

SWITCHING REGULATOR APPLICATIONS

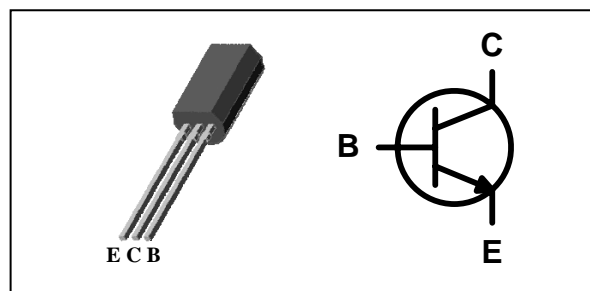
Features

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

Ordering Information

Type NO.	Marking	Package Code
STD13003L	STD13003	TO-92L

PIN Connection



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	1.5	A
Collector current (Pulse)	I_{CP}	3	A
Base current (DC)	I_B	0.75	A
Total power dissipation	P_C	1.5	W
Junction temperature	T_J	150	°C
Storage temperature range	T_{stg}	-55 ~ 150	°C

Characteristic		Symbol	Typ.	Max	Unit
Thermal resistance	Junction-ambient	$R_{th(J-a)}$	-	83.3	°C/W

Electrical Characteristics

(Ta=25°C)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Collector-emitter sustaining voltage	$V_{CEO(sus)}$	$I_C=5mA, I_B=0$	400	-	-	V
Collector cut-off current	I_{CBO}	$V_{CB}=700V, I_E=0$	-	-	10	μA
Emitter cut-off current	I_{EBO}	$V_{EB}=9V, I_C=0$	-	-	10	μA
DC Current gain	h_{FE}^*	$I_C=0.5A, V_{CE}=2V$	15	-	35	
		$I_C=1A, V_{CE}=2V$	5	-	-	
Collector-Emitter saturation voltage	$V_{CE(sat)}^*$	$I_C=0.5A, I_B=0.1A$	-	-	0.5	V
		$I_C=1A, I_B=0.25A$	-	-	1	
		$I_C=1.5A, I_B=0.5A$	-	-	3	
Base-Emitter saturation voltage	$V_{BE(sat)}^*$	$I_C=0.5A, I_B=0.1A$	-	-	1	V
		$I_C=1A, I_B=0.25A$	-	-	1.2	
Transition frequency	f_T	$V_{CB}=10V, I_C=0.1A, f=1MHz$	-	4	-	MHz
Output capacitance	C_{ob}	$V_{CB}=10V, I_E=0, f=0.1MHz$	-	21	-	pF
Turn on Time	t_{on}	$V_{CC}=125V, I_C=1A$ $I_{B1}=-I_{B2}=0.2A$	-	1.1	-	μs
Storage Time	t_{stg}		-	4	-	
Fall Time	t_f		-	0.7	-	

