TAIWAN SEMICONDUCTOR

RoHS COMPLIANCE

Preliminary

TSC5401

Very High Voltage NPN Transistor

TO-92

Pin Definition:
1. Emitter
2. Collector
3. Base

PRODUCT SUMMARY

BV_{CEO}	700V
BV_{CBO}	1500V
I_C	1A
$V_{CE(SAT)}$	1.0V @ I_C / I_B = 0.5A / 0.1A

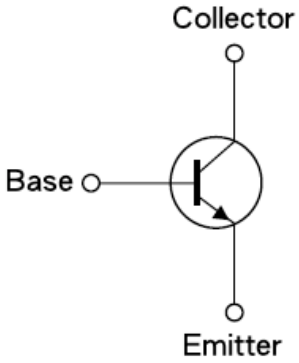
Features

- Very High Voltage
- High Speed Switching

Structure

- Silicon Triple Diffused Type
- NPN Silicon Transistor

Block Diagram



Ordering Information

Part No.	Package	Packing
TSC5401CT B0	TO-92	1Kpcs / Bulk
TSC5401CT B0G	TO-92	1Kpcs / Bulk
TSC5401CT A3	TO-92	2Kpcs / Ammo
TSC5401CT A3G	TO-92	2Kpcs / Ammo

Note: "G" denote for Green Product

Absolute Maximum Rating (Ta = 25ºC unless otherwise noted)

Parameter		Symbol	Limit	Unit
Collector-Base Voltage		V_{CBO}	1500V	V
Collector-Emitter Voltage		V_{CEO}	700V	V
Emitter-Base Voltage		V_{EBO}	7	V
Collector Current	DC	I_C	1	A
	Pulse		2	
Base Current	DC	I_B	0.5	A
	Pulse		1	
Total Power Dissipation		P_D	10	W
Operating Junction Temperature		T_J	+150	ºC
Operating Junction and Storage Temperature Range		T_{STG}	- 55 to +150	ºC

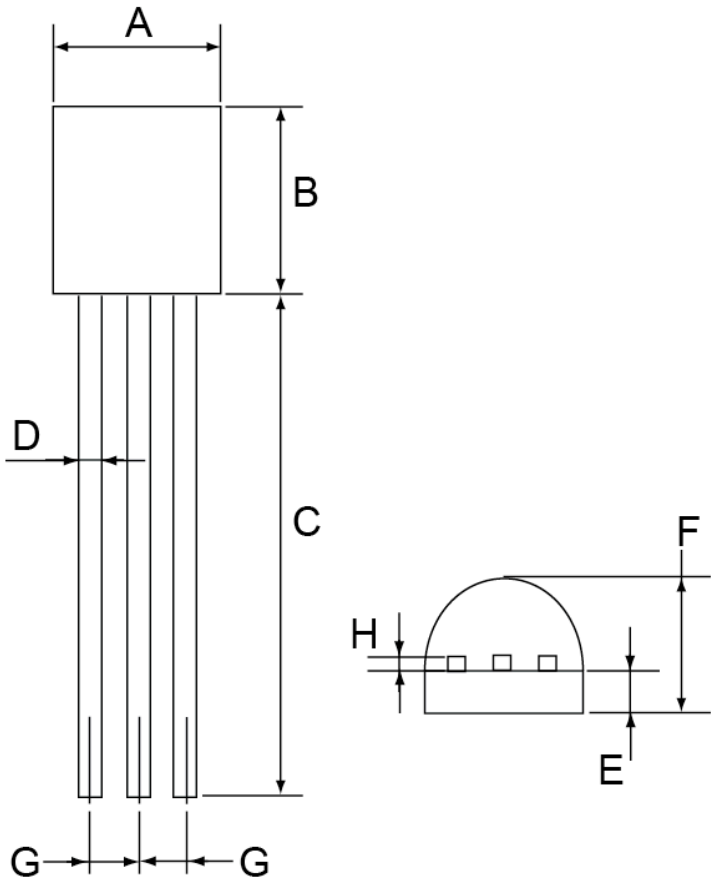
Note: Single Pulse. P_W = 300uS, Duty ≤2%

Electrical Specifications (Ta = 25ºC unless otherwise noted)

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Static						
Collector-Base Voltage	I_C =1mA, I_B =0	BV_{CBO}	1500	--	--	V
Collector-Emitter Breakdown Voltage	I_C =5mA, I_E =0	BV_{CEO}	700	--	--	V
Emitter-Base Breakdown Voltage	I_E =1mA, I_C =0	BV_{EBO}	7	--	--	V
Collector Cutoff Current	V_{CE} =700V, I_B=0	I_{CEO}	--	--	10	uA
Collector Cutoff Current	V_{CB} =1300V, I_E =0	I_{CBO}	--	--	1	mA
Emitter Cutoff Current	V_{EB} = 7V, I_C =0	I_{EBO}	--	--	10	uA
Collector-Emitter Saturation Voltage	I_C=0.2A, I_B =0.04A	$V_{CE(SAT)}1$	---	--	0.3	V
Collector-Emitter Saturation Voltage	I_C=0.5A, I_B =0.1A	$V_{CE(SAT)}2$	---	--	1.0	V
Base-Emitter Saturation Voltage	I_C=0.5A, I_B =0.1A	$V_{BE(SAT)}$	--	--	1.2	V
DC Current Gain	V_{CE} =5V, I_C =10mA	h_{FE}	20	--	45	
	V_{CE} =5V, I_C = 500mA		5	--		
	V_{CE} =5V, I_C = 1A		2	--	--	
Dynamic						
Resistive Load Switching Time (Ratings)						
Rise Time	V_{CC} =400V, I_C =0.5A, I_{B1}=0.1, I_{B2}=-0.2A, t_P =25uS	t_r		0.4	0.8	uS
Storage Time		t_{STG}	--	1.5	3	uS
Fall Time		t_f	--	0.25	0.4	uS

Note: pulse test: pulse width ≤300uS, duty cycle ≤2%

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	13.53 (typ)		0.532 (typ)	
D	0.39	0.49	0.015	0.019
E	1.18	1.28	0.046	0.050
F	3.30	3.70	0.130	0.146
G	1.27	1.31	0.050	0.051
H	0.33	0.43	0.013	0.017

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