

SWITCHING REGULATOR APPLICATIONS

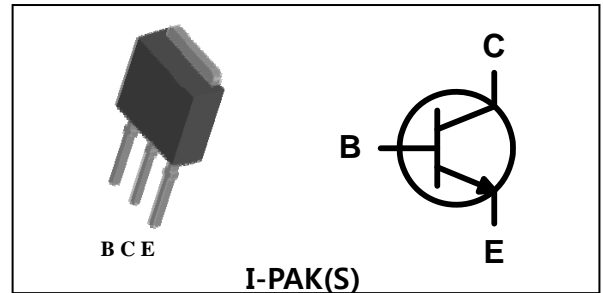
Features

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

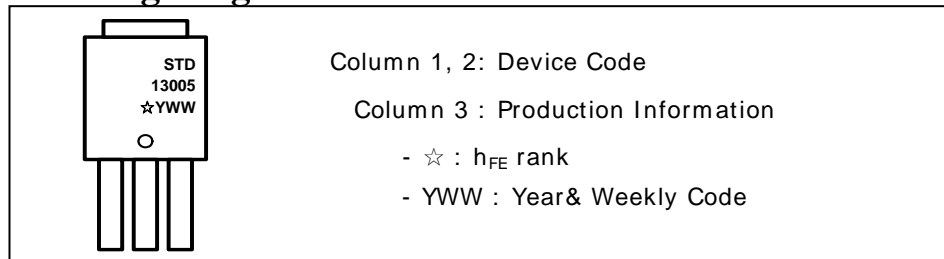
Ordering Information

Type NO.	Marking	Package Code
STD13005IS	STD13005	I-PAK(S)

PIN Connection



Marking Diagram



Absolute maximum ratings

 $(T_c = 25^\circ\text{C})$

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 ($T_c = 25^\circ\text{C}$)	P_D	40	W
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55~150	$^\circ\text{C}$

Characteristic		Symbol	Typ.	Max	Unit
Thermal resistance	Junction-case	$R_{th(J-C)}$	-	3.12	$^\circ\text{C}/\text{W}$
	Junction-ambient	$R_{th(J-a)}$	-	62.5	

Electrical Characteristics

(Tc=25°C)

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}	$V_{CEV} = \text{Rated Value}$ $V_{BE(off)} = 1.5V$	-	-	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	-	30	
		$I_C = 2A, V_{CE} = 5V$	8	-	30	
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}	$V_{CB} = 10V, I_E = 0, f = 0.1MHz$	-	35	-	pF
Turn on Time	t_{ON}	$V_{CC} = 125V, I_C = 2A, R_L = 62.5\Omega$ $I_{B1} = -I_{B2} = 0.4A$	-	0.5	-	μs
Storage Time	t_{STG}		-	2.5	-	
Fall Time	t_F		-	0.1	-	

