



**NPN BDW83, BDW83A, BDW83B,
BDW83C, BDW83D,**

NPN SILICON DARLINGTONS POWER TRANSISTORS

They are silicon epitaxial-base NPN power monolithic Darlington transistor mounted in Jedec TO-218 plastic package.

They are intended for use in power linear and switching applications.

The complementary are BDW84, BDW84A, BDW84B, BDW84C, BDW84D

Compliance to RoHS.

ABSOLUTE MAXIMUM RATINGS

| Symbol | Ratings | | Value | Unit | |
|-----------|----------------------------|---------------------------|-------------|------|---|
| V_{CEO} | Collector-Emitter Voltage | $I_B = 0$ | BDW83 | 45 | V |
| | | | BDW83A | 60 | |
| | | | BDW83B | 80 | |
| | | | BDW83C | 100 | |
| | | | BDW83D | 120 | |
| V_{CBO} | Collector- Emitter Voltage | $I_E = 0$ | BDW83 | 45 | V |
| | | | BDW83A | 60 | |
| | | | BDW83B | 80 | |
| | | | BDW83C | 100 | |
| | | | BDW83D | 120 | |
| V_{EBO} | Emitter-Base Voltage | $I_C = 0$ | 5 | V | |
| I_C | Collector Current | | 15 | A | |
| I_B | Base Current | | 0.5 | A | |
| P_t | Total Power Dissipation | 25°C case temperatur | 150 | W | |
| | | 25°C free aire temperatur | 3.5 | | |
| T_J | Junction Temperature | | -65 to +150 | °C | |
| T_{Stg} | Storage Temperature | | -65 to +150 | °C | |

THERMAL CHARACTERISTICS

| Symbol | Ratings | Value | Unit |
|------------|---|-------|------|
| R_{thJC} | Junction to Case Thermal Resistance | 0.83 | °C/W |
| R_{thJA} | Junction to Free Air Thermal Resistance | 35.7 | |

