

# isc Silicon PNP Darlington Power Transistor

## BDX86/A/B/C

### DESCRIPTION

- High DC Current Gain-  
:  $h_{FE} = 750(\text{Min}) @ I_C = -3A$
- Collector-Emitter Sustaining Voltage-  
:  $V_{CEO(\text{SUS})} = -45V(\text{Min})$ - BDX86;  $-60V(\text{Min})$ - BDX86A  
 $-80V(\text{Min})$ - BDX86B;  $-100V(\text{Min})$ - BDX86C
- Complement to Type BDX85/A/B/C
- Minimum Lot-to-Lot variations for robust device performance and reliable operation

### APPLICATIONS

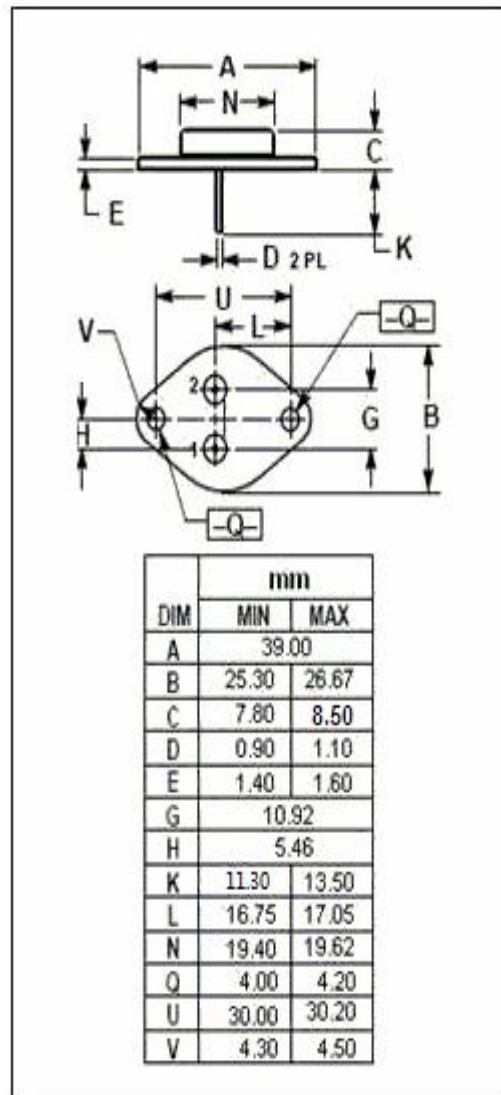
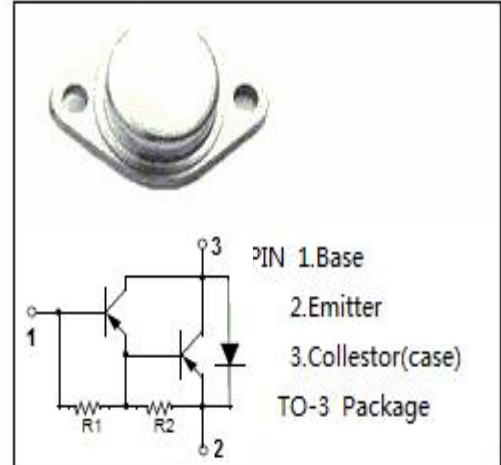
- Designed for use in power linear and switching applications.

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

| SYMBOL    | PARAMETER                                                 | VALUE   | UNIT             |
|-----------|-----------------------------------------------------------|---------|------------------|
| $V_{CBO}$ | Collector-Base Voltage                                    | BDX86   | -45              |
|           |                                                           | BDX86A  | -60              |
|           |                                                           | BDX86B  | -80              |
|           |                                                           | BDX86C  | -100             |
| $V_{CEO}$ | Collector-Emitter Voltage                                 | BDX86   | -45              |
|           |                                                           | BDX86A  | -60              |
|           |                                                           | BDX86B  | -80              |
|           |                                                           | BDX86C  | -100             |
| $V_{EBO}$ | Emitter-Base Voltage                                      | -5      | V                |
| $I_C$     | Collector Current-Continuous                              | -10     | A                |
| $I_{CM}$  | Collector Current-Peak                                    | -15     | A                |
| $I_B$     | Base Current                                              | -100    | mA               |
| $P_C$     | Collector Power Dissipation<br>@ $T_C = 25^\circ\text{C}$ | 100     | W                |
| $T_J$     | Junction Temperature                                      | 200     | $^\circ\text{C}$ |
| $T_{stg}$ | Storage Temperature Range                                 | -65~200 | $^\circ\text{C}$ |

