



TSC5305D

High Voltage NPN Transistor with Diode

TO-220



TO-263



Pin assignment:

1. Base
2. Collector
3. Emitter

$$BV_{CEO} = 400V$$

$$BV_{CBO} = 750V$$

$$I_C = 5A$$

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

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.

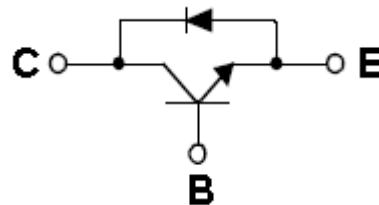
Structure

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

Ordering Information

Part No.	Packing	Package
TSC5305DCZ	Tube	TO-220
TSC5305DCM	T&R	TO-263

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	5	A
	Pulse		10	
Base Current	DC	I_B	2	A
	Pulse		4	
Total Power Dissipation (Tc=25 °C)		P_D	75	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		$R_{\theta jc}$	1.65	°C/W
Thermal Resistance Junction to Ambient		$R_{\theta ja}$	65	°C/W

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

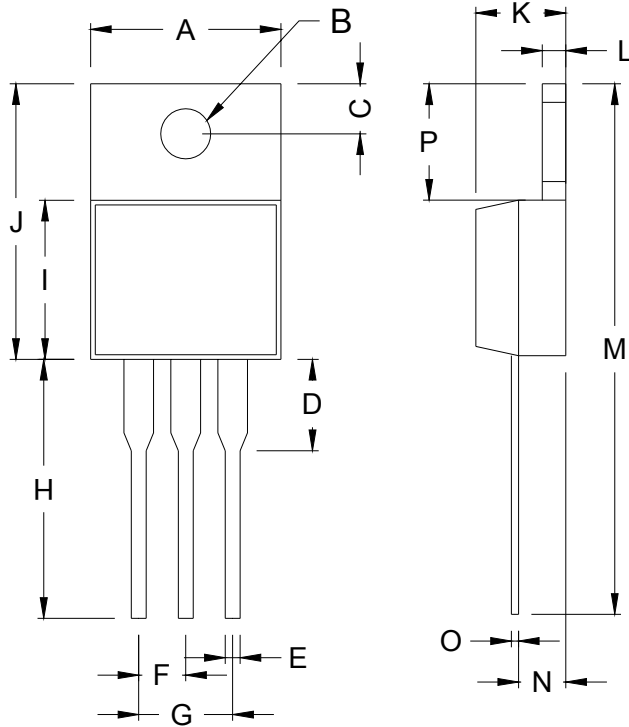


Electrical Characteristics						
Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Static						
Collector-Base Voltage	I _C = 1mA, I _B = 0	BV _{CBO}	750	--	--	V
Collector-Emitter Breakdown Voltage	I _C = 5mA, I _E = 0	BV _{CEO}	400	--	--	V
Emitter-Base Breakdown Voltage	I _E = 1mA, I _C = 0	BV _{EBO}	9	--	--	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	--	--	0.3	V
	I _C / I _B = 2.0A / 0.5A	V _{CE(SAT)} 2	--	--	0.5	
	I _C / I _B = 4.0A / 1.0A	V _{CE(SAT)} 3	--	--	1.2	
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 = 3A	t _F	--	--	700	nS
Forward Voltage	I _C = 3A	V _f	--	--	1.4	V

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

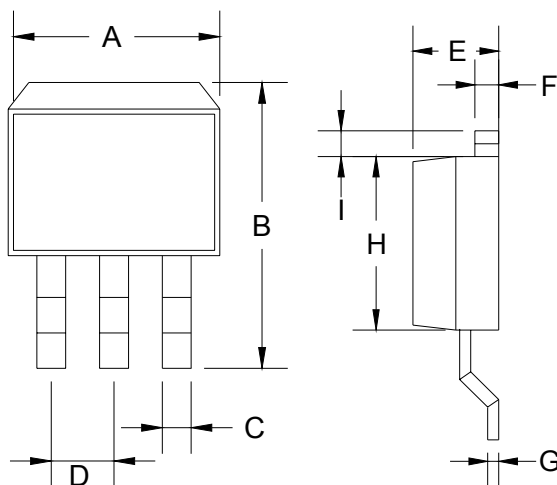


TO-220 Mechanical Drawing



TO-220 DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	10.000	10.500	0.394	0.413
B	3.240	4.440	0.128	0.175
C	2.440	2.940	0.096	0.116
D	-	6.350	-	0.250
E	0.381	1.106	0.015	0.040
F	2.345	2.715	0.092	0.058
G	4.690	5.430	0.092	0.107
H	12.700	14.732	0.500	0.581
I	8.382	9.017	0.330	0.355
J	14.224	16.510	0.560	0.650
K	3.556	4.826	0.140	0.190
L	0.508	1.397	0.020	0.055
M	27.700	29.620	1.060	1.230
N	2.032	2.921	0.080	0.115
O	0.255	0.610	0.010	0.024
P	5.842	6.858	0.230	0.270

TO-263 Mechanical Drawing



TO-263 DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	10.000	10.500	0.394	0.413
B	14.605	15.875	0.575	0.625
C	0.508	0.991	0.020	0.039
D	2.420	2.660	0.095	0.105
E	4.064	4.830	0.160	0.190
F	1.118	1.400	0.045	0.055
G	0.450	0.730	0.018	0.029
H	8.280	8.800	0.325	0.346
I	1.140	1.400	0.044	0.055
J	1.480	1.520	0.058	0.060