



TS13003

High Voltage NPN Transistor

<p>TO-126 TO-92</p> <p>1 2 3 1 2 3</p>	<p>Pin assignment:</p> <ol style="list-style-type: none"> 1. Emitter 2. Collector 3. Emitter
<p>$BV_{CEO} = 400V$ $BV_{CBO} = 700V$ $I_C = 1.5A$ $V_{CE(SAT)} = 0.8V @ I_C / I_B = 0.5A / 0.1A$</p>	

<p>Features</p> <ul style="list-style-type: none"> ◇ High voltage. ◇ High speed switching <p>Structure</p> <ul style="list-style-type: none"> ◇ Silicon triple diffused type. ◇ NPN silicon transistor 	<p>Ordering Information</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>Part No.</th> <th>Packing</th> <th>Package</th> </tr> </thead> <tbody> <tr> <td>TS13003CT</td> <td rowspan="2">Bulk</td> <td>TO-92</td> </tr> <tr> <td>TS13003CK</td> <td>TO-126</td> </tr> </tbody> </table>	Part No.	Packing	Package	TS13003CT	Bulk	TO-92	TS13003CK	TO-126
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	A
	Pulse		
Collector Power Dissipation	TO-92	P_D	W
	TO-126		
Operating Junction Temperature	T_J	+150	°C
Operating Junction and Storage Temperature Range	T_{STG}	- 55 to +150	°C

Note: 1. Single pulse, Pw = 5mS, Duty <= 10%

Electrical Characteristics							
Ta = 25 °C unless otherwise noted							
Parameter	Conditions	Symbol	Min	Typ	Max	Unit	
Static							
Collector-Base Voltage	$I_C = 5mA, I_B = 0$	BV_{CBO}	700			V	
Collector-Emitter Breakdown Voltage	$I_C = 5mA, I_E = 0$	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	$I_C / I_B = 1.5A / 0.5A$	$V_{CE(SAT)1}$			3	V	
	$I_C / I_B = 0.5A / 0.1A$	$V_{CE(SAT)2}$			0.5		
DC Current Gain	$V_{CE} = 2V, I_C = 0.5A$	h_{FE}	8		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	$V_{CC} = 125V, I_C = 1A,$ $I_{B1} = 0.2A, I_{B2} = - 0.2A,$ $R_L = 125ohm$	t_{ON}		1.1		uS	
Storage Time		t_{STG}			4	uS	
Fall Time		t_f				0.7	uS

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

Electrical Characteristics Curve

Figure 1. Static Characteristic

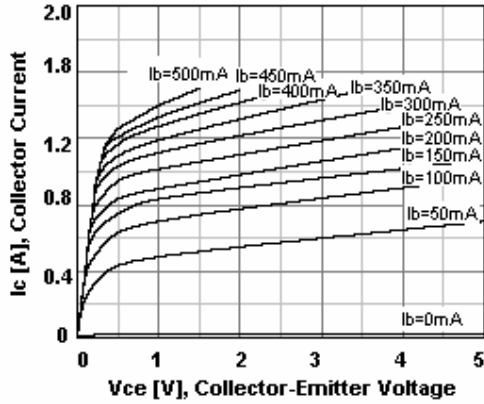


Figure 2. DC Current Gain

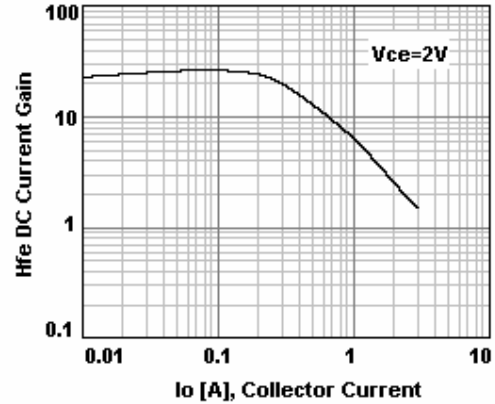


Figure 3. Vce(sat) v.s. Vbe(sat)