### THERMAL CHARACTERISTICS

| SYMBOL        | PARAMETER                            | MAX  | UNIT               |
|---------------|--------------------------------------|------|--------------------|
| $R_{th\ j-c}$ | Thermal Resistance, Junction to Case | 1.75 | $^\circ\text{C/W}$ |



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## ELECTRICAL CHARACTERISTICS

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

| SYMBOL          | PARAMETER                            |        | CONDITIONS                                                                                    | MIN  | TYP. | MAX          | UNIT |
|-----------------|--------------------------------------|--------|-----------------------------------------------------------------------------------------------|------|------|--------------|------|
| $V_{CEO(SUS)}$  | Collector-Emitter Sustaining Voltage | BDX86  | $I_C = -50\text{mA}; I_B = 0$                                                                 | -45  |      |              | V    |
|                 |                                      | BDX86A |                                                                                               | -60  |      |              |      |
|                 |                                      | BDX86B |                                                                                               | -80  |      |              |      |
|                 |                                      | BDX86C |                                                                                               | -100 |      |              |      |
| $V_{CE(sat)-1}$ | Collector-Emitter Saturation Voltage |        | $I_C = -4\text{A}; I_B = -16\text{mA}$                                                        |      |      | -2.0         | V    |
| $V_{CE(sat)-2}$ | Collector-Emitter Saturation Voltage |        | $I_C = -8\text{A}; I_B = -40\text{mA}$                                                        |      |      | -4.0         | V    |
| $V_{BE(sat)}$   | Base-Emitter Saturation Voltage      |        | $I_C = -8\text{A}; I_B = -80\text{mA}$                                                        |      |      | -4.0         | V    |
| $V_{BE(on)}$    | Base-Emitter On Voltage              |        | $I_C = -4\text{A}; V_{CE} = -3\text{V}$                                                       |      |      | -2.8         | V    |
| $I_{CBO}$       | Collector Cutoff Current             | BDX86  | $V_{CB} = -45\text{V}; I_E = 0$<br>$V_{CB} = -45\text{V}; I_E = 0; T_C = 150^\circ\text{C}$   |      |      | -0.5<br>-5.0 | mA   |
|                 |                                      | BDX86A | $V_{CB} = -60\text{V}; I_E = 0$<br>$V_{CB} = -60\text{V}; I_E = 0; T_C = 150^\circ\text{C}$   |      |      | -0.5<br>-5.0 |      |
|                 |                                      | BDX86B | $V_{CB} = -80\text{V}; I_E = 0$<br>$V_{CB} = -80\text{V}; I_E = 0; T_C = 150^\circ\text{C}$   |      |      | -0.5<br>-5.0 |      |
|                 |                                      | BDX86C | $V_{CB} = -100\text{V}; I_E = 0$<br>$V_{CB} = -100\text{V}; I_E = 0; T_C = 150^\circ\text{C}$ |      |      | -0.5<br>-5.0 |      |
| $I_{CEO}$       | Collector Cutoff Current             | BDX86  | $V_{CE} = -22\text{V}; I_B = 0$                                                               |      |      | -1.0         | mA   |
|                 |                                      | BDX86A | $V_{CE} = -30\text{V}; I_B = 0$                                                               |      |      |              |      |
|                 |                                      | BDX86B | $V_{CE} = -40\text{V}; I_B = 0$                                                               |      |      |              |      |
|                 |                                      | BDX86C | $V_{CE} = -50\text{V}; I_B = 0$                                                               |      |      |              |      |
| $I_{EBO}$       | 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                      |        | $I_C = -4\text{A}; V_{CE} = -3\text{V}$                                                       | 750  |      | 18000        |      |
| $h_{FE-3}$      | DC Current Gain                      |        | $I_C = -8\text{A}; V_{CE} = -4\text{V}$                                                       | 200  |      |              |      |

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