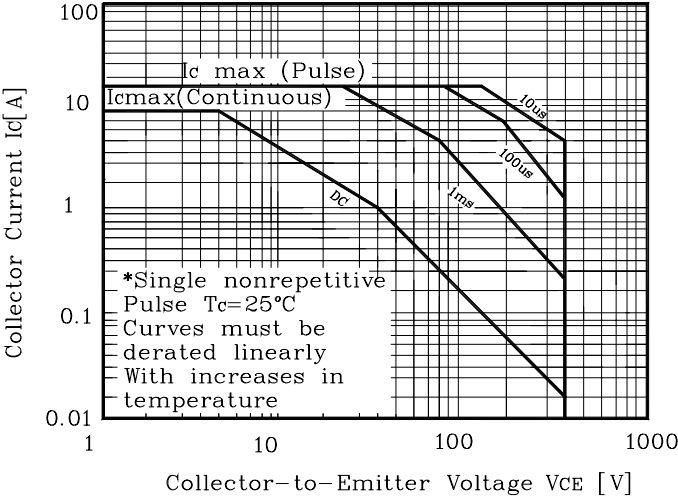


Fig. 7 Safe Operating Area



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