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

** h_{FE} rank / A : 15~30

Electrical Characteristic Curves

Fig. 1 $P_C - T_a$

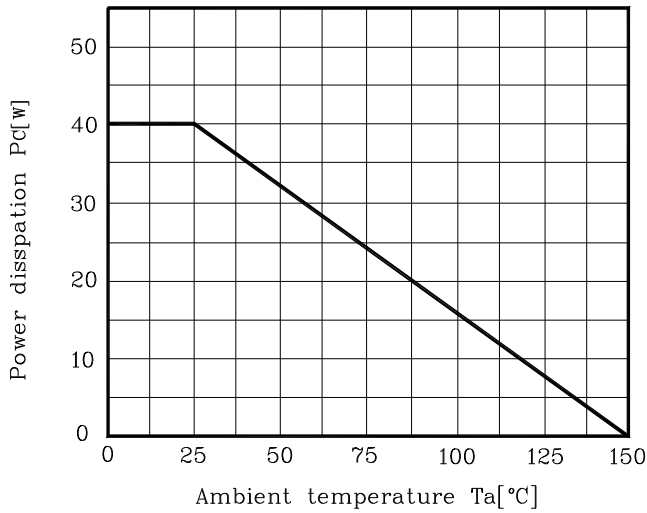


Fig. 2 $I_C - V_{BE(ON)}$

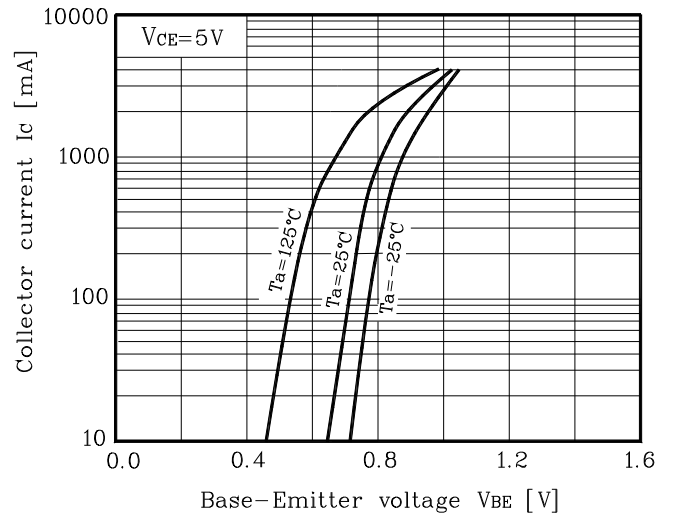


Fig. 3 $V_{CE(sat)} - I_C$

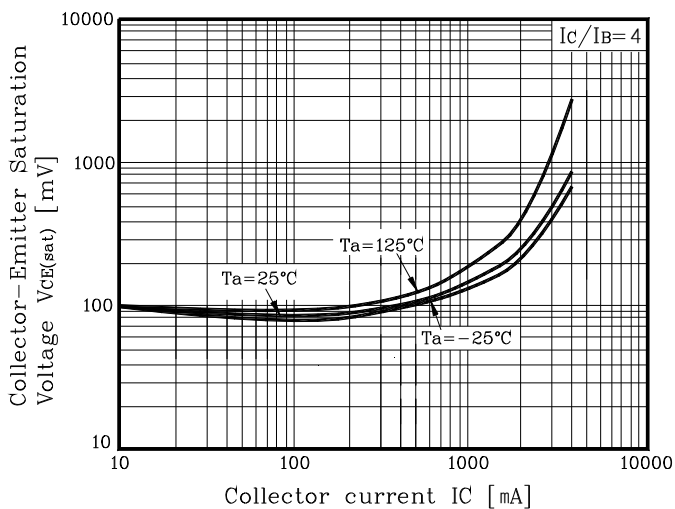


Fig. 4 $h_{FE} - I_C$

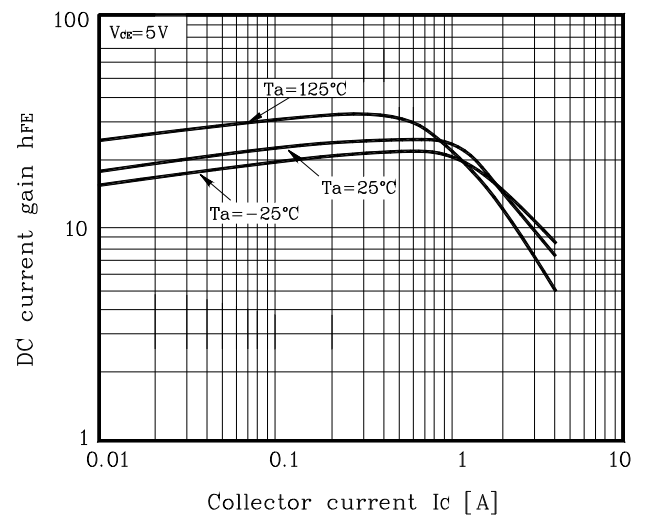


Fig. 5 $V_{BE(sat)} - I_C$

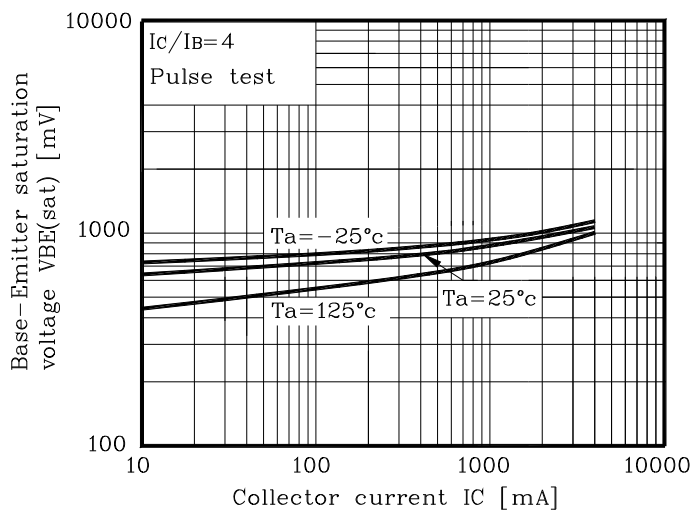
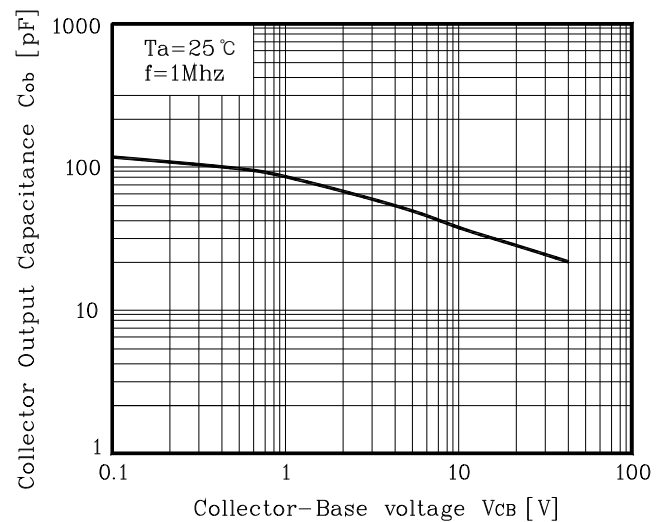
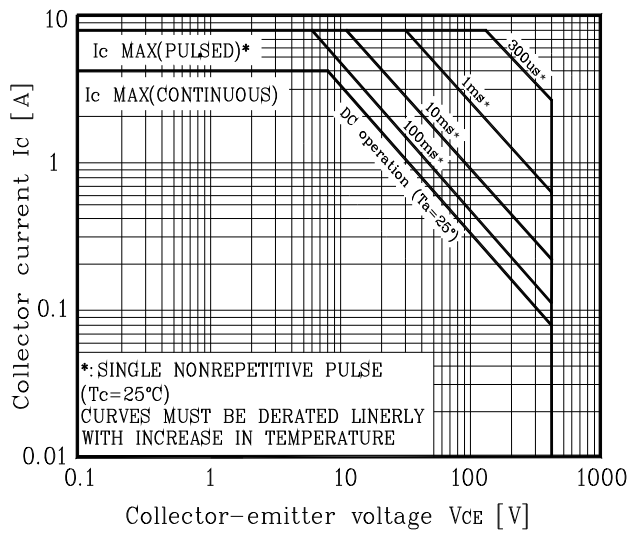


