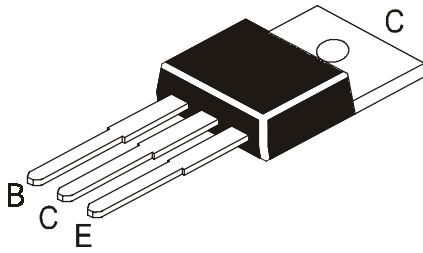


NPN/PNP PLASTIC POWER TRANSISTORS

**BDX33, 33A, 33B, 33C, 33D
BDX34, 34A, 34B, 34C, 34D**



**TO-220
Plastic Package**

Power Darlington for Linear Switching Application

ABSOLUTE MAXIMUM RATINGS

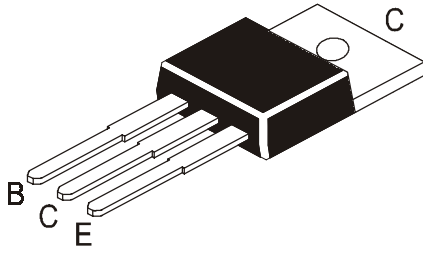
| DESCRIPTION | SYMBOL | BDX33 BDX34 | BDX33A BDX34A | BDX33B BDX34B | BDX33C BDX34C | BDX33D BDX34D | UNIT |
|--|----------------|----------------|------------------|------------------|------------------|------------------|---------------------|
| Collector -Emitter Voltage | V_{CEO} | 45 | 60 | 80 | 100 | 120 | V |
| Collector -Base Voltage | V_{CBO} | 45 | 60 | 80 | 100 | 120 | V |
| Emitter -Base Voltage | V_{EBO} | | | 5.0 | | | V |
| Collector Current - Continuous | I_C | | | 10 | | | A |
| Peak | I_{CM} | | | 15 | | | A |
| Base Current | I_B | | | 0.25 | | | A |
| Device Dissipation @ $T_c=25^\circ\text{C}$ | P_D | | | 70 | | | W |
| Derate Above 25°C | | | | 0.56 | | | W/ $^\circ\text{C}$ |
| Operating And Storage Junction | T_j, T_{stg} | | | -65 to +150 | | | $^\circ\text{C}$ |
| Temperature Range | | | | | | | |
| THERMAL RESISTANCE | | | | | | | |
| Junction to Case | $R_{th(j-c)}$ | | | 1.78 | | | $^\circ\text{C/W}$ |

ELECTRICAL CHARACTERISTICS ($T_c=25^\circ\text{C}$ Unless Otherwise Specified)

| DESCRIPTION | SYMBOL | TEST CONDITION | BDX33 BDX34 | BDX33A BDX34A | BDX33B BDX34B | BDX33C BDX34C | BDX33D BDX34D | UNIT |
|---------------------------|------------------|---|----------------|------------------|------------------|------------------|------------------|------|
| Breakdown (sus) Voltage | $V_{CEO(sus)}^*$ | $I_C=100\text{mA}, I_B=0$ | >45 | >60 | >80 | >100 | >120 | V |
| | $V_{CER(sus)}^*$ | $I_C=100\text{mA}, R_{BE}=100\ \Omega$ | >45 | >60 | >80 | >100 | >120 | V |
| | $V_{CEX(sus)}^*$ | $I_C=100\text{mA}, V_{BE}=1.5\text{V}$ | >45 | >60 | >80 | >100 | >120 | V |
| Collector-Cut off Current | I_{CEO} | $V_{CE}=1/2\text{rated}$ $V_{CEO}, I_B=0$ | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | mA |
| | | $T_c=100^\circ\text{C}$ $V_{CE}=1/2\text{rated}$ $V_{CEO}, I_B=0$ | <10 | <10 | <10 | <10 | <10 | mA |
| | I_{CBO} | $I_E=0, V_{CB}=\text{Rated}$ $V_{CBO}, T_c=100^\circ\text{C}$ $I_E=0, V_{CB}=\text{Rated}$ V_{CBO} | <1 | <1 | <1 | <1 | <1 | mA |
| | | | <5 | <5 | <5 | <5 | <5 | mA |

