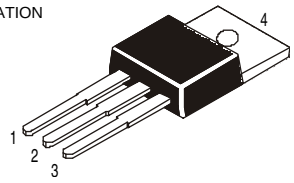
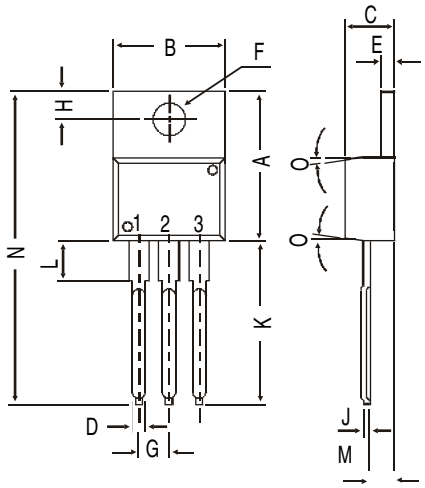
**TO-220 Plastic Package** **2N6109**

# *2N6109 PNP PLASTIC POWER TRANSISTOR*

*General Purpose Amplifier and Switching Application*

PIN CONFIGURATION
1. BASE
2. COLLECTOR
3. EMITTER
4. COLLECTOR




All diminsions in mm.

| DIM | MIN. | MAX. |
|---|---|---|
| A | 14.42 | 16.51 |
| B | 9.63 | 10.67 |
| C | 3.56 | 4.83 |
| D | | 0.90 |
| E | 1.15 | 1.40 |
| F | 3.75 | 3.88 |
| G | 2.29 | 2.79 |
| H | 2.54 | 3.43 |
| J | | 0.56 |
| K | 12.70 | 14.73 |
| L | 2.80 | 4.07 |
| M | 2.03 | 2.92 |
| N | | 31.24 |
| O | DEG 7 | |

***ABSOLUTE MAXIMUM RATINGS***

| | | | |
|---|---|---|---|
| *Collector-base voltage (open emitter)* | $V_{CBO}$ | *max.* | *60 V* |
| *Collector-emitter voltage (open base)* | $V_{CEO}$ | *max.* | *50 V* |
| *Collector current* | $I_C$ | *max.* | *7.0 A* |
| *Total power dissipation up to $T_C$ = 25°C* | $P_{tot}$ | *max.* | *40 W* |
| *Junction temperature* | $T_j$ | *max.* | *150 °C* |
| *Collector-emitter saturation voltage* | | | |
| *$I_C$ = 2.5A; $I_B$ = 0.25A* | $V_{CEsat}$ | *max.* | *1.0 V* |
| *D.C. current gain* | | | |
| *$I_C$ = 2.5A; $V_{CE}$ = 4V* | $h_{FE}$ | *min.* | *30* |
| | | *max.* | *150* |

***RATINGS*** *(at $T_A$=25°C unless otherwise specified)*

*Limiting values*

| | | | |
|---|---|---|---|
| *Collector-base voltage (open emitter)* | $V_{CBO}$ | *max.* | *60 V* |
| *Collector-emitter voltage (open base)* | $V_{CEO}$ | *max.* | *50 V* |
| *Emitter-base voltage (open collector)* | $V_{EBO}$ | *max.* | *5.0 V* |
| *Collector current* | $I_C$ | *max.* | *7.0 A* |

| | | | |
|---|---|---|---|
| *Collector current (Peak value)* | $I_C$ | *max.* | *10 A* |
| *Base current* | $I_B$ | *max.* | *3.0 A* |
| *Total power dissipation up to $T_C$ = 25°C* | $P_{tot}$ | *max.* | *40 W* |
| *Derate above 25°C* | | *max.* | *0.32 W/°C* |
| *Junction temperature* | $T_j$ | *max.* | *150 °C* |
| *Storage temperature* | $T_{stg}$ | | *–65 to +150 °C* |

***THERMAL CHARACTERISTICS***

| | | | |
|---|---|---|---|
| *From junction to case* | $R_{th\ j-c}$ | | *3.125 °C/W* |

***CHARACTERISTICS***

*$T_{amb}$ = 25°C unless otherwise specified*

| | | | |
|---|---|---|---|
| *Collector cutoff current* | | | |
| *$I_B$ = 0; $V_{CE}$ = 40V* | $I_{CEO}$ | *max.* | *1.0 mA* |
| *$V_{EB(off)}$ = 1.5V; $V_{CE}$ = 60V* | $I_{CEX}$ | *max.* | *0.1 mA* |
| *$V_{EB(off)}$ = 1.5V; $V_{CE}$ = 50V; $T_C$ = 150°C* | $I_{CEX}$ | *max.* | *2.0 mA* |
| *Emitter cut-off current* | | | |
| *$I_C$ = 0; $V_{EB}$ = 5V* | $I_{EBO}$ | *max.* | *1.0 mA* |
| *Breakdown voltages* | | | |
| *$I_C$ = 100 mA; $I_B$ = 0* | $V_{CEO(sus)}$* | *min.* | *50 V* |
| *$I_C$ = 1 mA; $I_E$ = 0* | $V_{CBO}$ | *min.* | *60 V* |
| *$I_E$ = 1 mA; $I_C$ = 0* | $V_{EBO}$ | *min.* | *5.0 V* |
| *Saturation voltages* | | | |
| *$I_C$ = 2.5 A; $I_B$ = 0.25 A* | $V_{CEsat}$* | *max.* | *1.0 V* |
| *$I_C$ = 7 A; $I_B$ = 3 A* | $V_{CEsat}$* | *max.* | *3.5 V* |
| *Base emitter on voltages* | | | |
| *$I_C$ = 2.5A; $V_{CE}$ = 4V* | $V_{BE(on)}$* | *max.* | *1.5 V* |
| *$I_C$ = 7A; $V_{CE}$ = 4V* | $V_{BE(on)}$* | *max.* | *3.0 V* |
| *D.C. current gain* | | | |
| *$I_C$ = 2.5A; $V_{CE}$ = 4V* | $h_{FE}$* | *min.* | *30* |
| | | *max.* | *150* |
| *$I_C$ = 7A; $V_{CE}$ = 4V* | $h_{FE}$* | *min.* | *2.3* |
| *Small-signal current gain f = 50 KHz* | | | |
| *$I_C$ = 0.5A; $V_{CE}$ = 4V* | $h_{fe}$ | *min.* | *20* |
| *Output capacitance at f = 1 MHz* | | | |
| *$I_E$ = 0; $V_{CB}$ = 10V* | $C_o$ | *max.* | *250 pF* |
| *Transition frequency at f = 1 MHz* | | | |
| *$I_C$ = 500 mA; $V_{CE}$ = 4V* | $f_T$ (1) | *min.* | *10 MHz* |

** Pulse test: pulse width ≤ 300 μs; duty cycle ≤ 2%.*

*(1) $f_T = |h_{fe}| \bullet f_{test}$*

## Notes

## Disclaimer

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