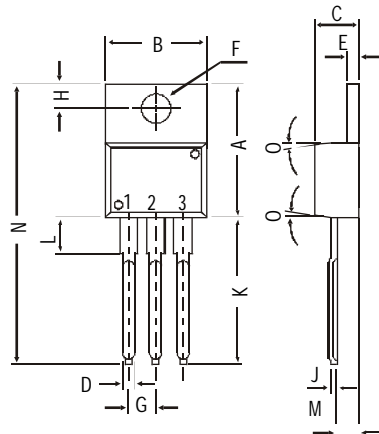
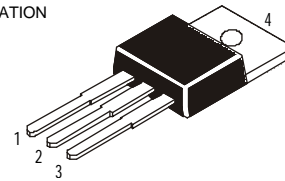


TO-220 Plastic Package

**BDX53, BDX53A, BDX53B, BDX53C
BDX54, BDX54A, BDX54B, BDX54C**

BDX53, 53A, 53B, 53C NPN PLASTIC POWER TRANSISTORS
BDX54, 54A, 54B, 54C PNP PLASTIC POWER TRANSISTORS
 Power **Darlington** for Linear and Switching Applications

PIN CONFIGURATION
 1. BASE
 2. COLLECTOR
 3. EMITTER
 4. COLLECTOR



| DIM | MIN. | MAX. |
|-----|-------|-------|
| A | 14.42 | 16.51 |
| B | 9.63 | 10.67 |
| C | 3.56 | 4.83 |
| D | | 0.90 |
| E | 1.15 | 1.40 |
| F | 3.75 | 3.88 |
| G | 2.29 | 2.79 |
| H | 2.54 | 3.43 |
| J | | 0.56 |
| K | 12.70 | 14.73 |
| L | 2.80 | 4.07 |
| M | 2.03 | 2.92 |
| N | | 31.24 |
| O | DEG 7 | |

All dimensions in mm.

ABSOLUTE MAXIMUM RATINGS

| | | 53 | 53A | 53B | 53C | |
|--------------------------------------------------------|-------------|-----------|------------|------------|------------|------------------|
| | | 54 | 54A | 54B | 54C | |
| Collector-base voltage (open emitter) | V_{CBO} | max. 45 | 60 | 80 | 100 | V |
| Collector-emitter voltage (open base) | V_{CEO} | max. 45 | 60 | 80 | 100 | V |
| Collector current | I_C | max. | | 8.0 | | A |
| Total power dissipation up to $T_C = 25^\circ\text{C}$ | P_{tot} | max. | | 60 | | W |
| Junction temperature | T_j | max. | | 150 | | $^\circ\text{C}$ |
| Collector-emitter saturation voltage | | | | | | |
| $I_C = 3\text{ A}; I_B = 12\text{ mA}$ | V_{CEsat} | max. | | 2.0 | | V |
| D.C. current gain | | | | | | |
| $I_C = 3\text{ A}; V_{CE} = 3\text{ V}$ | h_{FE} | min. | | 750 | | |

RATINGS (at $T_A=25^\circ\text{C}$ unless otherwise specified)

| | | 53 | 53A | 53B | 53C | |
|---------------------------------------|-----------|-----------|------------|------------|------------|---|
| | | 54 | 54A | 54B | 54C | |
| Limiting values | | | | | | |
| Collector-base voltage (open emitter) | V_{CBO} | max. 45 | 60 | 80 | 100 | V |
| Collector-emitter voltage (open base) | V_{CEO} | max. 45 | 60 | 80 | 100 | V |
| Emitter-base voltage (open collector) | V_{EBO} | max. | | 5.0 | | V |

**BDX53, BDX53A, BDX53B, BDX53C
BDX54, BDX54A, BDX54B, BDX54C**

| | | | | |
|-----------------------------------------------------|-----------|------|-------------|--------------------------|
| Collector current | I_C | max. | 8.0 | A |
| Collector current (Peak value) | I_{CM} | max. | 12 | A |
| Base current | I_B | max. | 0.2 | A |
| Total power dissipation upto $T_C=25^\circ\text{C}$ | P_{tot} | max. | 60 | W |
| Derate above 25°C | | max. | 0.48 | W°C |
| Junction temperature | T_j | max. | 150 | $^\circ\text{C}$ |
| Storage temperature | T_{stg} | | -65 to +150 | $^\circ\text{C}$ |

