

# isc Silicon NPN Darlington Power Transistor

# BDW73/A/B/C/D

## DESCRIPTION

- Collector Current  $-I_C = 8A$
- High DC Current Gain  $-h_{FE} = 750(\text{Min.}) @ I_C = 3A$
- Complement to Type BDW74/A/B/C/D

## APPLICATIONS

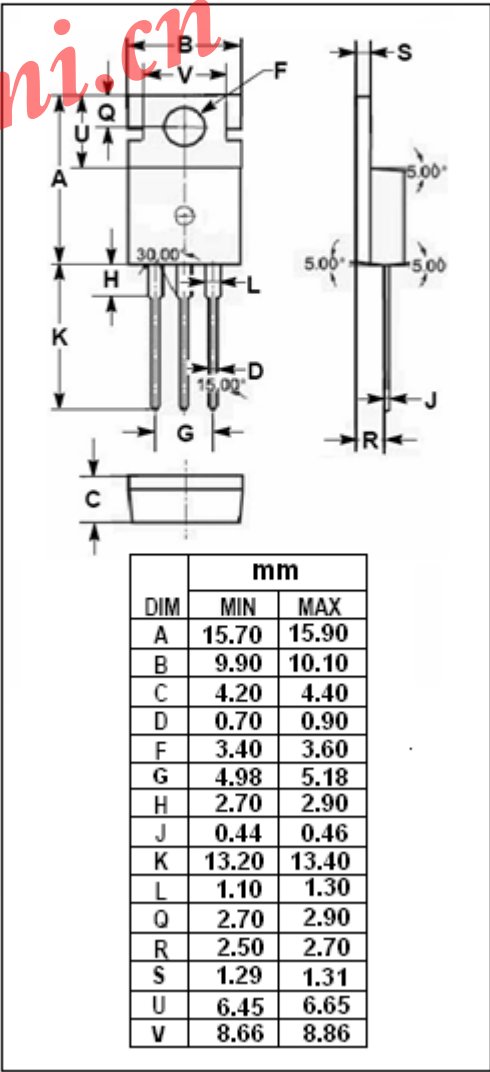
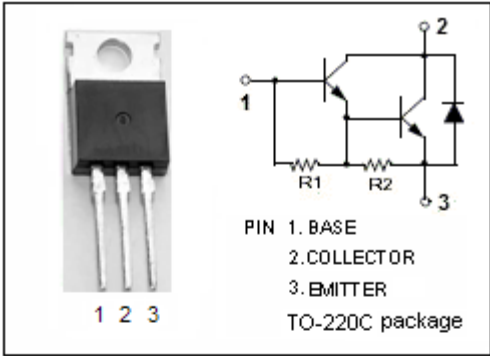
- Designed for audio output stages and general amplifier and switching applications

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

| SYMBOL    | PARAMETER                                              | VALUE   | UNIT             |
|-----------|--------------------------------------------------------|---------|------------------|
| $V_{CBO}$ | Collector-Base Voltage                                 | BDW73   | 45               |
|           |                                                        | BDW73A  | 60               |
|           |                                                        | BDW73B  | 80               |
|           |                                                        | BDW73C  | 100              |
|           |                                                        | BDW73D  | 120              |
| $V_{CEO}$ | Collector-Emitter Voltage                              | BDW73   | 45               |
|           |                                                        | BDW73A  | 60               |
|           |                                                        | BDW73B  | 80               |
|           |                                                        | BDW73C  | 100              |
|           |                                                        | BDW73D  | 120              |
| $V_{EBO}$ | Emitter-Base Voltage                                   | 5       | V                |
| $I_C$     | Collector Current-Continuous                           | 8       | A                |
| $I_B$     | Base Current-Continuous                                | 0.3     | A                |
| $P_C$     | Collector Power Dissipation @ $T_a = 25^\circ\text{C}$ | 2       | W                |
|           | Collector Power Dissipation @ $T_c = 25^\circ\text{C}$ | 80      |                  |
| $T_J$     | 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 | 1.56 | $^\circ\text{C/W}$ |
| $R_{th\ j-c}$ | Thermal Resistance, Junction to Case | 62.5 | $^\circ\text{C/W}$ |



