

# SPTECH Silicon NPN Power Transistor

## BDW93/A/B/C

### DESCRIPTION

- Collector Current  $-I_C = 12A$
- Collector-Emitter Sustaining Voltage-  
:  $V_{CEO(SUS)} = 45V(\text{Min})$ - BDW93;  $60V(\text{Min})$ - BDW93A  
80V(Min)- BDW93B;  $100V(\text{Min})$ - BDW93C
- Complement to Type BDW94/A/B/C

### APPLICATIONS

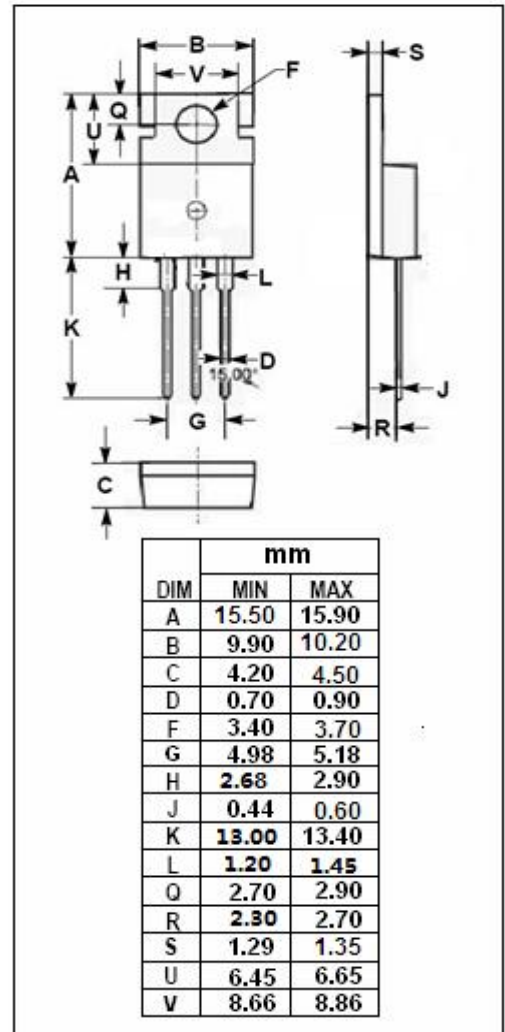
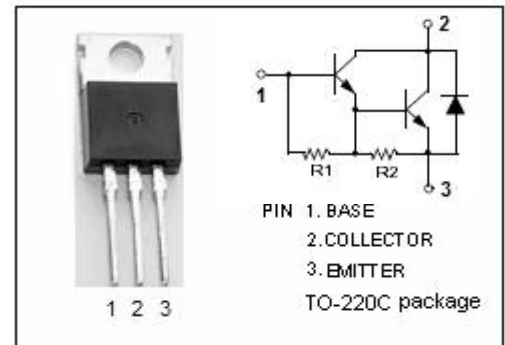
- Designed for hammer drivers, audio amplifier applications.

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

| SYMBOL    | PARAMETER                                               | VALUE   | UNIT             |
|-----------|---------------------------------------------------------|---------|------------------|
| $V_{CBO}$ | Collector-Base Voltage                                  | BDW93   | 45               |
|           |                                                         | BDW93A  | 60               |
|           |                                                         | BDW93B  | 80               |
|           |                                                         | BDW93C  | 100              |
| $V_{CEO}$ | Collector-Emitter Voltage                               | BDW93   | 45               |
|           |                                                         | BDW93A  | 60               |
|           |                                                         | BDW93B  | 80               |
|           |                                                         | BDW93C  | 100              |
| $V_{EBO}$ | Emitter-Base Voltage                                    | 5       | V                |
| $I_C$     | Collector Current-Continuous                            | 12      | A                |
| $I_{CM}$  | Collector Current-Peak                                  | 15      | A                |
| $I_B$     | Base Current                                            | 0.2     | A                |
| $P_C$     | Collector Power Dissipation<br>@ $T_C=25^\circ\text{C}$ | 80      | W                |
| $T_J$     | Junction Temperature                                    | 150     | $^\circ\text{C}$ |
| $T_{stg}$ | Storage Temperature Range                               | -65~150 | $^\circ\text{C}$ |

