
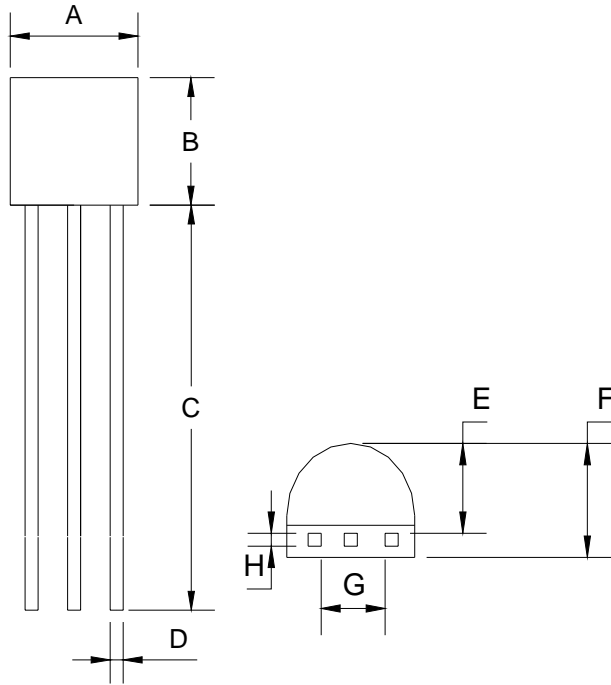


TSC		TS13002																																																																																																																				
		High Voltage NPN Transistor																																																																																																																				
<p>TO-92</p>  <p>Pin assignment: 1. Emitter 2. Collector 3. Base</p>		<p>BV_{CEO} = 400V BV_{CBO} = 700V I_C = 0.2A V_{CE(SAT)} = 0.5V @ I_C / I_B = 100mA / 10mA</p>																																																																																																																				
<p>Features</p> <ul style="list-style-type: none"> High voltage. High speed switching 		<p>Ordering Information</p> <table border="1"> <thead> <tr> <th>Part No.</th> <th>Packing</th> <th>Package</th> </tr> </thead> <tbody> <tr> <td>TS13002CT B0</td> <td>Bulk</td> <td>TO-92</td> </tr> <tr> <td>TS13002CT A3</td> <td>AMMO pack</td> <td>TO-92</td> </tr> </tbody> </table>		Part No.	Packing	Package	TS13002CT B0	Bulk	TO-92	TS13002CT A3	AMMO pack	TO-92																																																																																																										
Part No.	Packing	Package																																																																																																																				
TS13002CT B0	Bulk	TO-92																																																																																																																				
TS13002CT A3	AMMO pack	TO-92																																																																																																																				
<p>Structure</p> <ul style="list-style-type: none"> Silicon triple diffused type. NPN silicon transistor 																																																																																																																						
<p>Absolute Maximum Rating (Ta = 25 °C unless otherwise noted)</p> <table border="1"> <thead> <tr> <th>Parameter</th> <th>Symbol</th> <th>Limit</th> <th>Unit</th> </tr> </thead> <tbody> <tr> <td>Collector-Base Voltage</td> <td>V_{CBO}</td> <td>700V</td> <td>V</td> </tr> <tr> <td>Collector-Emitter Voltage</td> <td>V_{CEO}</td> <td>400V</td> <td>V</td> </tr> <tr> <td>Emitter-Base Voltage</td> <td>V_{EBO}</td> <td>9</td> <td>V</td> </tr> <tr> <td rowspan="2">Collector Current</td> <td>DC</td> <td>0.2</td> <td rowspan="2">A</td> </tr> <tr> <td>Pulse</td> <td>0.5</td> </tr> <tr> <td>Collector Power Dissipation</td> <td>P_D</td> <td>0.6</td> <td>W</td> </tr> <tr> <td>Operating Junction Temperature</td> <td>T_J</td> <td>+150</td> <td>°C</td> </tr> <tr> <td>Operating Junction and Storage Temperature Range</td> <td>T_{STG}</td> <td>- 55 to +150</td> <td>°C</td> </tr> </tbody> </table> <p>Note: 1. Single pulse, Pw = 5mS, Duty <= 10%</p>				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	0.2	A	Pulse	0.5	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																																																																																	
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	0.2	A																																																																																																																			
	Pulse	0.5																																																																																																																				
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																																																																																																																			
<p>Electrical Characteristics (Ta = 25 °C unless otherwise noted)</p> <table border="1"> <thead> <tr> <th>Parameter</th> <th>Conditions</th> <th>Symbol</th> <th>Min</th> <th>Typ</th> <th>Max</th> <th>Unit</th> </tr> </thead> <tbody> <tr> <td colspan="7">Static</td> </tr> <tr> <td>Collector-Base Voltage</td> <td>I_C = 10mA, I_B = 0</td> <td>BV_{CBO}</td> <td>700</td> <td>--</td> <td>--</td> <td>V</td> </tr> <tr> <td>Collector-Emitter Breakdown Voltage</td> <td>I_C = 1mA, I_E = 0</td> <td>BV_{CEO}</td> <td>400</td> <td>--</td> <td>--</td> <td>V</td> </tr> <tr> <td>Emitter-Base Breakdown Voltage</td> <td>I_E = 1mA, I_C = 0</td> <td>BV_{EBO}</td> <td>9</td> <td>--</td> <td>--</td> <td>V</td> </tr> <tr> <td>Collector Cutoff Current</td> <td>V_{CB} = 