KODENSHI AUK

STD13005F

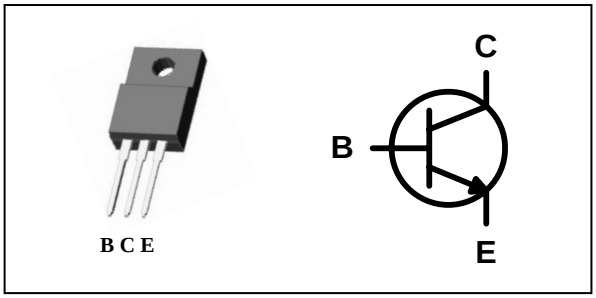
NPN Silicon Power Transistor

SWITCHING REGULATOR APPLICATIONS

Features

- High speed switching
- $V_{CEO(sus)}$ = 400V
- Suitable for Switching Regulator and Motor Control

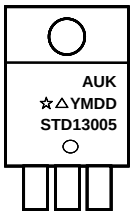
PIN Connection



Ordering Information

Type NO.	Marking	Package Code
STD13005F	STD13005	TO-220F-3L

Marking Diagram



Column 1 : Manufacturer

Column 2 : Production Information
- ☆ : h_{FE} rank
- △ : Factory Management Code
- YMDD : Date Code (Year, Month, Date)

Column 3 : Device Code

Absolute maximum ratings

(Tc=25℃)

Characteristic	Symbol	Ratings	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	4	A
Collector current (Pulse)	I_{CM}	8	A
Base current (DC)	I_B	2	A
Base current (Pulse)	I_{BM}	4	A
Total Power dissipation (Tc=25℃)	P_D	30	W
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	-55~150	°C

Characteristic		Symbol	Typ.	Max	Unit
Thermal resistance	Junction-case	$R_{th(J-C)}$	-	4.16	℃/W
	Junction-ambient	$R_{th(J-a)}$	-	62.5	

Electrical Characteristics

(Tc=25℃)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Collector-Emitter sustaining voltage	$V_{CE(sus)}$	I_C=10mA, I_B=0	400	-	-	V
Collector cut-off current	I_{CEV}	V_{CEV}=Rated Value $V_{BE(off)}$=1.5V	-	-	1	mA
Emitter cut-off current	I_{EBO}	V_{EB}=9V, I_C=0	-	-	1	mA
DC Current gain	h_{FE}*	I_C=1A, V_{CE}=5V※	15	-	40	
		I_C=2A, V_{CE}=5V	8	-	40	
Collector-Emitter saturation voltage	$V_{CE(sat)}$*	I_C=1A, I_B=0.2A	-	-	0.5	V
		I_C=2A, I_B=0.5A	-	-	0.6	
		I_C=4A, I_B=1A	-	-	1	
Base-Emitter saturation voltage	$V_{BE(sat)}$*	I_C=1A, I_B=0.2A	-	-	1.2	V
		I_C=2A, I_B=0.5A	-	-	1.6	
Transition frequency	f_T	V_{CB}=10V, I_C=0.5A, f=1MHz	-	4	-	MHz
Output capacitance	C_{ob}	V_{CB}=10V, I_E=0, f=0.1MHz	-	65	-	pF
Turn on Time	t_{ON}	V_{CC}=125V,I_C=2A, R_L=62.5Ω I_{B1}=-I_{B2}=0.4A	-	0.8	-	μs
Storage Time	t_{STG}		-	4	-	
Fall Time	t_F		-	0.9	-	

