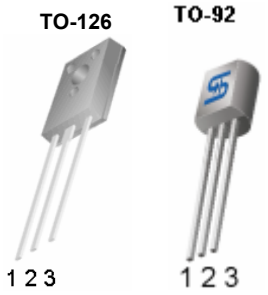
TS13003

High Voltage NPN Transistor



Pin assignment:

TO-92
1. Emitter
2. Collector
3. Base

TO-126
1. Base
2. Collector
3. Emitter

BV_{CEO} = 400V
BV_{CBO} = 700V
Ic = 1.5A
$V_{CE\ (SAT)}$, = 0.8V @ Ic / Ib = 0.5A / 0.1A

Features

- High voltage.
- High speed switching

Structure

- Silicon triple diffused type.
- NPN silicon transistor

Ordering Information

Part No.	Packing	Package
TS13003CT	Bulk	TO-92
TS13003CK		TO-126

Absolute Maximum Rating (Ta = 25 °C unless otherwise noted)

Parameter		Symbol	Limit	Unit
Collector-Base Voltage		V_{CBO}	700V	V
Collector-Emitter Voltage		V_{CEO}	400V	V
Emitter-Base Voltage		V_{EBO}	9	V
Collector Current	DC	I_C	1.5	A
	Pulse		3	
Collector Power Dissipation	TO-92	P_D	0.6	W
	TO-126		20	
Operating Junction Temperature		T_J	+150	°C
Operating Junction and Storage Temperature Range		T_{STG}	- 55 to +150	°C

Electrical Characteristics (Ta = 25 °C unless otherwise noted)

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Static						
Collector-Base Voltage	I_C = 10mA, I_B = 0	BV_{CBO}	700	--	--	V
Collector-Emitter Breakdown Voltage	I_C = 10mA, I_E = 0	BV_{CEO}	400	--	--	V
Emitter-Base Breakdown Voltage	I_E = 1mA, I_C = 0	BV_{EBO}	9	--	--	V
Collector Cutoff Current	V_{CB} = 700V, I_E = 0	I_{CBO}	--	--	100	uA
Emitter Cutoff Current	V_{EB} = 9V, I_C = 0	I_{EBO}	--	--	10	uA
Collector-Emitter Saturation Voltage	I_C / I_B = 1.5A / 0.5A I_C / I_B = 0.5A / 0.1A	$V_{CE(SAT)1}$ $V_{CE(SAT)2}$	--	--	3 0.8	V
DC Current Gain	V_{CE} = 10V, I_C = 0.4A V_{CE} = 2V, I_C = 1.0A V_{CE} = 5V, I_C = 10uA	h_{FE}	20 8 6	--	40 40 40	
Frequency	V_{CE} = 10V, I_C = 0.1A	f_T	4	--	--	MHz
Output Capacitance	V_{CB} = 10V, f = 0.1MHz	Cob	--	21	--	pF
Turn On Time	V_{CC} = 125V, I_C = 1A,	t_{ON}	--	1.1	--	uS
Storage Time	I_{B1} = 0.2A, I_{B2} = - 0.2A,	t_{STG}	--	--	4	uS
Fall Time	R_L = 125ohm	t_f	--	--	0.7	uS

