



NPN BDX54 – BDX54A – BDX54B – BDX54C

SILICON POWER DARLINGTON TRANSISTORS

The BDX54, BDX54A, BDX54B and BDX54C are silicon epitaxial-base PNP transistors in monolithic Darlington configuration and are mounted in Jedec TO-220 plastic package. They are intended for use in audio amplifiers, medium power linear and switching applications. The complementary NPN types are the BDX53, BDX53A, BDX53B and BDX53C respectively. Compliance to RoHS.

ABSOLUTE MAXIMUM RATINGS

| Symbol | Ratings | | Value | Unit | |
|-----------|---------------------------|--------------------|-------------|------------|---|
| V_{CEO} | Collector-Emitter Voltage | $I_B=0$ | BDX54 | -45 | V |
| | | | BDX54A | -60 | |
| | | | BDX54B | -80 | |
| | | | BDX54C | -100 | |
| V_{CBO} | Collector-Base Voltage | $I_E=0$ | BDX54 | -45 | V |
| | | | BDX54A | -60 | |
| | | | BDX54B | -80 | |
| | | | BDX54C | -100 | |
| V_{EBO} | Emitter-Base Voltage | $I_C=0$ | -5 | V | |
| I_C | Collector Current | $I_{C(RMS)}$ | -8 | A | |
| | | I_{CM} | -12 | | |
| I_B | Base Current | | -0.2 | A | |
| P_T | Power Dissipation | @ $T_C = 25^\circ$ | 60 | W | |
| T_J | Junction Temperature | | 150 | $^\circ C$ | |
| T_S | Storage Temperature | | -65 to +150 | | |

THERMAL CHARACTERISTICS

| Symbol | Ratings | Value | Unit |
|-------------|--------------------------------------|-------|--------------|
| R_{thJ-C} | Thermal Resistance, Junction to Case | 2.08 | $^\circ C/W$ |

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ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise noted

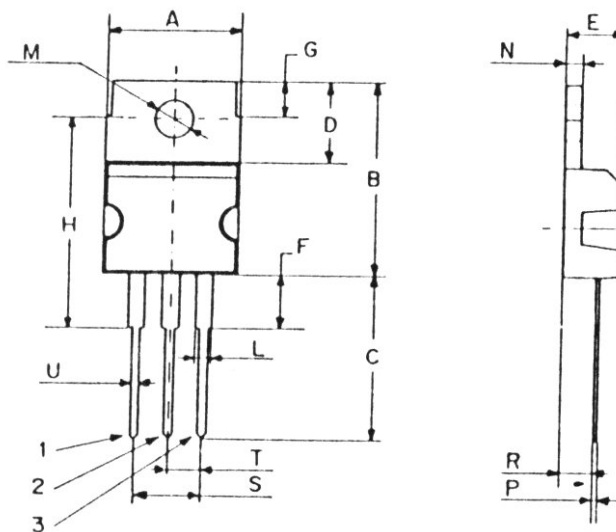
| Symbol | Ratings | Test Condition(s) | Min | Typ | Max | Unit | |
|---------------|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|--------|------|------|------|----|
| $V_{CE(SUS)}$ | Collector-Emitter Breakdown Voltage (*) | $I_C = -100 \text{ mA}$ $I_B = 0$ | BDX54 | -45 | - | - | V |
| | | | BDX54A | -60 | - | - | |
| | | | BDX54B | -80 | - | - | |
| | | | BDX54C | -100 | - | - | |
| I_{CEO} | Collector Cutoff Current | $V_{CB} = -22 \text{ V}, I_B = 0$ $V_{CB} = -30 \text{ V}, I_B = 0$ $V_{CB} = -40 \text{ V}, I_B = 0$ $V_{CB} = -50 \text{ V}, I_B = 0$ | BDX54 | - | - | -0.5 | mA |
| | | | BDX54A | - | - | | |
| | | | BDX54B | - | - | | |
| | | | BDX54C | - | - | | |
| I_{EBO} | Emitter Cutoff Current | $V_{BE} = -5 \text{ V}$ | BDX54 | - | - | -2 | mA |
| | | | BDX54A | | | | |
| | | | BDX54B | | | | |
| | | | BDX54C | | | | |
| I_{CBO} | Collector-Base Cutoff Current | $V_{CBO} = -45 \text{ V}, I_E = 0$ $V_{CBO} = -60 \text{ V}, I_E = 0$ $V_{CBO} = -80 \text{ V}, I_E = 0$ $V_{CBO} = -100 \text{ V}, I_E = 0$ | BDX54 | - | - | -0.2 | mA |
| | | | BDX54A | - | - | | |
| | | | BDX54B | - | - | | |
| | | | BDX54C | - | - | | |
| $V_{CE(SAT)}$ | Collector-Emitter saturation Voltage (*) | $I_C = -3 \text{ A}, I_B = -12 \text{ mA}$ | BDX54 | - | - | -2 | V |
| | | | BDX54A | | | | |
| | | | BDX54B | | | | |
| | | | BDX54C | | | | |
| $V_{BE(SAT)}$ | Base-Emitter saturation Voltage (*) | $I_C = -3 \text{ A}, I_B = -12 \text{ mA}$ | BDX54 | - | - | -2.5 | V |
| | | | BDX54A | | | | |
| | | | BDX54B | | | | |
| | | | BDX54C | | | | |
| V_F | Forward Voltage (pulse method) | $I_F = -3 \text{ A}$ | BDX54 | - | - | -4.0 | V |
| | | | BDX54A | | | | |
| | | | BDX54B | | | | |
| | | | BDX54C | | | | |
| | | $I_F = -8 \text{ A}$ | BDX54 | - | -1.8 | -2.5 | V |
| | | | BDX54A | - | -2.5 | - | |
| | | | BDX54B | - | -2.5 | - | |
| | | | BDX54C | - | -2.5 | - | |
| h_{FE} | DC Current Gain (*) | $V_{CE} = -3 \text{ V}, I_C = -3 \text{ A}$ | BDX54 | 750 | - | - | - |
| | | | BDX54A | | | | |
| | | | BDX54B | | | | |
| | | | BDX54C | | | | |

(*) Pulse Width $\approx 300 \mu\text{s}$, Duty Cycle $\angle 1.5\%$

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MECHANICAL DATA CASE TO-220

| DIMENSIONS (mm) | | |
|-----------------|-------|-------|
| | Min. | Max. |
| A | 9,90 | 10,30 |
| B | 15,65 | 15,90 |
| C | 13,20 | 13,40 |
| D | 6,45 | 6,65 |
| E | 4,30 | 4,50 |
| F | 2,70 | 3,15 |
| G | 2,60 | 3,00 |
| H | 15,75 | 17,15 |
| L | 1,15 | 1,40 |
| M | 3,50 | 3,70 |
| N | - | 1,37 |
| P | 0,46 | 0,55 |
| R | 2,50 | 2,70 |
| S | 4,98 | 5,08 |
| T | 2,49 | 2,54 |
| U | 0,70 | 0,90 |



| | |
|---------|-----------|
| Pin 1 : | Base |
| Pin 2 : | Collector |
| Pin 3 : | Emitter |
| Case : | Collector |

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