### THERMAL CHARACTERISTICS

| SYMBOL        | PARAMETER                            | MAX | UNIT                      |
|---------------|--------------------------------------|-----|---------------------------|
| $R_{th\ j-c}$ | Thermal Resistance, Junction to Case | 1.5 | $^\circ\text{C}/\text{W}$ |



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## BDW93/A/B/C

## ELECTRICAL CHARACTERISTICS

 $T_C=25^{\circ}\text{C}$  unless otherwise specified

| SYMBOL          | PARAMETER                            |        | CONDITIONS                         | MIN  | TYP. | MAX   | UNIT |
|-----------------|--------------------------------------|--------|------------------------------------|------|------|-------|------|
| $V_{CEQ(SUS)}$  | Collector-Emitter Sustaining Voltage | BDW93  | $I_C=50\text{mA}; I_B=0$           | 45   |      |       | V    |
|                 |                                      | BDW93A |                                    | 60   |      |       |      |
|                 |                                      | BDW93B |                                    | 80   |      |       |      |
|                 |                                      | BDW93C |                                    | 100  |      |       |      |
| $V_{CE(sat)-1}$ | Collector-Emitter Saturation Voltage |        | $I_C=5\text{A}; I_B=20\text{mA}$   |      |      | 2.0   | V    |
| $V_{CE(sat)-2}$ | Collector-Emitter Saturation Voltage |        | $I_C=10\text{A}; I_B=0.1\text{A}$  |      |      | 3.0   | V    |
| $V_{BE(sat)-1}$ | Base-Emitter Saturation Voltage      |        | $I_C=5\text{A}; I_B=20\text{mA}$   |      |      | 2.5   | V    |
| $V_{BE(sat)-1}$ | Base-Emitter Saturation Voltage      |        | $I_C=10\text{A}; I_B=0.1\text{A}$  |      |      | 4.0   | V    |
| $I_{CBO}$       | Collector Cutoff Current             | BDW93  | $V_{CB}=45\text{V}; I_E=0$         |      |      | 0.1   | mA   |
|                 |                                      | BDW93A | $V_{CB}=60\text{V}; I_E=0$         |      |      |       |      |
|                 |                                      | BDW93B | $V_{CB}=80\text{V}; I_E=0$         |      |      |       |      |
|                 |                                      | BDW93C | $V_{CB}=100\text{V}; I_E=0$        |      |      |       |      |
| $I_{CEO}$       | Collector Cutoff Current             | BDW93  | $V_{CE}=45\text{V}; I_B=0$         |      |      | 1.0   | mA   |
|                 |                                      | BDW93A | $V_{CE}=60\text{V}; I_B=0$         |      |      |       |      |
|                 |                                      | BDW93B | $V_{CE}=80\text{V}; I_B=0$         |      |      |       |      |
|                 |                                      | BDW93C | $V_{CE}=100\text{V}; I_B=0$        |      |      |       |      |
| $I_{EBO}$       | Emitter Cutoff Current               |        | $V_{EB}=5\text{V}; I_C=0$          |      |      | 2.0   | mA   |
| $h_{FE-1}$      | DC Current Gain                      |        | $I_C=3\text{A}; V_{CE}=3\text{V}$  | 1000 |      |       |      |
| $h_{FE-2}$      | DC Current Gain                      |        | $I_C=5\text{A}; V_{CE}=3\text{V}$  | 750  |      | 20000 |      |
| $h_{FE-3}$      | DC Current Gain                      |        | $I_C=10\text{A}; V_{CE}=3\text{V}$ | 100  |      |       |      |
| $V_{ECF-1}$     | C-E Diode Forward Voltage            |        | $I_F=5\text{A}$                    |      |      | 2.0   | V    |
| $V_{ECF-2}$     | C-E Diode Forward Voltage            |        | $I_F=10\text{A}$                   |      |      | 4.0   | V    |