* Pulse test: PW≤300 μs, Duty cycle≤2% Pulse

※h_{FE} rank / A : 15~30, B : 25~40

Electrical Characteristic Curves

Fig. 1 P_D - T_C

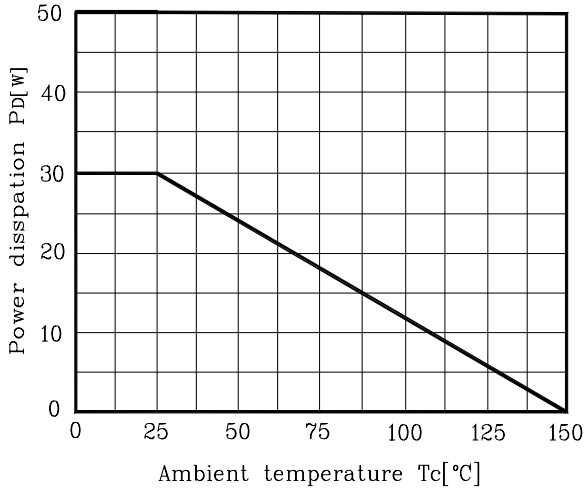


Fig. 2 $V_{BE(sat)}$, $V_{CE(sat)}$ - I_C

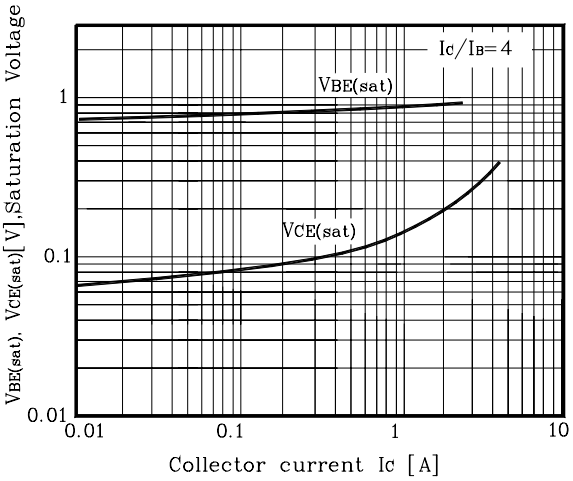