Fig. 6 $C_{ob} - V_{CB}$

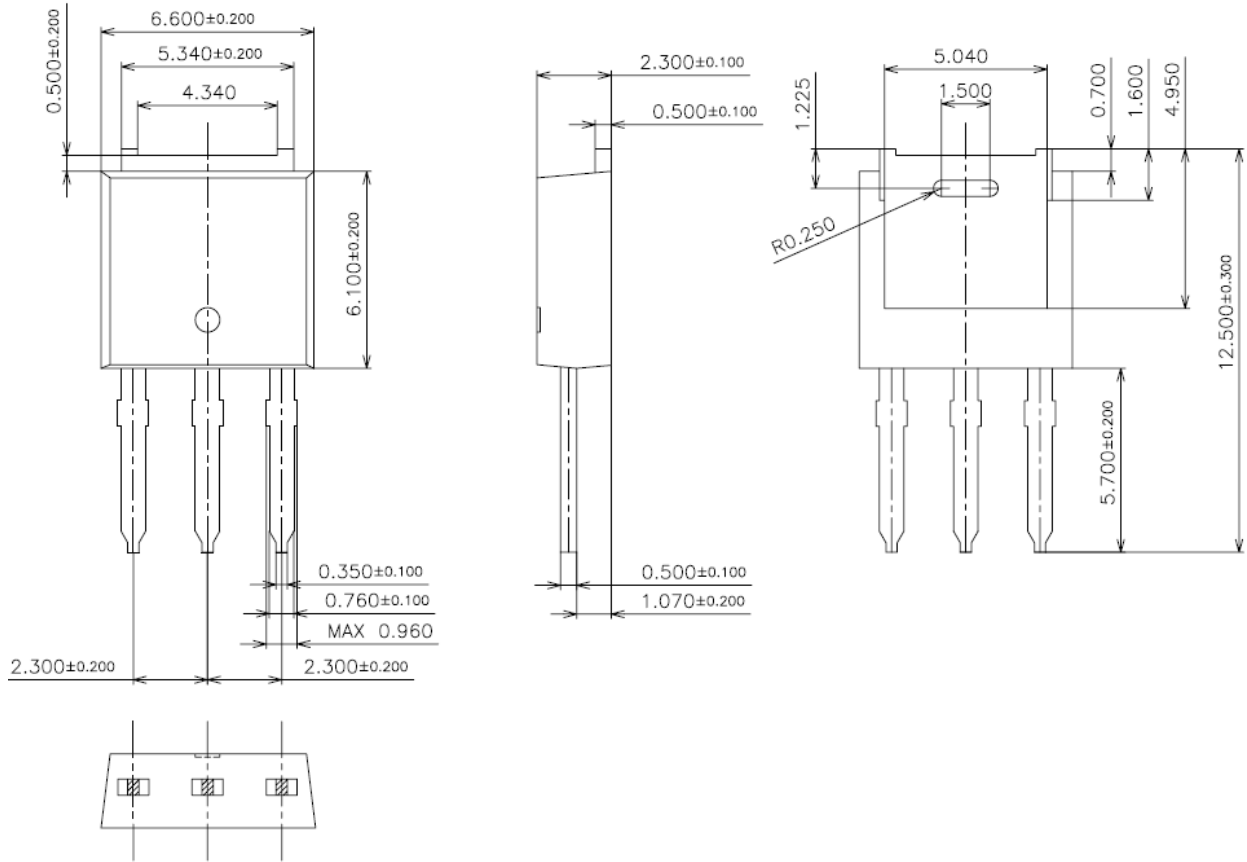


Electrical Characteristic Curves

Fig. 7 Safe operating Area



Outline Dimensions



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