Note : pulse test: pulse width <=5mS, duty cycle <=10%

Electrical Characteristics Curve

Figure 1. Static Characteric

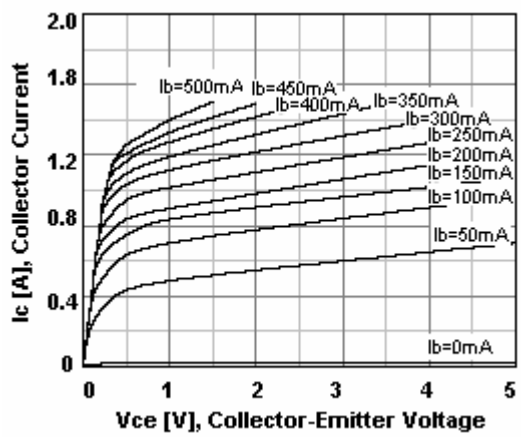


Figure 2. DC Current Gain

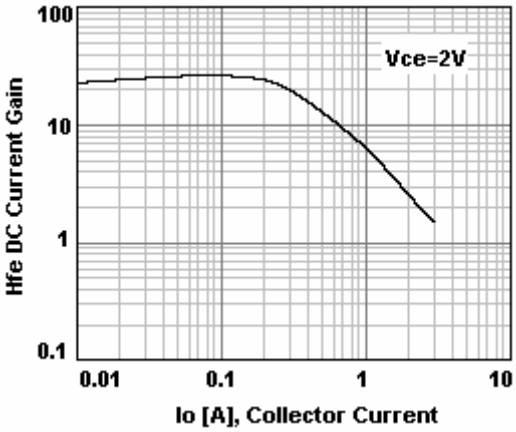


Figure 3. Vce(sat) v.s. Vbe(sat)

