



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)

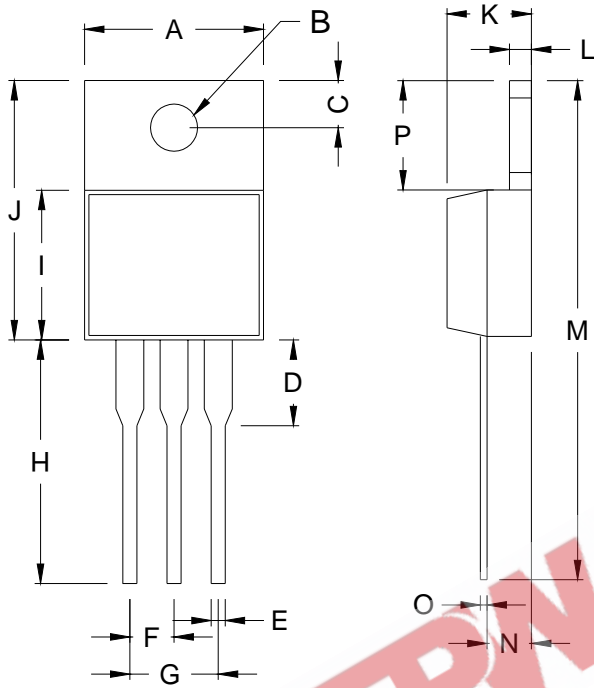
| Parameter | Symbol | Limit | Unit |
|--|------------------|--------------|------|
| Collector-Base Voltage | V_{CBO} | 700V | V |
| Collector-Emitter Voltage | V_{CEO} | 400V | V |
| Emitter-Base Voltage | V_{EBO} | 9 | V |
| Collector Current | DC | 8 | A |
| | Pulse | 16 | |
| Base Current | I_B | 4 | A |
| Collector Power Dissipation | $T_C=25^\circ C$ | 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 |
|--------------------------------------|--|----------------|-----|-----|-----|------|
| Static | | | | | | |
| 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 | $I_C / I_B = 2A / 0.4A$ $I_C / I_B = 5A / 1A$ $I_C / I_B = 8A / 2A$ | $V_{CE(SAT)1}$ | -- | -- | 1 | V |
| | | $V_{CE(SAT)2}$ | -- | -- | 2 | |
| | | $V_{CE(SAT)3}$ | -- | -- | 3 | |
| Base-Emitter Saturation Voltage | $I_C / I_B = 2A / 0.4A$ $I_C / I_B = 5A / 1A$ | $V_{BE(SAT)1}$ | -- | -- | 1.2 | V |
| | | $V_{BE(SAT)2}$ | -- | -- | 1.6 | |
| DC Current Gain | $V_{CE} = 5V, I_C = 2A$ $V_{CE} = 5V, I_C = 5A$ | h_{FE1} | 8 | -- | 60 | |
| | | 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 | $V_{CC} = 125V, I_C = 5A,$ $I_{B1} = 1A, I_{B2} = -1A,$ $R_L = 50\Omega$ | 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 |