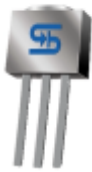




TSC5304D

High Voltage NPN Transistor with Diode

TO-251



TO-252



Pin assignment:

1. Base
2. Collector
3. Emitter

$$BV_{CEO} = 400V$$

$$BV_{CBO} = 750V$$

$$I_C = 4A$$

$$V_{CE(SAT)} = 1.2V @ I_C / I_B = 4A / 1A$$

Features

- ✧ Built-in free-wheeling diode makes efficient anti saturation operation.
- ✧ No need to interest an hfe value because of low variable storage-time spread even though comer spirit product.
- ✧ Low base drive requirement.
- ✧ Suitable for half bridge light ballast applications.

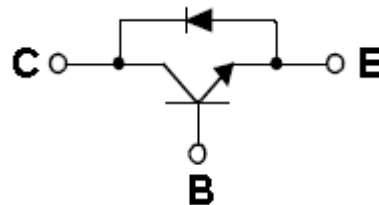
Structure

- ✧ Silicon triple diffused type.
- ✧ NPN silicon transistor with Diode

Ordering Information

Part No.	Packing	Package
TSC5304DCH	Tube	TO-251
TSC5304DCP	T&R	TO-252

Block Diagram



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

Parameter		Symbol	Limit	Unit
Collector-Base Voltage		V_{CBO}	750V	V
Collector-Emitter Voltage		V_{CEO}	400V	V
Emitter-Base Voltage		V_{EBO}	10	V
Collector Current	DC	I_C	4	A
	Pulse		8	
Base Current	DC	I_B	1.5	A
	Pulse		4	
Total Power Dissipation (Tc=25 °C)		P_D	35	W
Operating Junction Temperature		T_J	+150	°C
Operating Junction and Storage Temperature Range		T_{STG}	- 65 to +150	°C
Thermal Resistance Junction to Case		$R_{\theta jc}$	6	°C/W
Thermal Resistance Junction to Ambient		$R_{\theta ja}$	90	°C/W

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

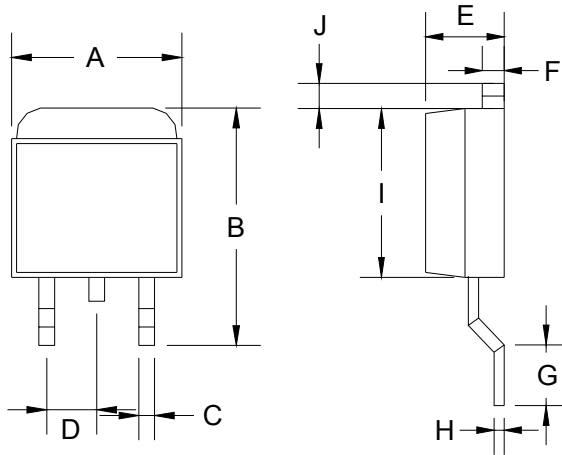


Electrical Characteristics						
Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Static						
Collector-Base Voltage	I _C = 1mA, I _B = 0	BV _{CBO}	750	--	--	V
Collector-Emitter Breakdown Voltage	I _C = 5mA, I _E = 0	BV _{CEO}	400	--	--	V
Emitter-Base Breakdown Voltage	I _E = 1mA, I _C = 0	BV _{EBO}	9	--	--	V
Collector Cutoff Current	V _{CB} = 500V, I _E = 0	I _{CBO}	--	--	10	uA
Emitter Cutoff Current	V _{EB} = 9V, I _C = 0	I _{EBO}	--	--	10	uA
Collector-Emitter Saturation Voltage	I _C / I _B = 1.0A / 0.2A	V _{CE(SAT)} 1	--	--	0.35	V
	I _C / I _B = 2.0A / 0.5A	V _{CE(SAT)} 2	--	--	0.55	
	I _C / I _B = 4.0A / 1.0A	V _{CE(SAT)} 3	--	--	1.25	
Base-Emitter Saturation Voltage	I _C / I _B = 1.0A / 0.2A	V _{CB(SAT)} 1	--	--	1.0	V
	I _C / I _B = 2.0A / 0.5A	V _{CB(SAT)} 2	--	--	1.1	
DC Current Gain	V _{CE} = 5V, I _C = 0.5A	h _{FE} 1	15	20	--	
	V _{CE} = 5V, I _C = 2A	h _{FE} 2	10	--	--	
Turn On Time	V _{CC} = 250V, I _C = 2A, I _{B1} = I _{B2} = 0.4A, t _p = 25uS Duty cycle < 1%	t _{ON}	--	--	0.5	uS
Storage Time		t _{STG}	--	--	3	uS
Fall Time		t _F	--	--	0.2	uS
Doide						
Fall Time	I _C = 2A	t _F	--	--	500	nS
Forward Voltage	I _C = 2A	V _f	--	--	1.3	V

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

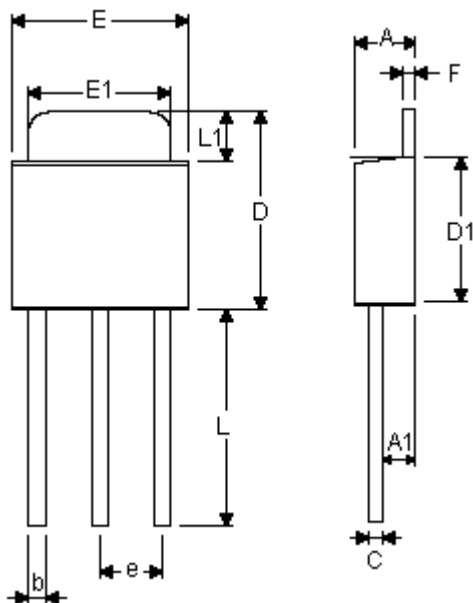


TO-252 Mechanical Drawing



DIM	TO-252 DIMENSION			
	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	6.570	6.840	0.259	0.269
B	9.250	10.400	0.364	0.409
C	0.550	0.700	0.022	0.028
D	2.560	2.670	0.101	0.105
E	2.300	2.390	0.090	0.094
F	0.490	0.570	0.019	0.022
G	1.460	1.580	0.057	0.062
H	0.520	0.570	0.020	0.022
I	5.340	5.550	0.210	0.219
J	1.460	1.640	0.057	0.065

TO-251 Mechanical Drawing



DIM	TO-251 DIMENSION			
	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.20	2.4	0.087	0.095
A1	1.10	1.30	0.043	0.051
b	0.40	0.80	0.016	0.032
C	0.40	0.60	0.016	0.024
D	6.70	7.30	0.264	0.287
D1	5.40	5.65	0.213	0.222
E	6.40	6.65	0.252	0.262
e	2.10	2.50	0.083	0.098
F	0.40	0.60	0.016	0.024
L	7.00	8.00	0.276	0.315
L1	1.60	1.86	0.063	0.073