

**isc Silicon PNP Darlington Power Transistor**

**BD650**

**DESCRIPTION**

- Collector-Emitter Breakdown Voltage-  
:  $V_{(BR)CEO} = -100V(\text{Min})$
- High DC Current Gain  
:  $h_{FE} = 750(\text{Min}) @ I_C = -3A$
- Low Saturation Voltage
- Complement to Type BD649

**APPLICATIONS**

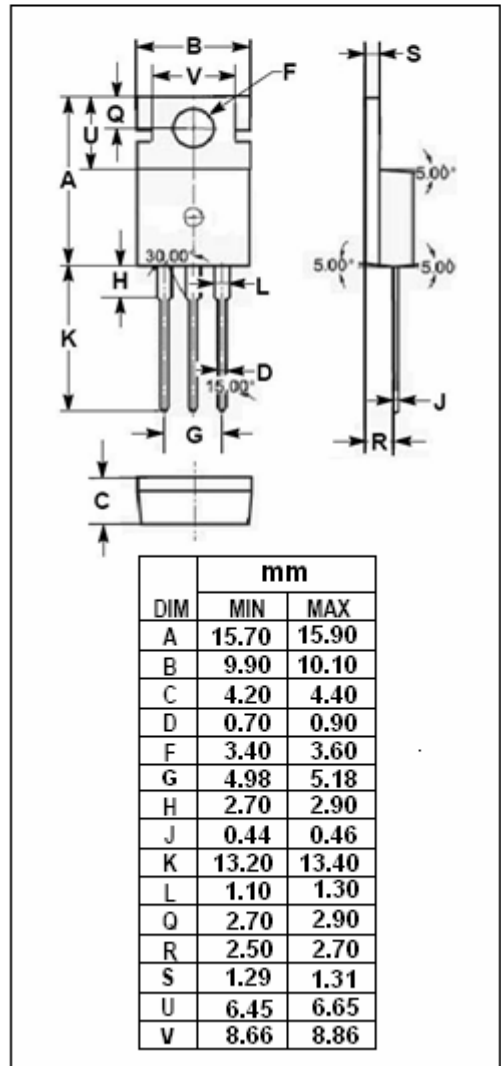
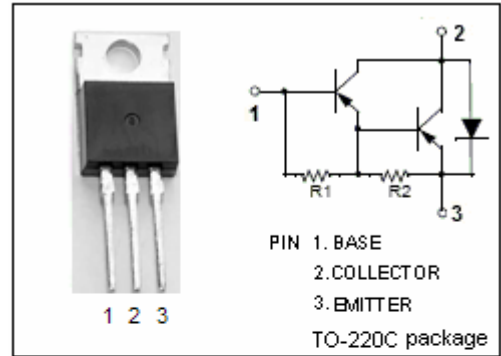
- Designed for use as complementary AF push-pull output stage applications

**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                            | -100    | V                |
| $V_{EBO}$ | Emitter-Base Voltage                                 | -5      | V                |
| $I_C$     | Collector Current-Continuous                         | -8      | A                |
| $I_{CP}$  | Collector Current-Peak                               | -12     | 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 @ $T_c=25^\circ\text{C}$ | 62.5    |                  |
| $T_J$     | 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    | 2    | $^\circ\text{C/W}$ |
| $R_{th\ j-a}$ | Thermal Resistance, Junction to Ambient | 62.5 | $^\circ\text{C/W}$ |



**isc Silicon PNP Darlington Power Transistor****BD650****ELECTRICAL CHARACTERISTICS** $T_C=25^{\circ}\text{C}$  unless otherwise specified

| SYMBOL          | PARAMETER                            | CONDITIONS   | MIN  | TYP. | MAX  | UNIT |
|-----------------|--------------------------------------|--|------|------|------|------|
| $V_{CE0(SUS)}$  | Collector-Emitter Breakdown Voltage  | $I_C = -30\text{mA}; I_B = 0$                              | -100 |      |      | V    |
| $V_{CE(sat)-1}$ | Collector-Emitter Saturation Voltage | $I_C = -3\text{A}; I_B = -12\text{mA}$                     |      |      | -2.0 | V    |
| $V_{CE(sat)-2}$ | Collector-Emitter Saturation Voltage | $I_C = -5\text{A}; I_B = -50\text{mA}$                     |      |      | -2.5 | V    |
| $V_{BE(sat)}$   | Base-Emitter Saturation Voltage      | $I_C = -5\text{A}; I_B = -50\text{mA}$                     |      |      | -3.0 | V    |
| $V_{BE(on)}$    | Base-Emitter On Voltage              | $I_C = -3\text{A}; V_{CE} = -3\text{V}$                    |      |      | -2.5 | V    |
| $I_{CBO}$       | Collector Cutoff Current             | $V_{CB} = -100\text{V}; I_E = 0$                           |      |      | -0.2 | mA   |
|                 |                                      | $V_{CB} = -60\text{V}; I_E = 0; T_C = 150^{\circ}\text{C}$ |      |      | -2.0 |      |
| $I_{CEO}$       | Collector Cutoff Current             | $V_{CE} = -50\text{V}; I_B = 0$                            |      |      | -0.5 | mA   |
| $I_{EBO}$       | Emitter Cutoff Current               | $V_{EB} = -5\text{V}; I_C = 0$                             |      |      | -5   | mA   |
| $h_{FE}$        | DC Current Gain                      | $I_C = -3\text{A}; V_{CE} = -3\text{V}$                    | 750  |      |      |      |