

## BDX67 – A – B – C

### NPN SILICON DARLINGTON POWER TRANSISTOR

The BDX67, BDX67A, BDX67 and BDX67C are mounted in TO-3 metal package.  
High current power darlington designed for power amplification and switching applications.  
The complementary PNP are BDX66, BDX66A, BDX66B, BDX66C.  
Compliance to RoHS.

#### ABSOLUTE MAXIMUM RATINGS

| Symbol           | Ratings                   |                        |        | Value       | Unit       |
|------------------|---------------------------|------------------------|--------|-------------|------------|
| V <sub>CEO</sub> | Collector-Emitter Voltage |                        | BDX67  | 60          | V          |
|                  |                           |                        | BDX67A | 80          |            |
|                  |                           |                        | BDX67B | 100         |            |
|                  |                           |                        | BDX67C | 120         |            |
| V <sub>CBO</sub> | Collector-Base Voltage    |                        | BDX67  | 80          | V          |
|                  |                           |                        | BDX67A | 100         |            |
|                  |                           |                        | BDX67B | 120         |            |
|                  |                           |                        | BDX67C | 140         |            |
| V <sub>EBO</sub> | Emitter-Base Voltage      |                        | BDX67  | 5.0         | V          |
|                  |                           |                        | BDX67A |             |            |
|                  |                           |                        | BDX67B |             |            |
|                  |                           |                        | BDX67C |             |            |
| I <sub>C</sub>   | Collector Current         | I <sub>C(RMS)</sub>    | BDX67  | 16          | A          |
|                  |                           |                        | BDX67A |             |            |
|                  |                           |                        | BDX67B |             |            |
|                  |                           |                        | BDX67C |             |            |
|                  |                           | I <sub>CM</sub>        | BDX67  | 20          |            |
|                  |                           |                        | BDX67A |             |            |
|                  |                           |                        | BDX67B |             |            |
|                  |                           |                        | BDX67C |             |            |
| I <sub>B</sub>   | Base Current              |                        | BDX67  | 0.25        | A          |
|                  |                           |                        | BDX67A |             |            |
|                  |                           |                        | BDX67B |             |            |
|                  |                           |                        | BDX67C |             |            |
| P <sub>T</sub>   | Power Dissipation         | @ T <sub>C</sub> = 25° | BDX67  | 150         | Watts W/°C |
|                  |                           |                        | BDX67A |             |            |
|                  |                           |                        | BDX67B |             |            |
|                  |                           |                        | BDX67C |             |            |
| T <sub>J</sub>   | Junction Temperature      |                        |        | -55 to +200 | °C         |
| T <sub>S</sub>   | Storage Temperature       |                        |        |             |            |

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### THERMAL CHARACTERISTICS

| Symbol      | Ratings                              |        | Value | Unit |
|-------------|--------------------------------------|--------|-------|------|
| $R_{thJ-C}$ | Thermal Resistance, Junction to Case | BDX67  | 1.17  | °C/W |
|             |                                      | BDX67A |       |      |
|             |                                      | BDX67B |       |      |
|             |                                      | BDX67C |       |      |

### ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise noted

| Symbol         | Ratings                                 | Test Condition(s)                                    |        | Min | Typ | Max | Unit |
|----------------|-----------------------------------------|------------------------------------------------------|--------|-----|-----|-----|------|
| $V_{CEO(SUS)}$ | Collector-Emitter Breakdown Voltage (*) | $I_C=0.1\text{ A}$ ,<br>$L=25\text{mH}$              | BDX67  | 60  | -   | -   | V    |
|                |                                         |                                                      | BDX67A | 80  | -   | -   |      |
|                |                                         |                                                      | BDX67B | 100 | -   | -   |      |
|                |                                         |                                                      | BDX67C | 120 | -   | -   |      |
| $I_{CEO}$      | Collector Cutoff Current                | $V_{CE}=30\text{ V}$                                 | BDX67  | -   | -   | 3   | mA   |
|                |                                         | $V_{CE}=40\text{ V}$                                 | BDX67A | -   | -   |     |      |
|                |                                         | $V_{CE}=50\text{ V}$                                 | BDX67B | -   | -   |     |      |
|                |                                         | $V_{CE}=60\text{ V}$                                 | BDX67C | -   | -   |     |      |
| $I_{EBO}$      | Emitter Cutoff Current                  | $V_{BE}=5\text{ V}$                                  | BDX67  | -   | -   | 5.0 | mA   |
|                |                                         |                                                      | BDX67A |     |     |     |      |
|                |                                         |                                                      | BDX67B |     |     |     |      |
|                |                                         |                                                      | BDX67C |     |     |     |      |
| $I_{CBO}$      | Collector-Base Cutoff Current           | $T_{CASE}=25^\circ\text{C}$<br>$V_{CB}=60\text{ V}$  | BDX67  | -   | -   | 1   | mA   |
|                |                                         | $T_{CASE}=200^\circ\text{C}$<br>$V_{CB}=40\text{ V}$ |        | -   | -   | 5   |      |
|                |                                         | $T_{CASE}=25^\circ\text{C}$<br>$V_{CB}=80\text{ V}$  | BDX67A | -   | -   | 1   |      |
|                |                                         | $T_{CASE}=200^\circ\text{C}$<br>$V_{CB}=50\text{ V}$ |        | -   | -   | 5   |      |

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### ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise noted

| Symbol               | Ratings                                  | Test Condition(s)                                                                           |                                     | Min                                           | Typ                                 | Max | Unit |    |   |     |
|----------------------|------------------------------------------|---------------------------------------------------------------------------------------------|-------------------------------------|-----------------------------------------------|-------------------------------------|-----|------|----|---|-----|
| I <sub>CBO</sub>     | Collector-Base Cutoff Current            | T <sub>CASE</sub> =25℃<br>V <sub>CB</sub> =100 V                                            | BDX67B                              | -                                             | -                                   | 1   | mA   |    |   |     |
|                      |                                          | T <sub>CASE</sub> =200℃<br>V <sub>CB</sub> =60 V                                            |                                     | -                                             | -                                   | 5   |      |    |   |     |
|                      |                                          | T <sub>CASE</sub> =25℃<br>V <sub>CB</sub> =120 V                                            | BDX67C                              | -                                             | -                                   | 1   |      | 5  |   |     |
|                      |                                          | T <sub>CASE</sub> =200℃<br>V <sub>CB</sub> =70 V                                            |                                     | -                                             | -                                   |     |      |    |   |     |
| h <sub>FE</sub>      | Dc Current Gain                          | V <sub>CE</sub> =3 V, I <sub>C</sub> =1 A                                                   |                                     | -                                             | 5200                                | -   | -    |    |   |     |
|                      |                                          | V <sub>CE</sub> =3 V, I <sub>C</sub> =10 A                                                  |                                     | 1000                                          | -                                   | -   |      |    |   |     |
|                      |                                          | V <sub>CE</sub> =3 V, I <sub>C</sub> =16 A                                                  |                                     | -                                             | 4000                                | -   |      |    |   |     |
| V <sub>CE(SAT)</sub> | Collector-Emitter Saturation Voltage (*) | I <sub>C</sub> =10 A<br>I <sub>B</sub> =40 mA                                               | BDX67<br>BDX67A<br>BDX67B<br>BDX67C | -                                             | -                                   | 2   | V    |    |   |     |
| V <sub>BE</sub>      | Base-Emitter Voltage(1&2)                | V <sub>CE</sub> =3 V<br>I <sub>C</sub> =10 A                                                | BDX67<br>BDX67A<br>BDX67B<br>BDX67C | -                                             | -                                   | 2,5 | V    |    |   |     |
| V <sub>F</sub>       | Diode Forward Voltage                    | I <sub>F</sub> =10 A                                                                        | BDX67<br>BDX67A<br>BDX67B<br>BDX67C | -                                             | 2,5                                 | -   | V    |    |   |     |
| C <sub>c</sub>       | Collector Capacitance                    | I <sub>E</sub> =0 A<br>V <sub>CB</sub> =10V                                                 | BDX67<br>BDX67A<br>BDX67B<br>BDX67C | -                                             | 300                                 | -   | pF   |    |   |     |
| t <sub>on</sub>      | Switching Characteristics                | V <sub>CC</sub> =12V<br>I <sub>C</sub> =-10 A<br>I <sub>B1</sub> =- I <sub>B2</sub> =0.04 A | BDX67<br>BDX67A<br>BDX67B<br>BDX67C | -                                             | 1                                   | -   | μS   |    |   |     |
| t <sub>off</sub>     |                                          |                                                                                             | BDX67<br>BDX67A<br>BDX67B<br>BDX67C | -                                             | 3.5                                 | -   |      |    |   |     |
|                      |                                          |                                                                                             |                                     |                                               |                                     |     |      |    |   |     |
|                      |                                          |                                                                                             |                                     |                                               |                                     |     |      |    |   |     |
|                      |                                          |                                                                                             |                                     |                                               |                                     |     |      |    |   |     |
| f <sub>hfe</sub>     |                                          |                                                                                             | Small Signal Current Gain           | V <sub>CE</sub> =-3 V<br>I <sub>C</sub> =-5 A | BDX67<br>BDX67A<br>BDX67B<br>BDX67C | -   |      | 50 | - | kHz |

