

isc Silicon NPN Darlington Power Transistor

BD649

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 BD650

APPLICATIONS

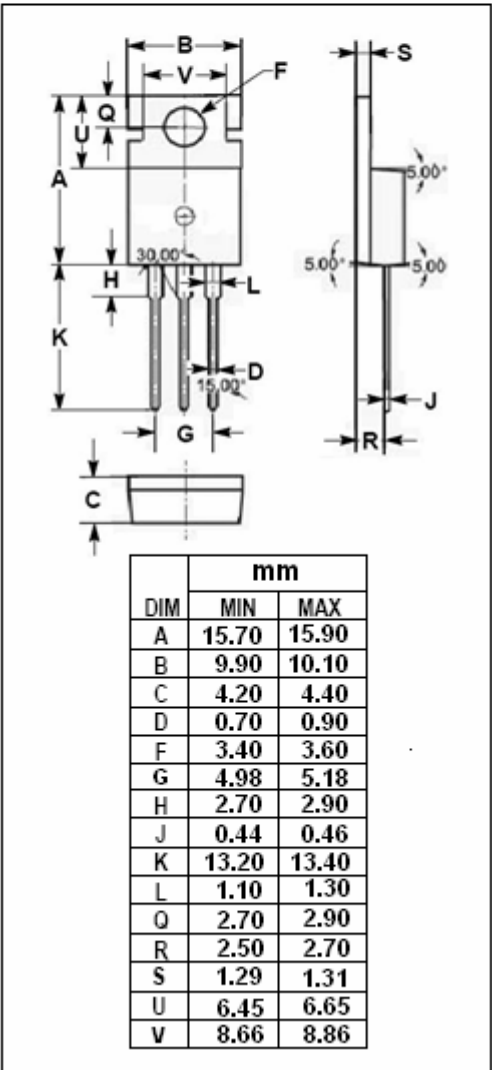
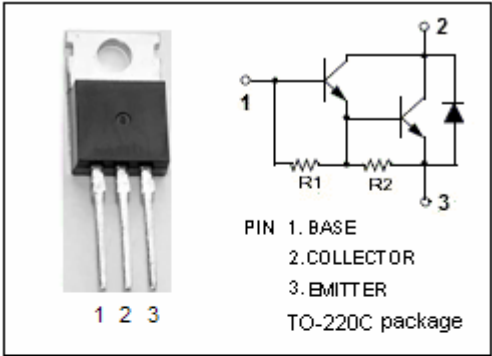
- Designed for use as complementary AF push-pull output stage applications

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<br>@ $T_a=25^{\circ}\text{C}$ | 2       | W                  |
|           | Collector Power Dissipation<br>@ $T_C=25^{\circ}\text{C}$ | 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 NPN Darlington Power Transistor****BD649****ELECTRICAL CHARACTERISTICS** $T_C=25^{\circ}\text{C}$  unless otherwise specified

| SYMBOL          | PARAMETER                            | CONDITIONS                                          | MIN | TYP. | MAX | UNIT |
|-----------------|--------------------------------------|-----------------------------------------------------|-----|------|-----|------|
| $V_{CEO(SUS)}$  | 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 |      |     |      |