



# TS13003HV

## High Voltage NPN Transistor

TO-92



Pin assignment:

1. Emitter
2. Collector
3. Base

$BV_{CEO} = 530V$   
 $BV_{CBO} = 900V$   
 $I_C = 1.5A$   
 $V_{CE(SAT)} = 0.5V @ I_C / I_B = 0.5A / 0.1A$

### Features

- ◇ High voltage.
- ◇ High speed switching

### Structure

- ◇ Silicon triple diffused type.
- ◇ NPN silicon transistor

### Ordering Information

Part No.	Packing	Package
TS13003HVCT B0	Bulk Pack	TO-92
TS13003HVCT A3	Ammo Pack	TO-92

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

Parameter	Symbol	Limit	Unit
Collector-Base Voltage	$V_{CBO}$	900V	V
Collector-Emitter Voltage	$V_{CEO}$	530V	V
Emitter-Base Voltage	$V_{EBO}$	10	V
Collector Current	DC	1.5	A
	Pulse	3	
Collector Power Dissipation	$P_D$	0.6	W
Operating Junction Temperature	$T_J$	+150	°C
Operating Junction and Storage Temperature Range	$T_{STG}$	- 55 to +150	°C

Note: 1. Single pulse,  $P_w = 300\mu S$ , Duty  $\leq 2\%$

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

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
<b>Static</b>						
Collector-Base Voltage	$I_C = 10mA, I_B = 0$	$BV_{CBO}$	900	--	--	V
Collector-Emitter Breakdown Voltage	$I_C = 10mA, I_E = 0$	$BV_{CEO}$	530	--	--	V
Emitter-Base Breakdown Voltage	$I_E = 1mA, I_C = 0$	$BV_{EBO}$	9	--	--	V
Collector Cutoff Current	$V_{CB} = 800V, I_E = 0$	$I_{CBO}$	--	--	10	$\mu A$
Emitter Cutoff Current	$V_{EB} = 10V, I_C = 0$	$I_{EBO}$	--	--	0.5	$\mu A$
Collector-Emitter Saturation Voltage	$I_C / I_B = 1.5A / 0.5A$ $I_C / I_B = 0.5A / 0.1A$	$V_{CE(SAT)1}$	--	--	2.5	V
		$V_{CE(SAT)2}$	--	--	0.8	
DC Current Gain	$V_{CE} = 10V, I_C = 10\mu A$ $V_{CE} = 10V, I_C = 0.4A$ $V_{CE} = 10V, I_C = 1.0A$	$h_{FE}$	15	--	40	
			20	--	40	
			6	--	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	--	$\mu S$
Storage Time		$t_{STG}$	--	--	4	$\mu S$
Fall Time		$t_f$	--	--	0.7	$\mu S$

Note : pulse test: pulse width  $\leq 300\mu S$ , duty cycle  $\leq 2\%$

## Electrical Characteristics Curve

Figure 1. Static Characteristic

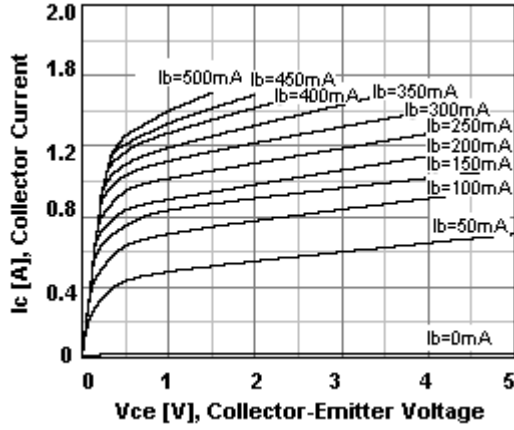


Figure 2. DC Current Gain

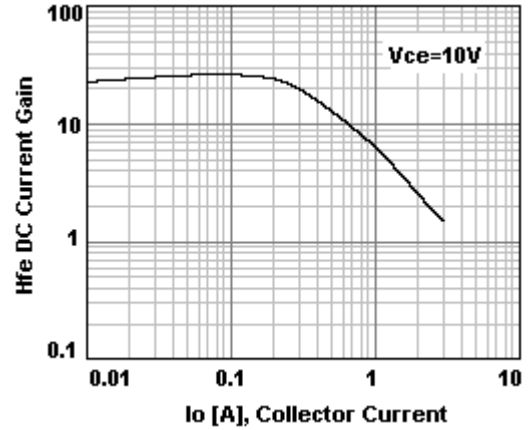


Figure 3. Vce(sat) v.s. Vbe(sat)