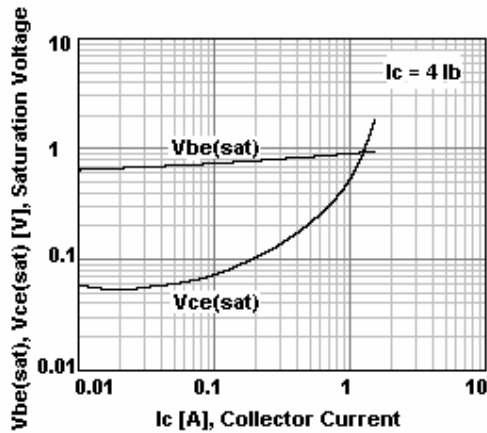


Figure 4. Switching Time

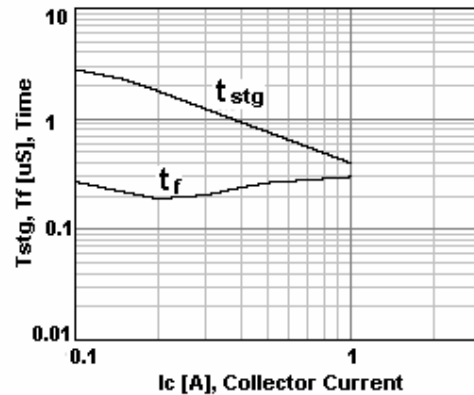


Figure 5. Safe Operating Area

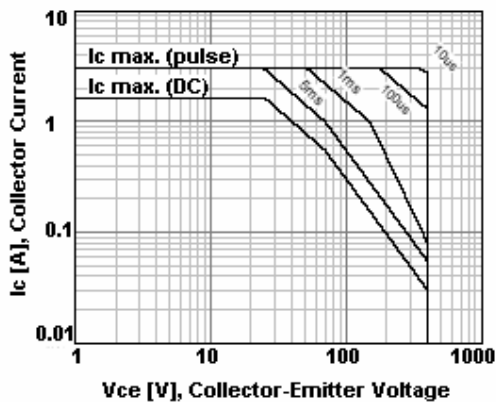
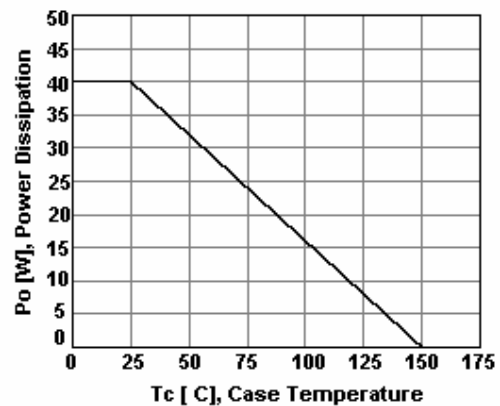
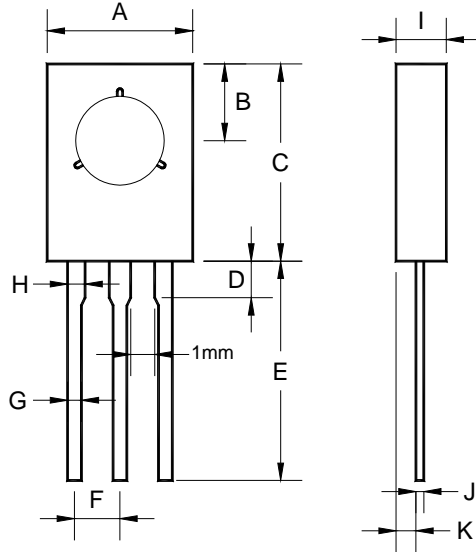


Figure 6. Power Derating

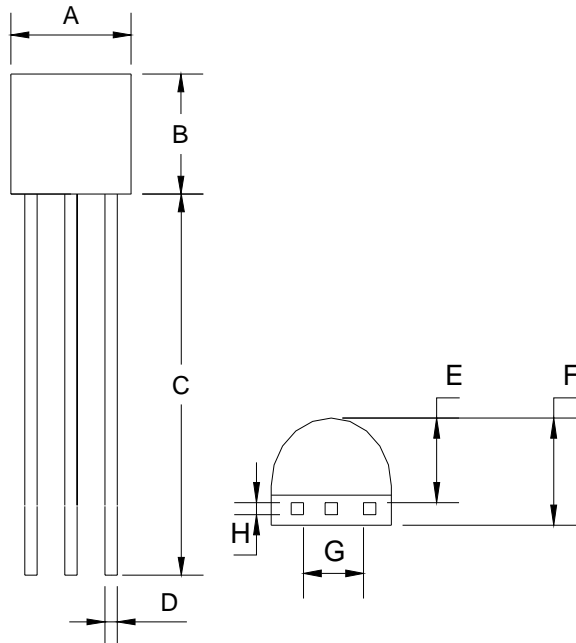


TO-126 Mechanical Drawing



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