

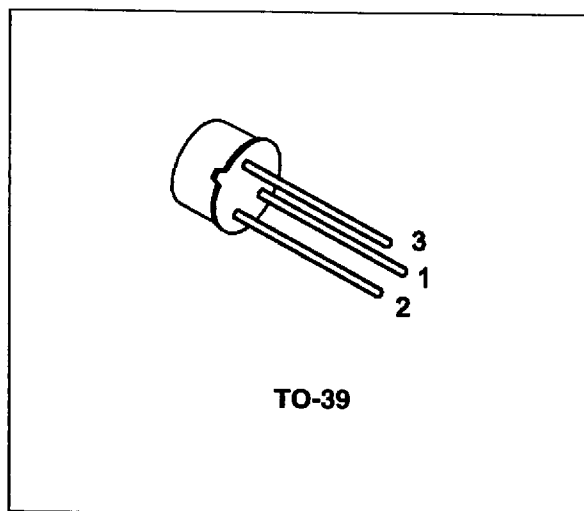
**COMPLEMENTARY SILICON POWER  
DARLINGTON TRANSISTORS**

■ **SGS-THOMSON PREFERRED SALESTYPES**

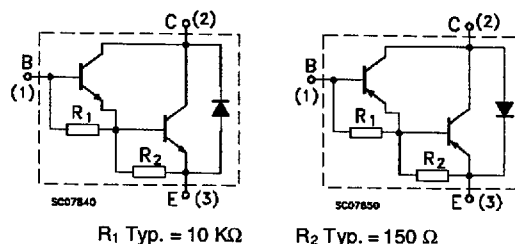
**DESCRIPTION**

The BDW91 is a silicon epitaxial-base NPN transistors in monolithic Darlington configuration mounted in Jedec TO-39 metal case, intended for use in linear and switching applications.

The complementary PNP types is BDW92.



**INTERNAL SCHEMATIC DIAGRAM**



**ABSOLUTE MAXIMUM RATINGS**

| Symbol    | Parameter  | Value |            | Unit             |
|-----------|--|-------|------------|------------------|
|           |  | NPN   | BDW91      |                  |
|           |  | PNP   | BDW92      |                  |
| $V_{CB0}$ | Collector-Base Voltage ( $I_E = 0$ )   |       | 180        | V                |
| $V_{CE0}$ | Collector-Emitter Voltage ( $I_B = 0$ )  |       | 180        | V                |
| $V_{EB0}$ | Emitter-Base Voltage ( $I_C = 0$ )   |       | 6          | V                |
| $I_C$     | Collector Current  |       | 4          | A                |
| $I_B$     | Base Current   |       | 100        | mA               |
| $P_{tot}$ | Total Dissipation at $T_{case} \leq 25\text{ }^\circ\text{C}$<br>$T_{amb} \leq 25\text{ }^\circ\text{C}$ |       | 10         | W                |
|           |  |       | 1          | W                |
| $T_{stg}$ | Storage Temperature  |       | -65 to 200 | $^\circ\text{C}$ |
| $T_j$     | Max. Operating Junction Temperature  |       | 200        | $^\circ\text{C}$ |

For PNP types voltage and current values are negative.

## BDW91/BDW92

### THERMAL DATA

|                |                                  |     |      |               |
|----------------|----------------------------------|-----|------|---------------|
| $R_{thj-case}$ | Thermal Resistance Junction-case | Max | 17.5 | $^{\circ}C/W$ |
| $R_{thj-amb}$  | Thermal Resistance Junction-amb  | Max | 175  | $^{\circ}C/W$ |