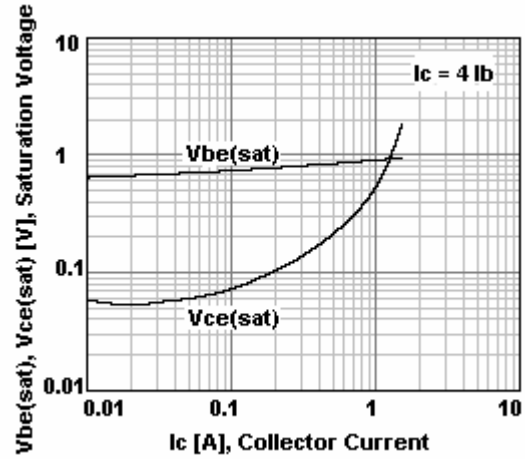


Figure 4. Switching Time

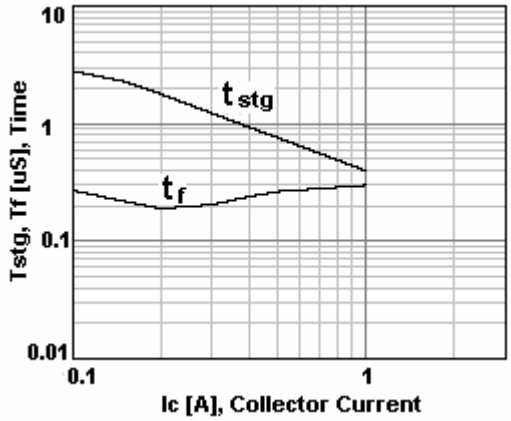


Figure 5. Safe Operating Area

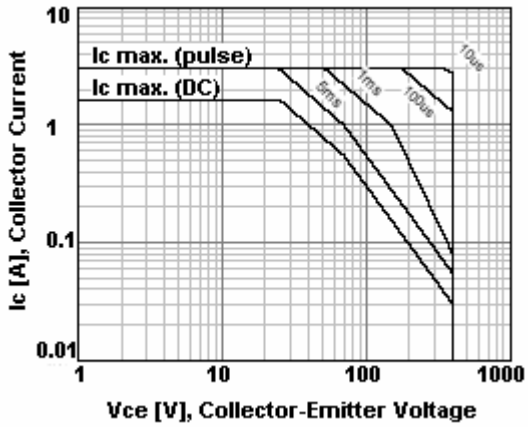
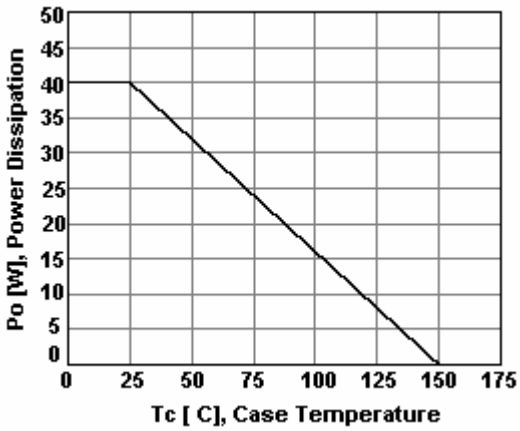
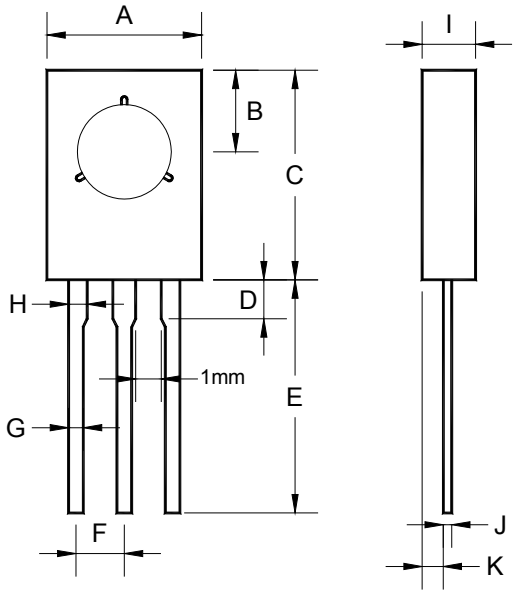


Figure 6. Power Derating

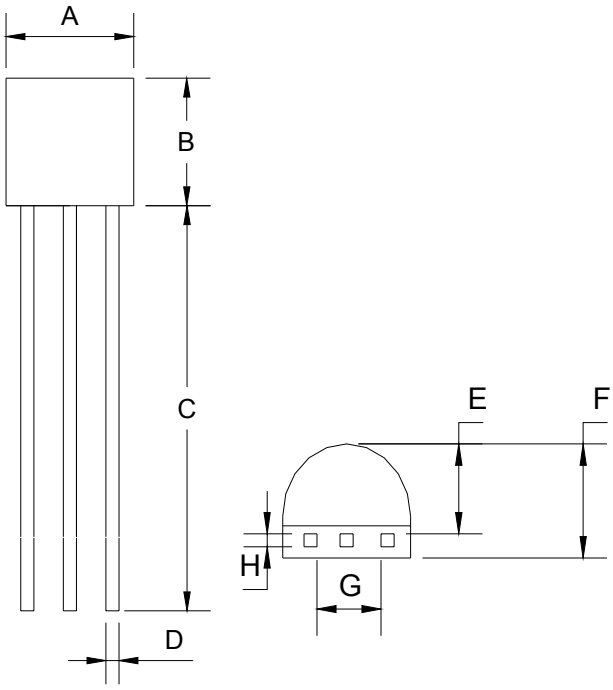


TO-126 Mechanical Drawing



TO-126 DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	8.00 (typ)		0.315(typ)	
B	4.20 (typ)		0.165 (typ)	
C	10.58	11.00	0.417	0.433
D	2.00 (typ)		0.079 (typ)	
E	12.00(typ)		0.472(typ)	
F	2.50(typ)		0.098 (typ)	
G	0.74	0.78	0.029	0.031
H	0.8 (typ)		0.031(typ)	
I	2.56	3.00	0.101	0.118
J	0.38	0.50	0.015	0.020
K	1.1 (typ)		0.043 (typ)	

TO-92 Mechanical Drawing



TO-92 DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.30	4.70	0.169	0.185
B	4.30	4.70	0.169	0.185
C	14.30(typ)		0.563(typ)	
D	0.43	0.49	0.017	0.019
E	2.19	2.81	0.086	0.111
F	3.30	3.70	0.130	0.146
G	2.42	2.66	0.095	0.105
H	0.37	0.43	0.015	0.017