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## BDW73/A/B/C/D

## ELECTRICAL CHARACTERISTICS

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

| SYMBOL          | PARAMETER                            |        | CONDITIONS                                                              | MIN | TYP. | MAX        | UNIT    |
|-----------------|--------------------------------------|--------|-------------------------------------------------------------------------|-----|------|------------|---------|
| $V_{(BR)CEO}$   | Collector-Emitter Breakdown Voltage  | BDW73  | $I_C= 30mA; I_B=0$                                                      | 45  |      |            | V       |
|                 |                                      | BDW73A |                                                                         | 60  |      |            |         |
|                 |                                      | BDW73B |                                                                         | 80  |      |            |         |
|                 |                                      | BDW73C |                                                                         | 100 |      |            |         |
|                 |                                      | BDW73D |                                                                         | 120 |      |            |         |
| $V_{CE(sat)-1}$ | Collector-Emitter Saturation Voltage |        | $I_C= 3A; I_B= 12mA$                                                    |     |      | 2.5        | V       |
| $V_{CE(sat)-2}$ | Collector-Emitter Saturation Voltage |        | $I_C= 8A; I_B= 80mA$                                                    |     |      | 4.0        | V       |
| $V_{BE(on)}$    | Base-Emitter On Voltage              |        | $I_C= 3A; V_{CE}= 3V$                                                   |     |      | 2.5        | V       |
| $V_{ECF}$       | C-E Diode Forward Voltage            |        | $I_F= 8A$                                                               |     |      | 3.5        | V       |
| $I_{CEO}$       | Collector Cutoff Current             | BDW73  | $V_{CE}= 30V; I_B= 0$                                                   |     |      | 0.5        | mA      |
|                 |                                      | BDW73A | $V_{CE}= 30V; I_B= 0$                                                   |     |      |            |         |
|                 |                                      | BDW73B | $V_{CE}= 40V; I_B= 0$                                                   |     |      |            |         |
|                 |                                      | BDW73C | $V_{CE}= 50V; I_B= 0$                                                   |     |      |            |         |
|                 |                                      | BDW73D | $V_{CE}= 60V; I_B= 0$                                                   |     |      |            |         |
| $I_{CBO}$       | Collector Cutoff Current             | BDW73  | $V_{CB}= 45V; I_E= 0$<br>$V_{CB}= 45V; I_E= 0; T_J= 150^{\circ}C$       |     |      | 0.2<br>5.0 | mA      |
|                 |                                      | BDW73A | $V_{CB}= 60V; I_E= 0$<br>$V_{CB}= 60V; I_E= 0; T_J= 150^{\circ}C$       |     |      | 0.2<br>5.0 |         |
|                 |                                      | BDW73B | $V_{CB}= 80V; I_E= 0$<br>$V_{CB}= 80V; I_E= 0; T_J= 150^{\circ}C$       |     |      | 0.2<br>5.0 |         |
|                 |                                      | BDW73C | $V_{CB}= 100V; I_E= 0$<br>$V_{CB}= 100V; I_E= 0; T_J= 150^{\circ}C$     |     |      | 0.2<br>5.0 |         |
|                 |                                      | BDW73D | $V_{CB}= 120V; I_E= 0$<br>$V_{CB}= 120V; I_E= 0; T_J= 150^{\circ}C$     |     |      | 0.2<br>5.0 |         |
| $I_{EBO}$       | Emitter Cutoff Current               |        | $V_{EB}= 5V; I_C= 0$                                                    |     |      | 2.0        | mA      |
| $h_{FE-1}$      | DC Current Gain                      |        | $I_C= 3A; V_{CE}= 3V$                                                   | 750 |      | 20000      |         |
| $h_{FE-2}$      | DC Current Gain                      |        | $I_C= 8A; V_{CE}= 3V$                                                   | 100 |      |            |         |
| Switching times |                                      |        |                                                                         |     |      |            |         |
| $t_{on}$        | Turn-on Time                         |        | $I_C= 3A; I_{B1}= -I_{B2}= 12mA;$<br>$V_{BE(off)}= -3.5V, R_L=10\Omega$ |     | 1.0  |            | $\mu s$ |
| $t_{off}$       | Turn-off Time                        |        |                                                                         |     | 5.0  |            | $\mu s$ |