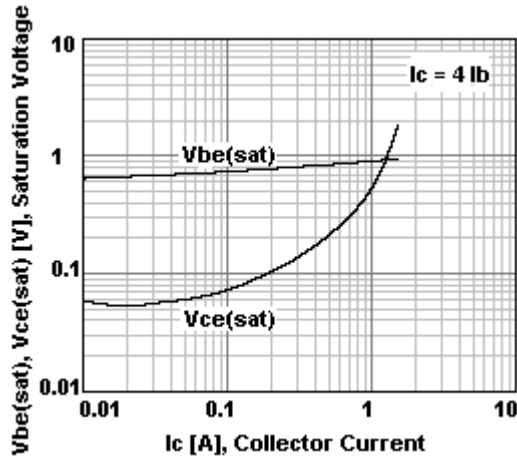


Figure 4. Switching Time

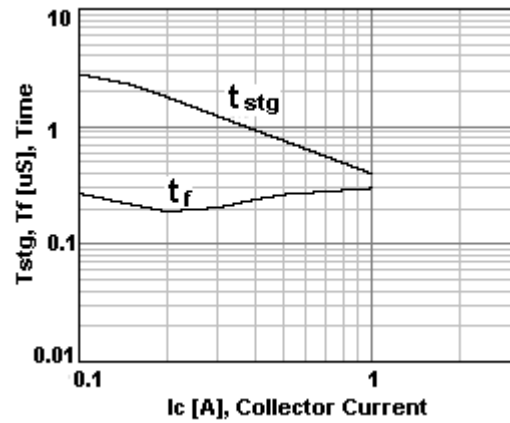


Figure 5. Safe Operating Area

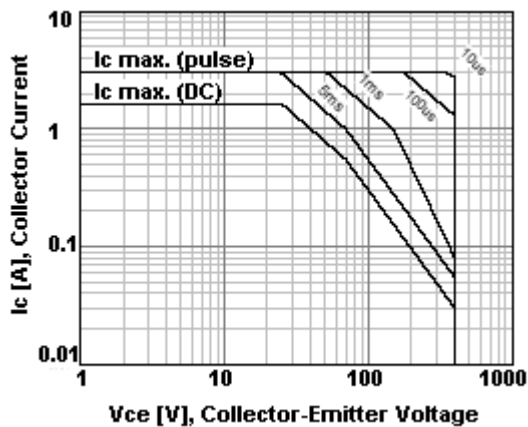
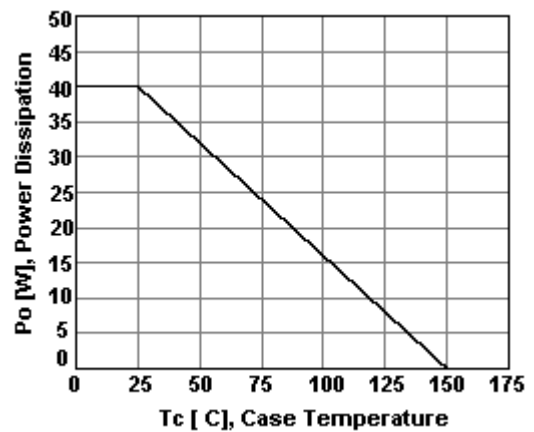
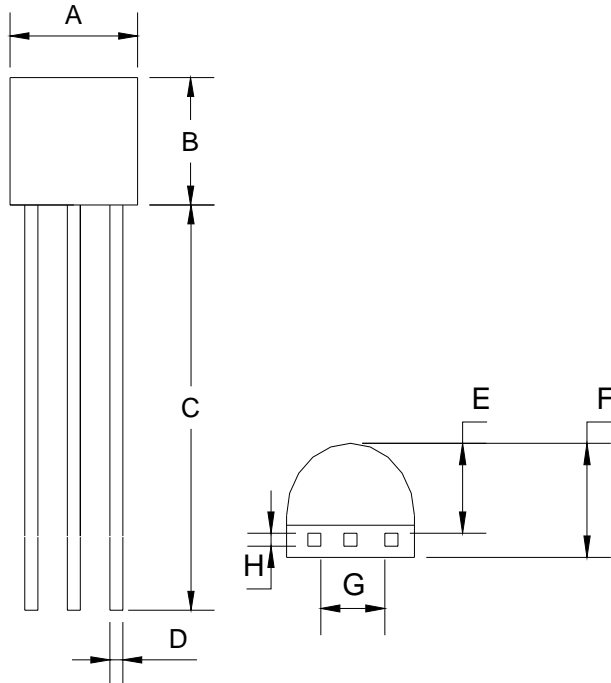


Figure 6. Power Derating



## TO-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