



# TS13007

## High Voltage NPN Transistor

TO-220



Pin assignment:

1. Base
2. Collector
3. Emitter

**$BV_{CEO} = 400V$**   
 **$BV_{CBO} = 700V$**   
 **$I_C = 8A$**   
 **$V_{CE(SAT)} = 3V @ I_C / I_B = 8A / 2A$**

### Features

- ◇ Suitable for switching regulator and motor control
- ◇ High speed switching

### Structure

- ◇ Silicon triple diffused type.

### Ordering Information

Part No.	Packing	Package
TS13007CZ	Tube	TO-220

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

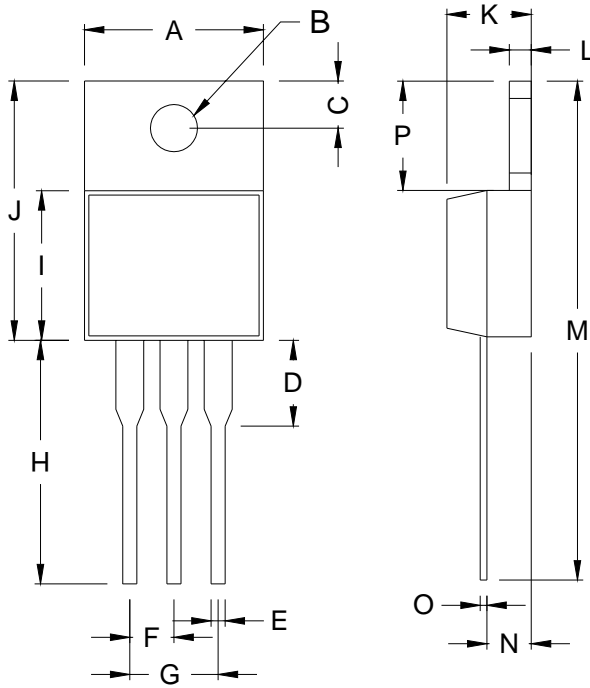
Parameter	Symbol	Limit	Unit
Collector-Base Voltage	$V_{CBO}$	700V	V
Collector-Emitter Voltage	$V_{CEO}$	400V	V
Emitter-Base Voltage	$V_{EBO}$	9	V
Collector Current	DC	8	A
	Pulse	16	
Base Current	$I_B$	4	A
Collector Power Dissipation	$T_C=25\text{ }^\circ\text{C}$	80	W
Operating Junction Temperature	$T_J$	+150	°C
Operating Junction and Storage Temperature Range	$T_{STG}$	- 65 to +150	°C

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

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
<b>Static</b>						
Collector-Base Voltage	$I_C = 10mA, I_B = 0$	$BV_{CBO}$	700	--	--	V
Collector-Emitter Breakdown Voltage	$I_C = 10mA, I_E = 0$	$BV_{CEO}$	400	--	--	V
Emitter-Base Breakdown Voltage	$I_E = 1mA, I_C = 0$	$BV_{EBO}$	9	--	--	V
Emitter Cutoff Current	$V_{EB} = 9V, I_C = 0$	$I_{EBO}$	--	--	1	mA
Collector-Emitter Saturation Voltage	$I_C / I_B = 2A / 0.4A$	$V_{CE(SAT)1}$	--	--	1	V
	$I_C / I_B = 5A / 1A$	$V_{CE(SAT)2}$	--	--	2	
	$I_C / I_B = 8A / 2A$	$V_{CE(SAT)3}$	--	--	3	
Base-Emitter Saturation Voltage	$I_C / I_B = 2A / 0.4A$	$V_{BE(SAT)1}$	--	--	1.2	V
	$I_C / I_B = 5A / 1A$	$V_{BE(SAT)2}$	--	--	1.6	
DC Current Gain	$V_{CE} = 5V, I_C = 2A$	$h_{FE1}$	8	--	60	
	$V_{CE} = 5V, I_C = 5A$	$h_{FE2}$	5	--	30	
Frequency	$V_{CE} = 10V, I_C = 0.5A$	$f_T$	4	--	--	MHz
Output Capacitance	$V_{CB} = 10V, f = 0.1MHz$	$C_{ob}$	--	110	--	pF
Turn On Time	$V_{CC} = 125V, I_C = 5A,$ $I_{B1} = 1A, I_{B2} = -1A, R_L$ $= 50ohm$	$t_{ON}$	--	--	1.6	uS
Storage Time		$t_{STG}$	--	--	3	uS
Fall Time		$t_f$	--	--	0.7	uS

Note : pulse test: pulse width  $\leq 300\mu S$ , 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