

## isc Silicon NPN Darlington Power Transistor

BDW43

## DESCRIPTION

- Collector-Emitter Sustaining Voltage-  
:  $V_{CE(SUS)} = 120V(\text{Min})$
- High DC Current Gain  
:  $h_{FE} = 1000(\text{Min}) @ I_C = 5A$
- Low Collector Saturation Voltage  
:  $V_{CE(sat)} = 2.0V(\text{Max.}) @ I_C = 5.0A$   
=  $3.0V(\text{Max.}) @ I_C = 10A$
- Complement to Type BDW48
- Minimum Lot-to-Lot variations for robust device performance and reliable operation

## APPLICATIONS

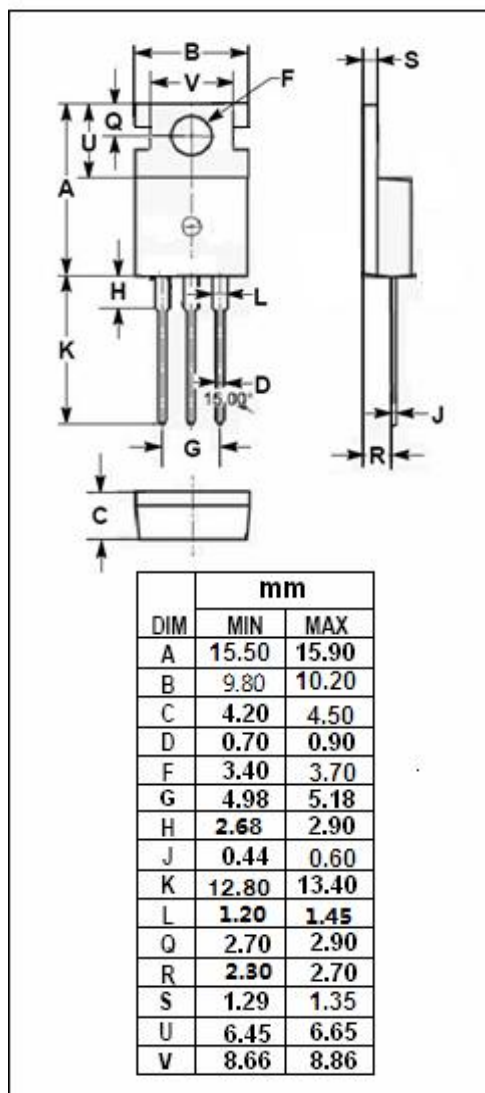
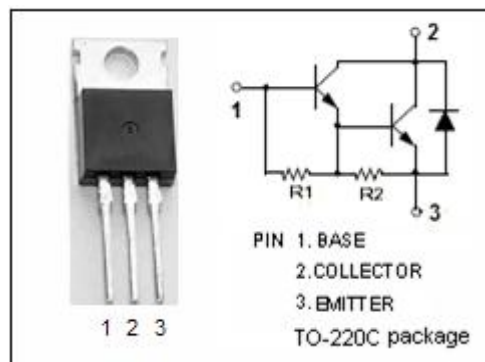
- Designed for general purpose and low speed switching applications

ABSOLUTE MAXIMUM RATINGS( $T_a = 25^\circ\text{C}$ )

| SYMBOL    | PARAMETER                                                 | VALUE   | UNIT             |
|-----------|-----------------------------------------------------------|---------|------------------|
| $V_{CBO}$ | Collector-Base Voltage                                    | 120     | V                |
| $V_{CEO}$ | Collector-Emitter Voltage                                 | 120     | V                |
| $V_{EBO}$ | Emitter-Base Voltage                                      | 5       | V                |
| $I_C$     | Collector Current-Continuous                              | 15      | A                |
| $I_B$     | Base Current-Continuous                                   | 0.5     | A                |
| $P_C$     | Collector Power Dissipation<br>@ $T_C = 25^\circ\text{C}$ | 85      | W                |
| $T_J$     | Junction Temperature                                      | 150     | $^\circ\text{C}$ |
| $T_{stg}$ | Storage Temperature Range                                 | -55~150 | $^\circ\text{C}$ |

## THERMAL CHARACTERISTICS

| SYMBOL       | PARAMETER                            | MAX  | UNIT               |
|--------------|--------------------------------------|------|--------------------|
| $R_{th j-c}$ | Thermal Resistance, Junction to Case | 1.47 | $^\circ\text{C/W}$ |



**isc Silicon NPN Darlington Power Transistor****BDW43****ELECTRICAL CHARACTERISTICS****T<sub>C</sub>=25°C unless otherwise specified**

| SYMBOL                 | PARAMETER                            | CONDITIONS                                                            | MIN  | TYP. | MAX | UNIT |
|------------------------|--------------------------------------|-----------------------------------------------------------------------|------|------|-----|------|
| V <sub>CE(sus)</sub>   | Collector-Emitter Sustaining Voltage | I <sub>C</sub> = 30mA; I <sub>B</sub> = 0                             | 120  |      |     | V    |
| V <sub>CE(sat)-1</sub> | Collector-Emitter Saturation Voltage | I <sub>C</sub> = 5A; I <sub>B</sub> = 10mA                            |      |      | 2.0 | V    |
| V <sub>CE(sat)-2</sub> | Collector-Emitter Saturation Voltage | I <sub>C</sub> = 10A; I <sub>B</sub> = 50mA                           |      |      | 3.0 | V    |
| V <sub>BE(on)</sub>    | Base-Emitter On Voltage              | I <sub>C</sub> = 10A; V <sub>CE</sub> = 4V                            |      |      | 3.0 | V    |
| I <sub>CBO</sub>       | Collector Cutoff Current             | V <sub>CB</sub> = 120V; I <sub>E</sub> = 0                            |      |      | 1.0 | mA   |
| I <sub>CEO</sub>       | Collector Cutoff Current             | V <sub>CE</sub> = 60V; I <sub>B</sub> = 0                             |      |      | 2.0 | mA   |
| I <sub>EBO</sub>       | Emitter Cutoff Current               | V <sub>EB</sub> = 5V; I <sub>C</sub> = 0                              |      |      | 2.0 | mA   |
| h <sub>FE-1</sub>      | DC Current Gain                      | I <sub>C</sub> = 5A; V <sub>CE</sub> = 4V                             | 1000 |      |     |      |
| h <sub>FE-2</sub>      | DC Current Gain                      | I <sub>C</sub> = 10A; V <sub>CE</sub> = 4V                            | 250  |      |     |      |
| f <sub>T</sub>         | Current-Gain—Bandwidth Product       | I <sub>C</sub> = 3A; V <sub>CE</sub> = 3V; f <sub>test</sub> = 1MHz   | 4    |      |     | MHz  |
| C <sub>OB</sub>        | Output Capacitance                   | I <sub>E</sub> = 0; V <sub>CB</sub> = 10V; f <sub>test</sub> = 0.1MHz |      |      | 200 | pF   |

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