700V, I_E = 0</td> <td>I_{CBO}</td> <td>--</td> <td>--</td> <td>100</td> <td>uA</td> </tr> <tr> <td>Emitter Cutoff Current</td> <td>V_{EB} = 7V, I_C = 0</td> <td>I_{EBO}</td> <td>--</td> <td>--</td> <td>10</td> <td>uA</td> </tr> <tr> <td rowspan="2">Collector-Emitter Saturation Voltage</td> <td rowspan="2">I_C / I_B = 200mA / 20mA I_C / I_B = 100mA / 10mA</td> <td>V_{CE(SAT)1}</td> <td>--</td> <td>--</td> <td>2.5</td> <td rowspan="2">V</td> </tr> <tr> <td>V_{CE(SAT)2}</td> <td>--</td> <td>--</td> <td>0.5</td> </tr> <tr> <td>DC Current Gain</td> <td>V_{CE} = 10V, I_C = 10uA</td> <td>h_{FE}</td> <td>10</td> <td>--</td> <td>40</td> <td></td> </tr> <tr> <td>DC Current Gain</td> <td>V_{CE} = 10V, I_C = 100mA</td> <td>h_{FE}</td> <td>20</td> <td>--</td> <td>40</td> <td></td> </tr> <tr> <td>DC Current Gain</td> <td>V_{CE} = 10V, I_C = 200mA</td> <td>h_{FE}</td> <td>10</td> <td>--</td> <td>40</td> <td></td> </tr> <tr> <td>Frequency</td> <td>V_{CE} = 10V, I_C = 0.1A</td> <td>f_T</td> <td>4</td> <td>--</td> <td>--</td> <td>MHz</td> </tr> <tr> <td>Output Capacitance</td> <td>V_{CB} = 10V, f = 0.1MHz</td> <td>Cob</td> <td>--</td> <td>21</td> <td>--</td> <td>pF</td> </tr> <tr> <td>Turn On Time</td> <td>V_{CC} = 125V, I_C = 100mA,</td> <td>t_{ON}</td> <td>--</td> <td>1.1</td> <td>--</td> <td>uS</td> </tr> <tr> <td>Storage Time</td> <td rowspan="2">I_{B1} = I_{B2} = 20mA, R_L = 125ohm</td> <td>t_{STG}</td> <td>--</td> <td>--</td> <td>4</td> <td>uS</td> </tr> <tr> <td>Fall Time</td> <td>t_f</td> <td>--</td> <td>--</td> <td>0.7</td> <td>uS</td> </tr> </tbody> </table> <p>Note : pulse test: pulse width <=5mS, duty cycle <=10%</p>				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 = 1mA, 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} = 7V, I _C = 0	I _{EBO}	--	--	10	uA	Collector-Emitter Saturation Voltage	I _C / I _B = 200mA / 20mA I _C / I _B = 100mA / 10mA	V _{CE(SAT)1}	--	--	2.5	V	V _{CE(SAT)2}	--	--	0.5	DC Current Gain	V _{CE} = 10V, I _C = 10uA	h _{FE}	10	--	40		DC Current Gain	V _{CE} = 10V, I _C = 100mA	h _{FE}	20	--	40		DC Current Gain	V _{CE} = 10V, I _C = 200mA	h _{FE}	10	--	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 = 100mA,	t _{ON}	--	1.1	--	uS	Storage Time	I _{B1} = I _{B2} = 20mA, R _L = 125ohm	t _{STG}	--	--	4	uS	Fall Time	t _f	--	--	0.7	uS
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 = 1mA, 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} = 7V, I _C = 0	I _{EBO}	--	--	10	uA																																																																																																																
Collector-Emitter Saturation Voltage	I _C / I _B = 200mA / 20mA I _C / I _B = 100mA / 10mA	V _{CE(SAT)1}	--	--	2.5	V																																																																																																																
		V _{CE(SAT)2}	--	--	0.5																																																																																																																	
DC Current Gain	V _{CE} = 10V, I _C = 10uA	h _{FE}	10	--	40																																																																																																																	
DC Current Gain	V _{CE} = 10V, I _C = 100mA	h _{FE}	20	--	40																																																																																																																	
DC Current Gain	V _{CE} = 10V, I _C = 200mA	h _{FE}	10	--	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 = 100mA,	t _{ON}	--	1.1	--	uS																																																																																																																
Storage Time	I _{B1} = I _{B2} = 20mA, R _L = 125ohm	t _{STG}	--	--	4	uS																																																																																																																
Fall Time		t _f	--	--	0.7	uS																																																																																																																

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

Copyright © Each Manufacturing Company.

All Datasheets cannot be modified without permission.

This datasheet has been download from :

www.AllDataSheet.com

100% Free DataSheet Search Site.

Free Download.

No Register.

Fast Search System.

www.AllDataSheet.com