Fig. 3 h_{FE}-I_C

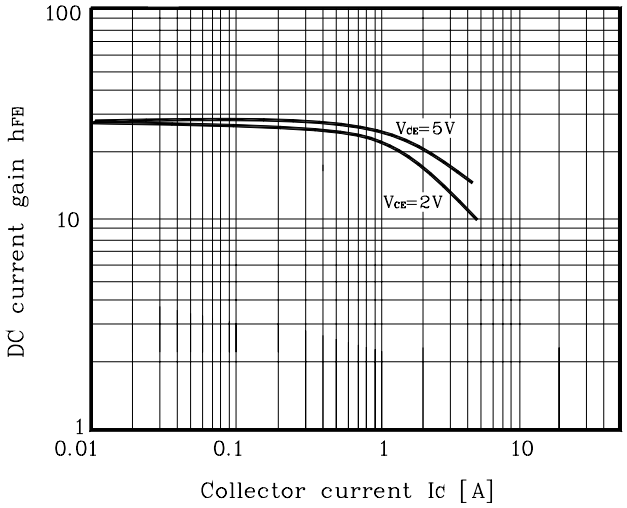


Fig. 4 Turn off time

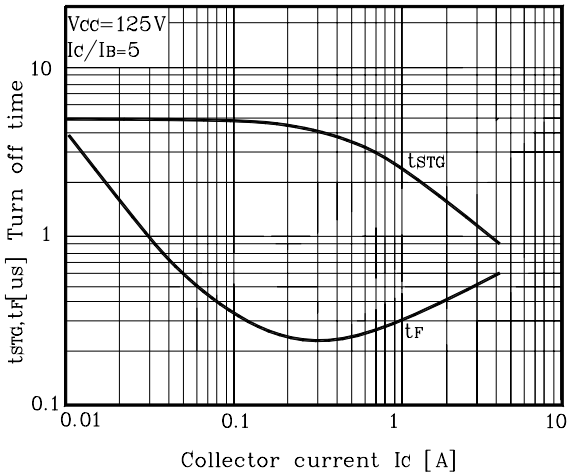


Fig. 5 Turn on time

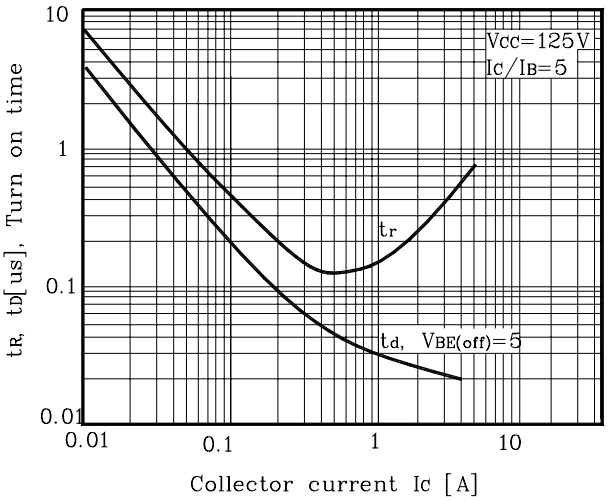
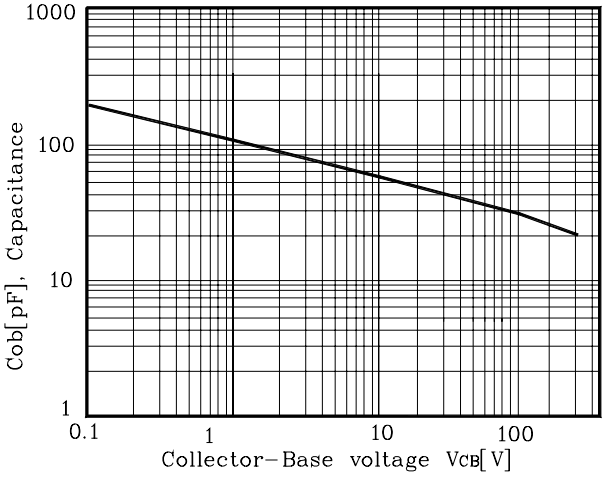