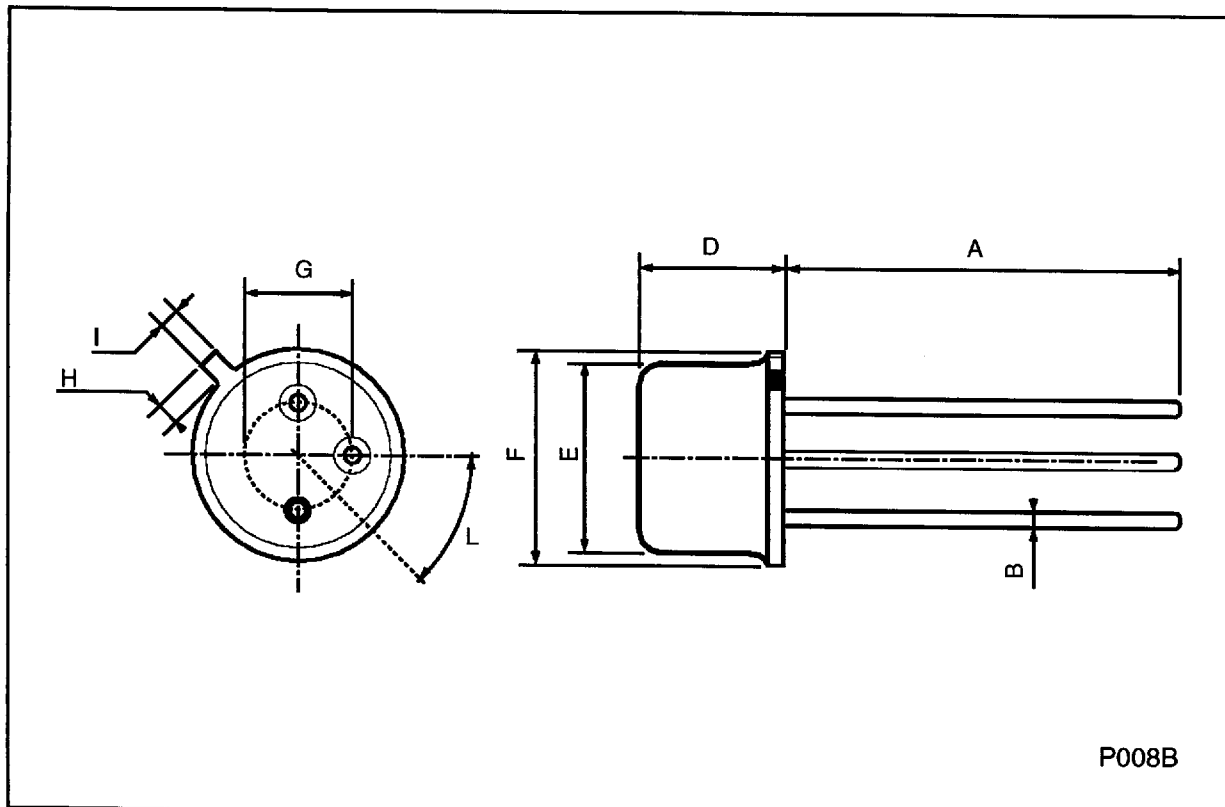
### ELECTRICAL CHARACTERISTICS ( $T_{case} = 25^{\circ}C$ unless otherwise specified)

| Symbol           | Parameter                               | Test Conditions  | Min.        | Typ.        | Max. | Unit    |
|------------------|---|--|-------------|-------------|------|---------|
| $I_{CBO}$        | Collector Cut-off Current ( $I_E = 0$ ) | $V_{CB} = 180 V$   |             |             | 50   | $\mu A$ |
| $I_{CEO}$        | Collector Cut-off Current ( $I_B = 0$ ) | $V_{CE} = 90 V$  |             |             | 50   | $\mu A$ |
| $I_{EBO}$        | Emitter Cut-off Current ( $I_C = 0$ )   | $V_{EB} = 6 V$   | 0.4         |             | 2    | mA      |
| $V_{CEO(sus)}^*$ | Collector-Emitter Sustaining Voltage    | $I_C = 50 mA$  | 180         |             |      | V       |
| $V_{CE(sat)}^*$  | Collector-Emitter Saturation Voltage    | $I_C = 2 A$ $I_B = 4 mA$                                   |             |             | 2    | V       |
| $V_{BE}^*$       | Base-Emitter Voltage                    | $I_C = 2 A$ $V_{CE} = 2 V$                                 |             |             | 2.5  | V       |
| $h_{FE}^*$       | DC Current Gain                         | $I_C = 2 A$ $V_{CE} = 5 V$<br>$I_C = 50 mA$ $V_{CE} = 5 V$ | 1000<br>150 | 3000<br>300 |      |         |
| $V_F^*$          | Parallel Diode Forward Voltage          | $I_F = 2 A$  |             |             | 2.5  | V       |
| $f_{re}$         | Small Signal Current Gain               | $I_C = 0.5 A$ $V_{CE} = .2 V$<br>$f = 1 MHz$               |             | 20          |      | MHz     |

\* Pulsed: Pulse duration = 300  $\mu s$ , duty cycle 1.5 %  
For PNP types voltage and current values are negative.

## TO39 MECHANICAL DATA

| DIM. | mm         |      |      | inch  |      |       |
|------|------------|------|------|-------|------|-------|
|      | MIN.       | TYP. | MAX. | MIN.  | TYP. | MAX.  |
| A    | 12.7       |      |      | 0.500 |      |       |
| B    |            |      | 0.49 |       |      | 0.019 |
| D    |            |      | 6.6  |       |      | 0.260 |
| E    |            |      | 8.5  |       |      | 0.334 |
| F    |            |      | 9.4  |       |      | 0.370 |
| G    | 5.08       |      |      | 0.200 |      |       |
| H    |            |      | 1.2  |       |      | 0.047 |
| I    |            |      | 0.9  |       |      | 0.035 |
| L    | 45° (typ.) |      |      |       |      |       |



P008B