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

Electrical Characteristic Curves

Fig. 1 $P_c - T_a$

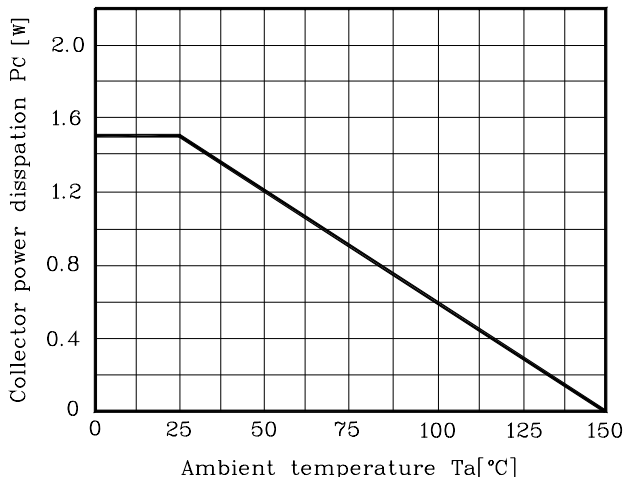


Fig. 2 $I_c - V_{CE}$

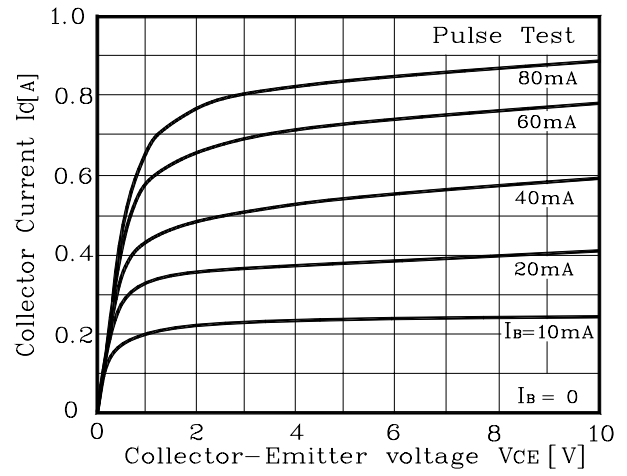


Fig. 3 $V_{CE(sat)} - I_c$

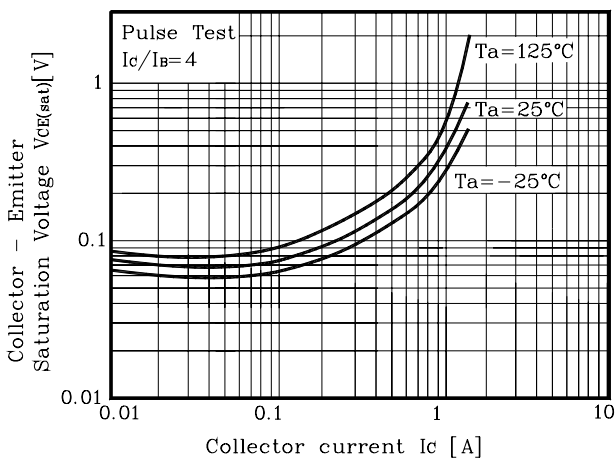


Fig. 4 $V_{BE(sat)} - I_c$

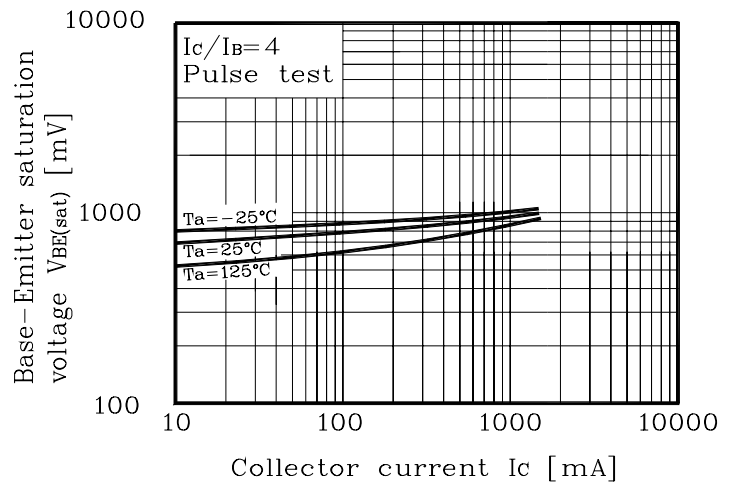


Fig. 5 $h_{FE} - I_c$

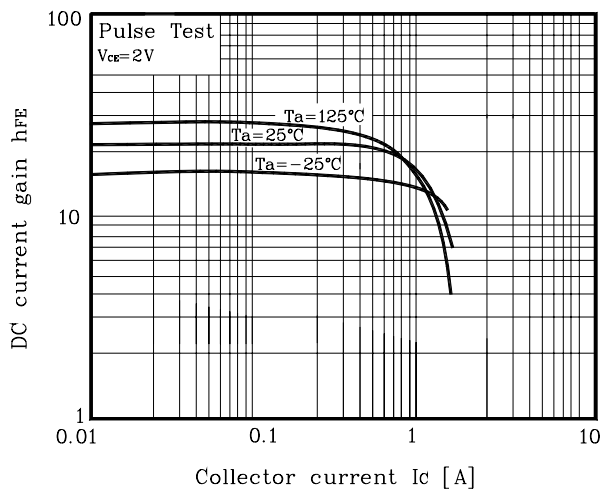
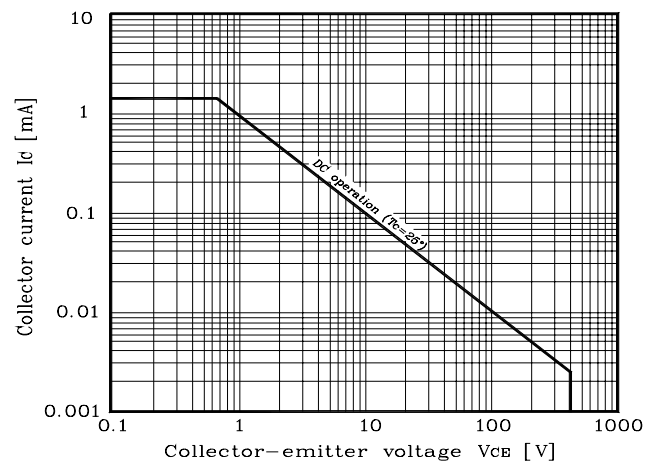