Fig. 6 Capacitance



Electrical Characteristic Curves

Fig. 7 Forward Safe Operating Area

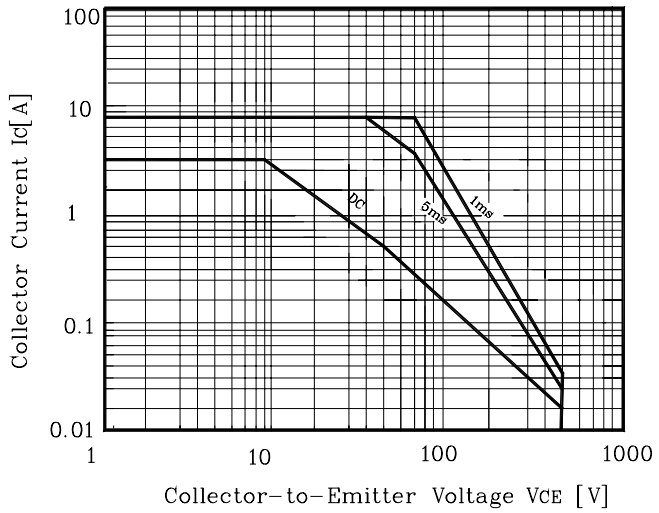
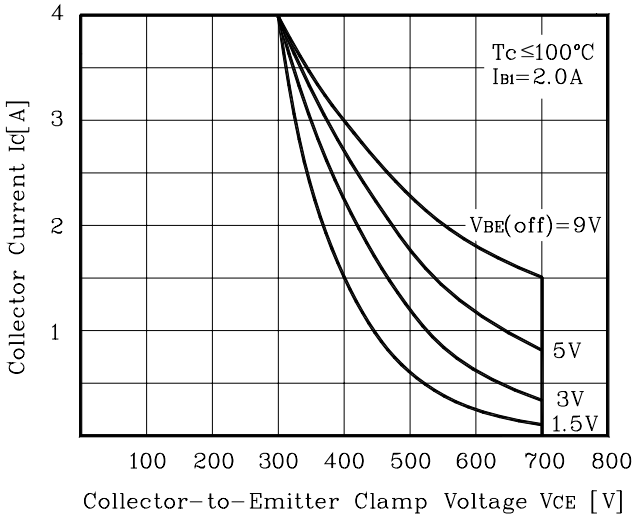
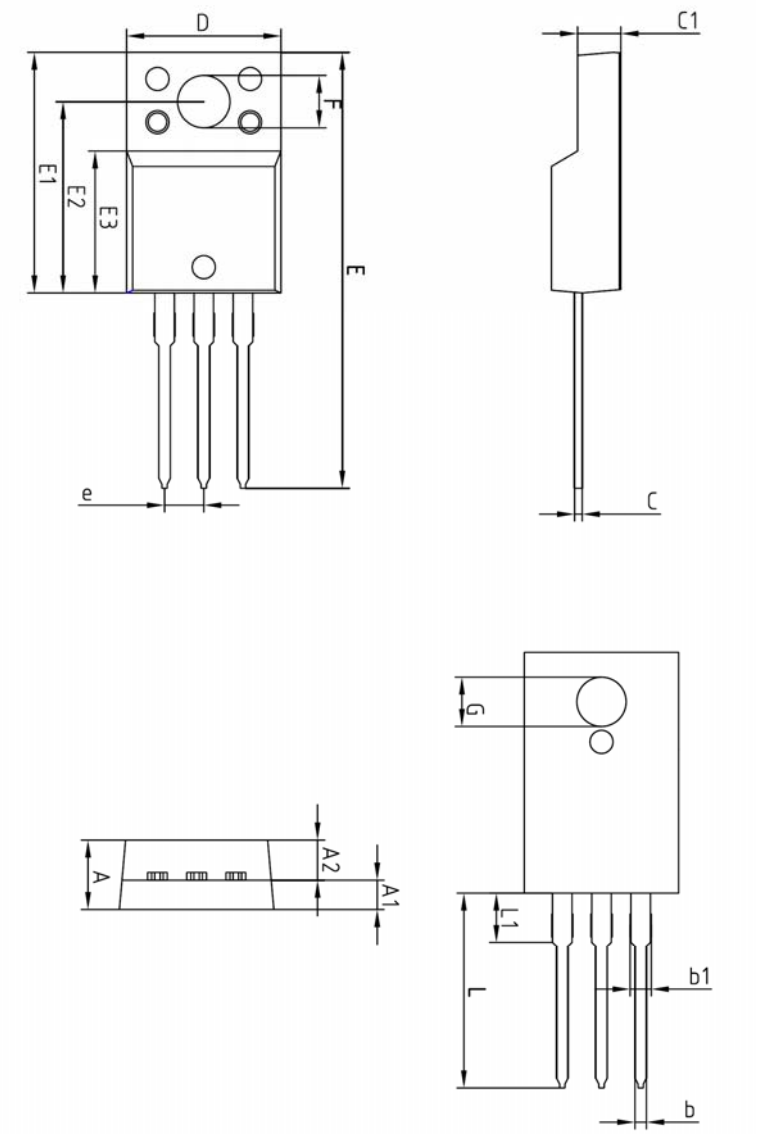


Fig. 8 Reverse Safe Operating Area



Outline Dimension



SYMBOL	MILLIMETERS			NOTE
	MINIMUM	NOMINAL	MAXIMUM	
A	–	–	4.60	
A1	2.45	2.50	2.55	
A2	1.95	2.00	2.05	
b	0.65	0.75	0.85	
b1	1.07	1.27	1.47	
C	0.40	0.50	0.60	
C1	2.70	2.80	2.90	
D	9.90	10.00	10.10	
E	28.00	–	28.60	
E1	15.50	15.60	15.70	
E2	12.30	12.40	12.50	
E3	9.15	9.20	9.25	
F	3.30	3.40	3.50	
G	3.10	3.20	3.30	
e	2.54 BSC			
L	12.40	–	13.00	
L1	3.46 BSC			

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