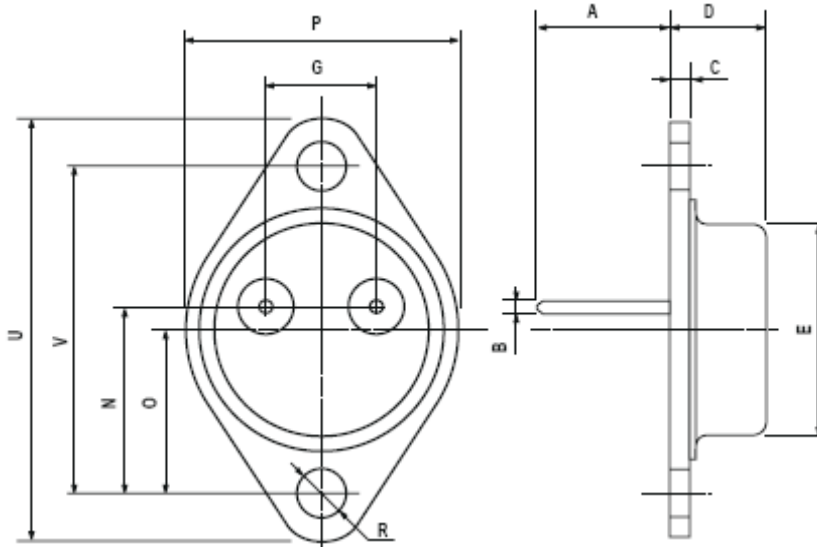
(\*) Pulse Width  $\approx 300 \mu s$ , Duty Cycle  $\angle 2.0\%$

(1) collector-Emitter voltage limited et  $V_{CECl} = V_{rated}$  by an auxiliary circuit

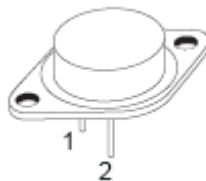
## BDX67 – A – B – C

### MECHANICAL DATA CASE TO-3

| DIMENSIONS (mm) |       |       |
|-----------------|-------|-------|
|                 | min   | max   |
| A               | 11    | 13.10 |
| B               | 0.97  | 1.15  |
| C               | 1.5   | 1.65  |
| D               | 8.32  | 8.92  |
| F               | 19    | 20    |
| G               | 10.70 | 11.1  |
| N               | 16.50 | 17.20 |
| P               | 25    | 26    |
| R               | 4     | 4.09  |
| U               | 38.50 | 39.30 |
| V               | 30    | 30.30 |



|         |           |
|---------|-----------|
| Pin 1 : | Base      |
| Pin 2 : | Emitter   |
| Case :  | Collector |



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