

Silicon PNP Power Transistors

BDW84/84A/84B/84C/84D

DESCRIPTION

- With TO-3PN package
- Complement to type BDW83/83A/83B/83C/83D
- DARLINGTON
- High DC current gain

APPLICATIONS

- For use in power linear and switching applications.

PINNING

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

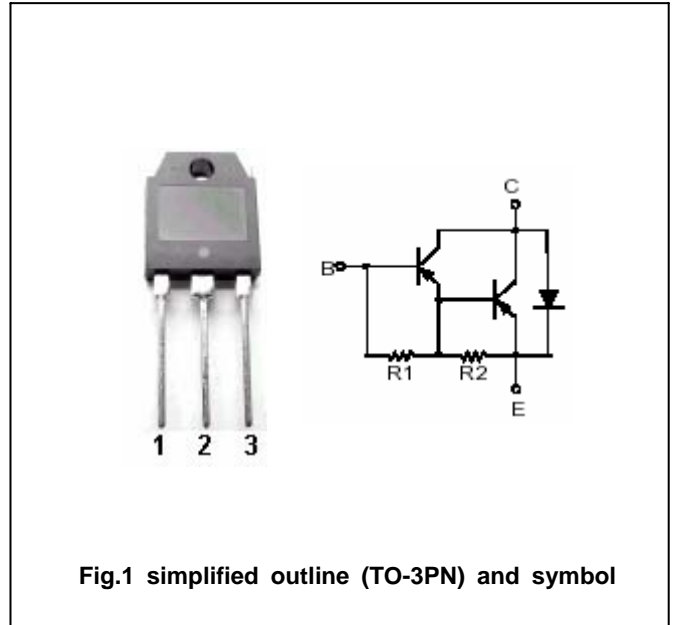


Fig.1 simplified outline (TO-3PN) and symbol

Absolute maximum ratings(Tc=25 )

| SYMBOL           | PARAMETER                   | CONDITIONS         | VALUE   | UNIT |   |
|------------------|-----------------------------|--------------------|---------|------|---|
| V <sub>CBO</sub> | Collector-base voltage      | Open emitter       | BDW84   | -45  | V |
|                  |                             |                    | BDW84A  | -60  |   |
|                  |                             |                    | BDW84B  | -80  |   |
|                  |                             |                    | BDW84C  | -100 |   |
|                  |                             |                    | BDW84D  | -120 |   |
| V <sub>CEO</sub> | Collector-emitter voltage   | Open base          | BDW84   | -45  | V |
|                  |                             |                    | BDW84A  | -60  |   |
|                  |                             |                    | BDW84B  | -80  |   |
|                  |                             |                    | BDW84C  | -100 |   |
|                  |                             |                    | BDW84D  | -120 |   |
| V <sub>EBO</sub> | Emitter-base voltage        | Open collector     | -5      | V    |   |
| I <sub>C</sub>   | Collector current           |                    | -15     | A    |   |
| I <sub>B</sub>   | Base current                |                    | -0.5    | A    |   |
| P <sub>C</sub>   | Collector power dissipation | T <sub>C</sub> =25 | 150     | W    |   |
|                  |                             | T <sub>a</sub> =25 | 3.5     |      |   |
| T <sub>j</sub>   | Junction temperature        |                    | 150     |      |   |
| T <sub>stg</sub> | Storage temperature         |                    | -65~150 |      |   |

## Silicon PNP Power Transistors

## BDW84/84A/84B/84C/84D

## CHARACTERISTICS

T<sub>j</sub>=25 unless otherwise specified

| SYMBOL               | PARAMETER                            | CONDITIONS   | MIN   | TYP. | MAX   | UNIT |
|----------------------|--------------------------------------|--|---|------|-------|------|
| V <sub>(BR)CEO</sub> | Collector-emitter breakdown voltage  | BDW84  | I <sub>C</sub> =-30mA, I <sub>B</sub> =0                        |      |       | -45  |
|                      |                                      | BDW84A   |   |      |       | -60  |
|                      |                                      | BDW84B   |   |      |       | -80  |
|                      |                                      | BDW84C   |   |      |       | -100 |
|                      |                                      | BDW84D   |   |      |       | -120 |
| V <sub>CEsat-1</sub> | Collector-emitter saturation voltage | I <sub>C</sub> =-6A, I <sub>B</sub> =-12mA   |   |      | -2.5  | V    |
| V <sub>CEsat-2</sub> | Collector-emitter saturation voltage | I <sub>C</sub> =-15A, I <sub>B</sub> =-150mA   |   |      | -4.0  | V    |
| V <sub>BE</sub>      | Base-emitter on voltage              | I <sub>C</sub> =-6A; V <sub>CE</sub> =-3V  |   |      | -2.5  | V    |
| I <sub>CBO</sub>     | Collector cut-off current            | BDW84  | V <sub>CB</sub> =-45V, I <sub>E</sub> =0<br>T <sub>C</sub> =150 |      |       | -0.5 |
|                      |                                      | BDW84A   |   |      |       | -5.0 |
|                      |                                      | BDW84B   |   |      |       | -0.5 |
|                      |                                      | BDW84C   |   |      |       | -5.0 |
|                      |                                      | BDW84D   |   |      |       | -0.5 |
| I <sub>CEO</sub>     | Collector cut-off current            | BDW84  | V <sub>CE</sub> =-30V, I <sub>B</sub> =0                        |      |       | -1   |
|                      |                                      | BDW84A   |   |      |       | -1   |
|                      |                                      | BDW84B   |   |      |       | -1   |
|                      |                                      | BDW84C   |   |      |       | -1   |
|                      |                                      | BDW84D   |   |      |       | -1   |
| I <sub>EBO</sub>     | Emitter cut-off current              | V <sub>EB</sub> =-5V; I <sub>C</sub> =0  |   |      | -2    | mA   |
| h <sub>FE-1</sub>    | DC current gain                      | I <sub>C</sub> =-6A; V <sub>CE</sub> =-3V  | 750   |      | 20000 |      |
| h <sub>FE-2</sub>    | DC current gain                      | I <sub>C</sub> =-15A; V <sub>CE</sub> =-3V   | 100   |      |       |      |
| V <sub>EC</sub>      | Diode forward voltage                | I <sub>E</sub> =-15A   |   |      | -3.5  | V    |
| t <sub>on</sub>      | Turn-on time                         | I <sub>C</sub> = -10 A, I <sub>B1</sub> = -I <sub>B2</sub> = -40 mA<br>R <sub>L</sub> = 3 Ω; V <sub>BE(off)</sub> = 4.2V |   | 0.9  |       | μs   |
| t <sub>off</sub>     | Turn-off time                        | Duty Cycle 2%  |   | 7.0  |       | μs   |

## THERMAL CHARACTERISTICS

| SYMBOL              | PARAMETER                           | MAX  | UNIT |
|---------------------|-------------------------------------|------|------|
| R <sub>th j-c</sub> | Thermal resistance junction to case | 0.83 | /W   |