Fig. 6 Safe operating area



Electrical Characteristic Curves

Fig. 7 Turn on time - I_C

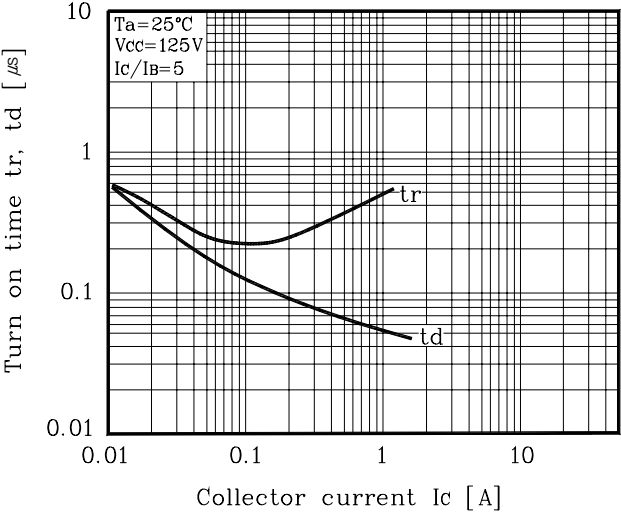
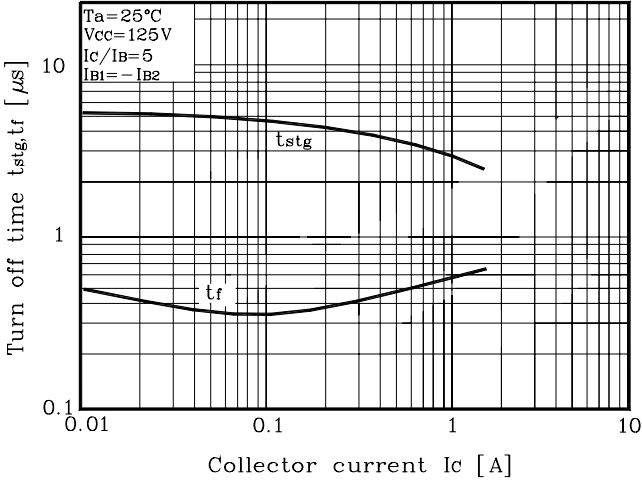
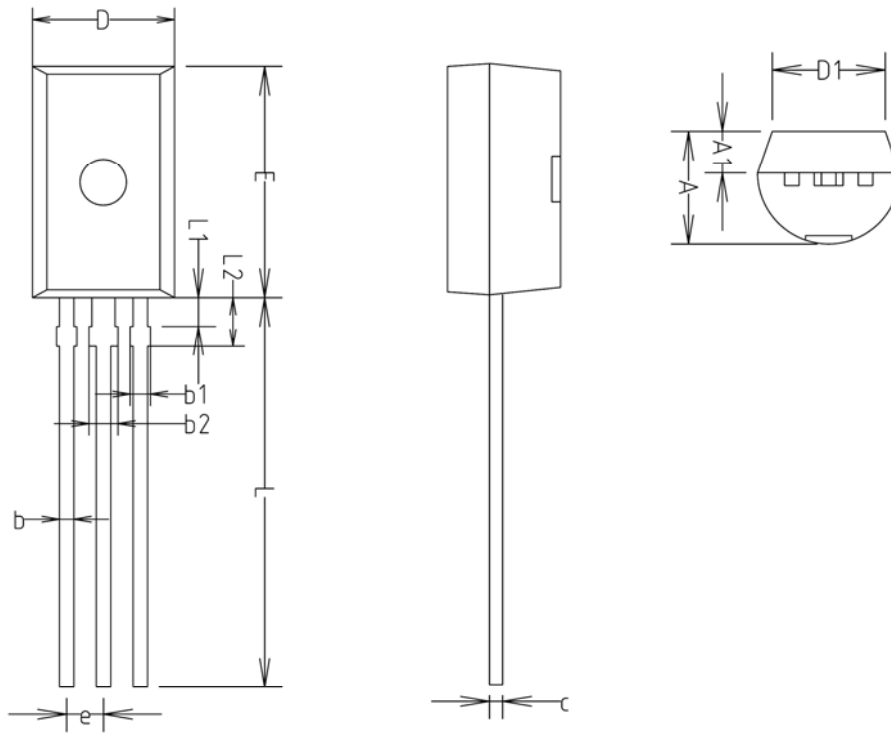


Fig. 8 Turn off time - I_C



Outline Dimension(mm)



SYMBOL	MILLIMETERS(mm)			NOTE
	MINIMUM	NOMINAL	MAXIMUM	
A	3.70	3.90	4.10	
A1	1.25	1.45	1.65	
b	0.40	0.50	0.60	
b1	-	-	0.70	
b2	-	-	1.00	
c	0.35	0.45	0.55	
D	4.70	4.90	5.10	
D1	3.70	3.90	4.10	
E	7.80	8.00	8.20	
e	1.27 TYP			
L	13.10	13.50	13.90	
L1	0.90	1.00	1.10	
L2	1.50	1.70	1.90	

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