

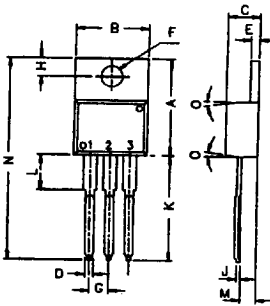
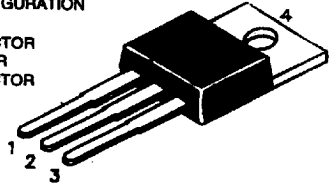
BD201, BD203, BDX77 NPN PLASTIC POWER TRANSISTORS

Complementary BD202, BD204 and BDX78

Medium Power Switching and Amplifier Applications

PIN CONFIGURATION

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



ALL DIMENSIONS ARE IN M.M.

| 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 | - | 0,58 |
| K | 12,70 | 14,73 |
| L | - | 6,35 |
| M | 2,03 | 2,92 |
| N | - | 31,24 |
| O | 7 | DEG |

ABSOLUTE MAXIMUM RATINGS

| | | 201 | 203 | BDX77 | |
|---|-------------|---------|-----|-------|------------------|
| Collector-base voltage (open emitter) | V_{CBO} | max. 60 | 60 | 100 | V |
| Collector-emitter voltage (open base) | V_{CEO} | max. 45 | 60 | 80 | V |
| Collector current (DC) | I_C | max. | 8.0 | | A |
| Total power dissipation up to $T_{mb} = 25^\circ\text{C}$ | P_{tot} | max. | 60 | | W |
| Junction temperature | T_j | max. | 150 | | $^\circ\text{C}$ |
| Collector-emitter saturation voltage | V_{CEsat} | max. | 1.0 | | V |
| $I_C = 3 \text{ A}; I_B = 0.3 \text{ A}$ | | | | | |
| D.C. current gain | h_{FE} | min. | - | - | 30 |
| $I_C = 1 \text{ A}; V_{CE} = 2 \text{ V}$ | | | | | |
| $I_C = 2 \text{ A}; V_{CE} = 2 \text{ V}$ | | | | | |
| $I_C = 3 \text{ A}; V_{CE} = 2 \text{ V}$ | | | | | |

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

| Limiting values | | 201 | 203 | BDX77 | |
|---------------------------------------|-----------|---------|-----|-------|---|
| Collector-base voltage (open emitter) | V_{CBO} | max. 60 | 60 | 100 | V |
| Collector-emitter voltage (open base) | V_{CEO} | max. 45 | 60 | 80 | V |
| Emitter-base voltage (open collector) | V_{EBO} | max. | 5.0 | | V |
| Collector current (DC) | I_C | max. | 8.0 | | A |

| | | | | |
|---|-----------|------|-------------|------------------|
| Collector current (peak $t_p = 10$ ms) | I_{CM} | max. | 12 | A |
| Collector current (non-repetitive peak $t_p = 2$ ms) | I_{CSM} | max. | 25 | A |
| Base current | I_B | max. | 3.0 | A |
| Total power dissipation up to $T_{mb} = 25^\circ\text{C}$ | P_{tot} | max. | 60 | W |
| Junction temperature | T_j | max. | 150 | $^\circ\text{C}$ |
| Storage temperature | T_{stg} | | -65 to +150 | $^\circ\text{C}$ |

THERMAL RESISTANCE

| | | | | |
|--------------------------|---------------|--|----|-----|
| From junction to ambient | $R_{th\ j-a}$ | | 70 | K/W |
|--------------------------|---------------|--|----|-----|

CHARACTERISTICS

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

| | | | 201 | 203 | BDX77 | |
|--|----------------|------|-----|-----|-------|-----|
| Collector cutoff current | | | | | | |
| $I_B = 0; V_{CE} = 30$ V | I_{CEO} | max. | | 0.2 | | mA |
| $I_B = 0; V_{CB} = 40$ V; $T_j = 150^\circ\text{C}$ | I_{CBO} | max. | | 1.0 | | mA |
| Emitter cut-off current | | | | | | |
| $I_C = 0; V_{EB} = 5$ V | I_{EBO} | max. | | 0.5 | | mA |
| Breakdown voltages | | | | | | |
| $I_C = 0.2$ A; $I_B = 0$ | V_{CEO} | min. | 45 | 60 | 80 | V |
| $I_C = 1$ mA; $I_E = 0$ | V_{CBO} | min. | 60 | 60 | 100 | V |
| $I_E = 1$ mA; $I_C = 0$ | V_{EBO} | min. | | 5.0 | | V |
| Saturation voltages | | | | | | |
| $I_C = 3$ A; $I_B = 0.3$ A | V_{CEsat}^* | max. | | 1.0 | | V |
| $I_C = 6$ A; $I_B = 0.6$ A | V_{CEsat}^* | max. | | 1.5 | | V |
| | V_{BEsat}^* | max. | | 2.0 | | V |
| Base-emitter on voltage | | | | | | |
| $I_C = 3$ A; $V_{CE} = 2$ V | $V_{BE(on)}^*$ | max. | | 1.5 | | V |
| D.C. current gain | | | | | | |
| $I_C = 1$ A; $V_{CE} = 2$ V | h_{FE}^* | min. | - | - | 30 | |
| $I_C = 2$ A; $V_{CE} = 2$ V | h_{FE}^* | min. | - | 30 | - | |
| $I_C = 3$ A; $V_{CE} = 2$ V | h_{FE}^* | min. | 30 | - | - | |
| Common emitter small | | | | | | |
| $I_C = 0.3$ A; $V_{CE} = 3$ V | f_{hfe} | min. | | 25 | | KHz |
| Transition frequency | | | | | | |
| $I_C = 0.3$ A; $V_{CE} = 3$ V; $f = 1$ MHz | f_T | min. | | 7.0 | | MHz |
| Second breakdown collector current with base forward biased (non-repetitive) | | | | | | |
| $V_{CE} = 40$ V; $t_p = 0.1$ s | $I_{S/b}$ | min. | | 1.5 | | A |

Switching time

$I_{Con} = 2$ A; $I_{Bon} = -I_{Boff} = 0.2$ A

| | | | | |
|---------------|-----------|------|-----|---------------|
| Turn on time | t_{on} | max. | 1.0 | μs |
| Turn off time | t_{off} | max. | 4.0 | μs |

* Pulse test: $t_p \leq 300$ μs ; duty cycle $\leq 2\%$