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ELECTRICAL CHARACTERISTICS

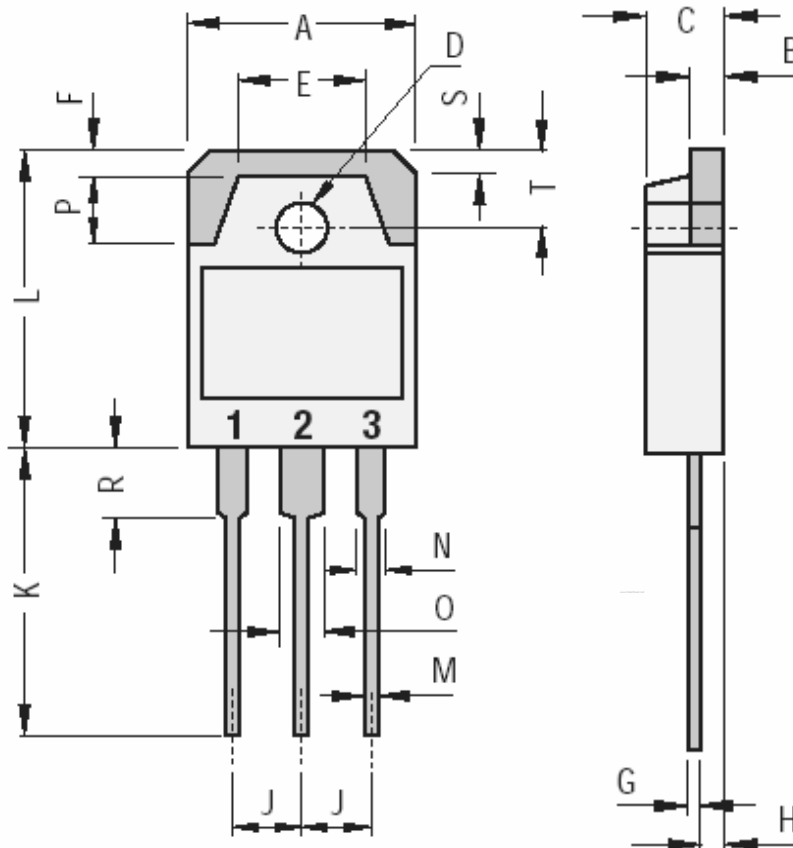
TC=25°C unless otherwise noted

| Symbol | Ratings | Test Condition(s) | Min | Typ | Max | Unit | |
|----------------|--|---|--|-----|-----|---------------|----|
| $V_{CEO(SUS)}$ | Collector-Emitter Sustaining Voltage (*) | $I_C=30\text{ mA}$ $I_B=0$ | BDW83 | 45 | - | - | V |
| | | | BDW83A | 60 | - | - | |
| | | | BDW83B | 80 | - | - | |
| | | | BDW83C | 100 | - | - | |
| | | | BDW83D | 120 | - | - | |
| I_{CEO} | Collector Cutoff Current | $I_B=0, V_{CE}=30\text{ V}$ | BDW83 | - | - | 1 | mA |
| | | | BDW83A | | | | |
| | | | BDW83B | | | | |
| | | | BDW83C | | | | |
| | | | BDW83D | | | | |
| I_{CBO} | Collector Cutoff Current | $I_E=0, V_{CB}=45\text{ V}$ | BDW83 | - | - | 0.5 | mA |
| | | | BDW83A | | | | |
| | | | BDW83B | | | | |
| | | | BDW83C | | | | |
| | | | BDW83D | | | | |
| | | $I_E=0, V_{CB}=60\text{ V}$ | BDW83 | - | - | 5 | |
| | | | BDW83A | | | | |
| | | | BDW83B | | | | |
| | | | BDW83C | | | | |
| | | | BDW83D | | | | |
| I_{EBO} | Emitter Cutoff Current | $V_{EB}=5.0\text{ V}, I_C=0$ | - | - | 2 | mA | |
| | | | $I_C=6\text{ A}, V_{CE}=3.0\text{ V}$ | 750 | - | 20 K | - |
| | | | $I_C=15\text{ A}, V_{CE}=3.0\text{ V}$ | 100 | - | - | - |
| | | | $I_C=6\text{ A}, I_B=12\text{ mA}$ | - | - | 2.5 | V |
| | | | $I_C=15\text{ A}, I_B=150\text{ mA}$ | - | - | 4 | |
| $V_{BE(on)}$ | Base-Emitter Voltage (*) | $I_C=6\text{ A}, I_B=3\text{ A}$ | - | - | 2.5 | | |
| V_{EC} | Parallel Diode Forward Voltage | $I_E=15\text{ A}, I_E=0$ | - | - | 3.5 | V | |
| t_{on} | Turn-on time | $I_C=10\text{ A}, I_{B1}=-I_{B2}=40\text{ mA}$ | - | 0.9 | - | μs | |
| t_{off} | Turn-off time | $R_L=3\Omega; V_{BE(off)}=-4.2\text{ V}$ Duty Cycle $\leq 2\%$ | - | 7 | - | | |

(*) Pulse Duration = 300 μs , Duty Cycle $\leq 2\%$

**NPN BDW83, BDW83A, BDW83B,
BDW83C, BDW83D,**

MECHANICAL DATA CASE TO3PN Non Isolated Plastic Package



| DIMENSIONS (mm) | | |
|-----------------|-------|-------|
| | Min. | Max. |
| A | 15.20 | 1600 |
| B | 1.90 | 2.10 |
| C | 4.60 | 5.00 |
| D | 3.10 | 3.30 |
| E | | 9.60 |
| F | | 2.00 |
| G | 0.35 | 0.55 |
| H | | 1.40 |
| J | 5.35 | 5.55 |
| K | 20.00 | |
| L | 19.60 | 20.20 |
| M | 0.95 | 1.25 |
| N | | 2.00 |
| O | | 3.00 |
| P | | 4.00 |
| R | | 4.00 |
| S | | 1.80 |
| T | 4.80 | 5.20 |

| | |
|---------|-----------|
| Pin 1 : | Base |
| Pin 2 : | Collector |
| Pin 3 : | Emitter |

The centre pin is in electrical contact with the mounting tab.

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