# Silicon NPN Power Transistors BD707 BD709 BD711

## DESCRIPTION

·With TO-220C package

·The BD707 and BD711are respectively complement to type BD708 and BD712

## APPLICATIONS

·Intented for use in power linear and switching applications.

## PINNING

| PIN | DESCRIPTION |
|---|---|
| 1 | Base |
| 2 | Collector;connected to mounting base |
| 3 | Emitter |

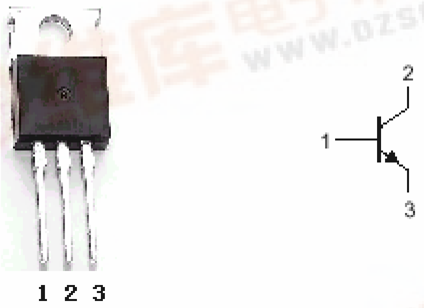

Fig.1 simplified outline (TO-220C) and symbol

## Absolute maximum ratings(Ta=25□)

| SYMBOL | PARAMETER | | CONDITIONS | VALUE | UNIT |
|---|---|---|---|---|---|
| $V_{CBO}$ | Collector-base voltage | BD707 | Open emitter | 60 | V |
| | | BD709 | | 80 | |
| | | BD711 | | 100 | |
| $V_{CEO}$ | Collector-emitter voltage | BD707 | Open base | 60 | |
| | | BD709 | | 80 | |
| | | BD711 | | 100 | |
| $V_{EBO}$ | Emitter-base voltage | | Open collector | 5 | V |
| $I_C$ | Collector current-DC | | | 12 | A |
| $I_{CM}$ | Collector current-Pulse | | | 18 | A |
| $I_B$ | Base current | | | 5 | A |
| $P_T$ | Total dissipation | | $T_C$=25□ | 75 | W |
| $T_j$ | Junction temperature | | | 150 | □ |
| $T_{stg}$ | Storage temperature | | | -65~150 | □ |

## THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | MAX | UNIT |
|---|---|---|---|
| $R_{th\ j\text{-}c}$ | Thermal resistance junction to case | 1.67 | □/W |

## CHARACTERISTICS

**Tj=25□ unless otherwise specified**

| SYMBOL | PARAMETER | | CONDITIONS | MIN | TYP. | MAX | UNIT |
|---|---|---|---|---|---|---|---|
| $V_{CEO(SUS)}$ | Collector-emitter sustaining voltage | BD707 | $I_C$=0.1A, $I_B$=0 | 60 | | | V |
| | | BD709 | | 80 | | | |
| | | BD711 | | 100 | | | |
| $V_{CEsat}$ | Collector-emitter saturation voltage | | $I_C$=4A ,$I_B$=0.4A | | | 1.0 | V |
| $V_{BE}$ | Base-emitter voltage | | $I_C$=4A , $V_{CE}$=4V | | | 1.5 | V |
| $I_{CBO}$ | Collector cut-off current | BD707 | $V_{CB}$=60V, $I_E$=0<br>$T_C$=150□ | | | 0.1<br>1.0 | mA |
| | | BD709 | $V_{CB}$=80V, $I_E$=0<br>$T_C$=150□ | | | 0.1<br>1.0 | |
| | | BD711 | $V_{CB}$=100V, $I_E$=0<br>$T_C$=150□ | | | 0.1<br>1.0 | |
| $I_{CEO}$ | Collector cut-off current | BD707 | $V_{CE}$=30V, $I_B$=0 | | | 0.1 | mA |
| | | BD709 | $V_{CE}$=40V, $I_B$=0 | | | | |
| | | BD711 | $V_{CE}$=50V, $I_B$=0 | | | | |
| $I_{EBO}$ | Emitter cut-off current | | $V_{EB}$=5V; $I_C$=0 | | | 1.0 | mA |
| $h_{FE-1}$ | DC current gain | | $I_C$=0.5A ; $V_{CE}$=2V | 40 | 120 | 400 | |
| $h_{FE-2}$ | DC current gain only for **BD707/709** | | $I_C$=2A ; $V_{CE}$=2V | 30 | | | |
| $h_{FE-3}$ | DC current gain | | $I_C$=4A ; $V_{CE}$=2V | 15 | | 150 | |
| $h_{FE-4}$ | DC current gain | BD707 | $I_C$=10A ; $V_{CE}$=4V | 5 | 10 | | |
| | | BD709 | | | 8 | | |
| | | BD711 | | | 8 | | |
| $f_T$ | Transition frequency | | $I_C$=0.3A;$V_{CE}$=3V; | 3 | | | MHz |

**PACKAGE OUTLINE**

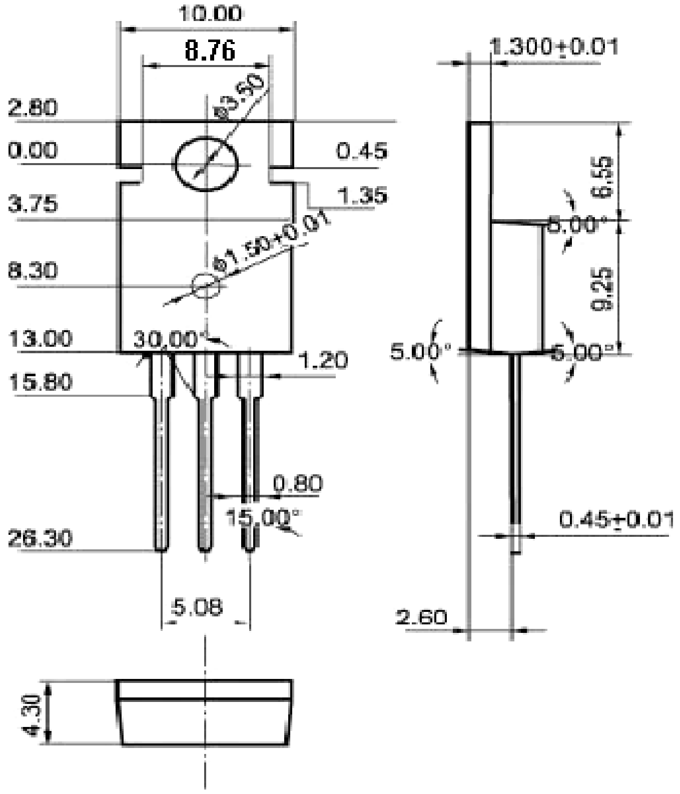

Fig.2 Outline dimensions