THERMAL RESISTANCE

| | | | | |
|--------------------------|-------------|--|------|--------------------|
| From junction to case | R_{thj-c} | | 2.08 | $^\circ\text{C/W}$ |
| From junction to ambient | R_{thj-a} | | 7.0 | $^\circ\text{C/W}$ |

CHARACTERISTICS

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

| | | 53 | 53A | 53B | 53C | |
|-------------------------------------------------------------|---------------------|-----------|------------|------------|------------|----|
| | | 54 | 54A | 54B | 54C | |
| Collector cutoff current | | | | | | |
| $I_B = 0; V_{CB} = 45\text{ V}$ | I_{CBO} | max. 0.2 | - | - | - | mA |
| $I_B = 0; V_{CB} = 60\text{ V}$ | I_{CBO} | max. - | 0.2 | - | - | mA |
| $I_B = 0; V_{CB} = 80\text{ V}$ | I_{CBO} | max. - | - | 0.2 | - | mA |
| $I_B = 0; V_{CB} = 100\text{ V}$ | I_{CBO} | max. - | - | - | 0.2 | mA |
| $I_B = 0; V_{CE} = 22\text{ V}$ | I_{CEO} | max. 0.5 | - | - | - | mA |
| $I_B = 0; V_{CE} = 30\text{ V}$ | I_{CEO} | max. - | 0.5 | - | - | mA |
| $I_B = 0; V_{CE} = 40\text{ V}$ | I_{CEO} | max. - | - | 0.5 | - | mA |
| $I_B = 0; V_{CE} = 50\text{ V}$ | I_{CEO} | max. - | - | - | 0.5 | mA |
| Emitter cut-off current | | | | | | |
| $I_C = 0; V_{EB} = 5\text{ V}$ | I_{EBO} | max. | 2.0 | | | mA |
| Breakdown voltages | | | | | | |
| $I_C = 100\text{ mA}; I_B = 0$ | $V_{CEO(sus)}^*$ | min. 45 | 60 | 80 | 100 | V |
| $I_C = 1\text{ mA}; I_E = 0$ | V_{CBO} | min. 45 | 60 | 80 | 100 | V |
| $I_E = 1\text{ mA}; I_C = 0$ | V_{EBO} | min. | 5.0 | | | V |
| Saturation voltages | | | | | | |
| $I_C = 3\text{ A}; I_B = 12\text{ mA}$ | V_{CEsat}^* | max. | 2.0 | | | V |
| | V_{BEsat}^* | max. | 2.5 | | | V |
| D.C. current gain | | | | | | |
| $I_C = 3\text{ A}; V_{CE} = 3\text{ V}$ | h_{FE}^* | min. | 750 | | | |
| Small signal current gain | | | | | | |
| $I_C = 3\text{ A}; V_{CE} = 4\text{ V}; f = 1.0\text{ MHz}$ | $ h_{fe} $ | min. | 4.0 | | | |
| Output capacitance $f = 1.0\text{ MHz}$ | | | | | | |
| $I_E = 0; V_{CB} = 10\text{ V}$ | NPN C_o | max. | 300 | | | pF |
| | PNP C_o | max. | 200 | | | pF |
| Parallel-diode forward voltage | | | | | | |
| $I_F = 3\text{ A}$ | V_F | max. | 2.5 | | | V |
| $I_F = 8\text{ A}$ | V_F | typ. | 2.5 | | | V |

* Pulse test: pulse width $\leq 300\ \mu\text{s}$; duty cycle $\leq 2\%$

Notes

Disclaimer

The product information and the selection guides facilitate selection of the CDIL's Discrete Semiconductor Device(s) best suited for application in your product(s) as per your requirement. It is recommended that you completely review our Data Sheet(s) so as to confirm that the Device(s) meet functionality parameters for your application. The information furnished on the CDIL Web Site/ CD is believed to be accurate and reliable. CDIL however, does not assume responsibility for inaccuracies or incomplete information. Furthermore, CDIL does not assume liability whatsoever, arising out of the application or use of any CDIL product; neither does it convey any license under its patent rights nor rights of others. These products are not designed for use in life saving/support appliances or systems. CDIL customers selling these products (either as individual Discrete Semiconductor Devices or incorporated in their end products), in any life saving/support appliances or systems or applications do so at their own risk and CDIL will not be responsible for any damages resulting from such sale(s).

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