NPN/PNP PLASTIC POWER TRANSISTORS

**BDX33, 33A, 33B, 33C, 33D
BDX34, 34A, 34B, 34C, 34D**



**TO-220
Plastic Package**

ELECTRICAL CHARACTERISTICS (Tc=25°C Unless Otherwise Specified)

| DESCRIPTION | SYMBOL | TEST CONDITION | BDX33 | BDX33A | BDX33B | BDX33C | BDX33D | UNIT |
|---|-----------------|-------------------------------|-------|--------|--------|--------|--------|------|
| | | | BDX34 | BDX34A | BDX34B | BDX34C | BDX34D | |
| Emitter-Cut off Current | I_{EBO} | $V_{EB}=5V, I_C=0$ | <10 | <10 | <10 | <10 | <10 | mA |
| Collector Emitter Saturation Voltage | $V_{CE(Sat)}^*$ | $I_C=4A, I_B=8mA$ | <2.5 | <2.5 | | | | V |
| Base Emitter on Voltage | $V_{BE(on)}^*$ | $I_C=3A, I_B=6mA$ | | | <2.5 | <2.5 | <2.5 | V |
| DC Current Gain | h_{FE}^* | $I_C=4A, V_{CE}=3V$ | <2.5V | <2.5 | | | | V |
| | | $I_C=3A, V_{CE}=3V$ | | | <2.5 | <2.5 | <2.5 | V |
| Diode Forward Voltage | V_F | $I_C=4A, V_{CE}=3V$ | >750 | >750 | - | - | - | |
| | | $I_C=3A, V_{CE}=3V$ | | | >750 | >750 | >750 | |
| SECOND BREAKDOWN | | $I_C=8A$ ALL | | | <4 | | | V |
| Secondbreakdown Collector Current With Base Forward Biased (non-repetitive) | $I_{S/b}^{**}$ | $V_{CE}=25V,$ BDX33 Series | | | >2.8 | | | A |
| | | $V_{CE}=20V,$ BDX34 Series | | | >3.5 | | | A |
| | | $V_{CE}=36V,$ BDX33 Series | | | >1.0 | | | A |
| | | $V_{CE}=33V,$ BDX34 Series | — | | >1.0 | | | A |

ELECTRICAL CHARACTERISTICS (Tc=25°C Unless Otherwise Specified)

| DESCRIPTION | SYMBOL | TEST CONDITION | VALUE | | UNIT |
|--------------------------------|------------|--------------------------------------|--------------|------|------|
| | | | min | max | |
| DYNAMIC CHARACTERISTICS | | | | | |
| Small- Signal Current Gain | $ h_{fe} $ | $I_C=1A, V_{CE}=5V,$ $f=1MHz$ | | 1000 | |
| Output Capacitance | C_{ob} | $V_{CB}=10V, I_E=0,$ $f=1MHz$ | | | |
| | | | BDX33 series | | 200 |
| | | BDX34 series | | 300 | |
| Transition Frequency | f_T | $V_{CE}=5V, I_C=1A,$ $f=1MHz$ ALL | | 3.0 | MHZ |

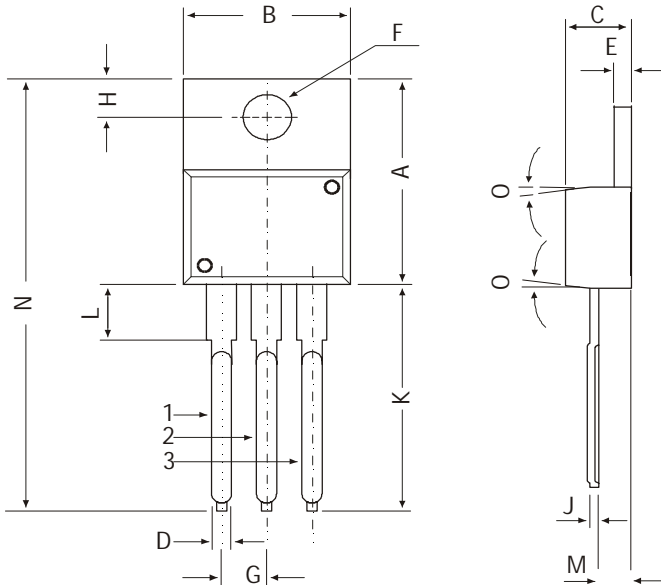
*Pulse Test:- Pulse Width<300μs, Duty Cycle=<2%

**Pulse Test non- repetitive : Pulse Width=0.25s

**BDX33, 33A, 33B, 33C, 33D
BDX34, 34A, 34B, 34C, 34D**

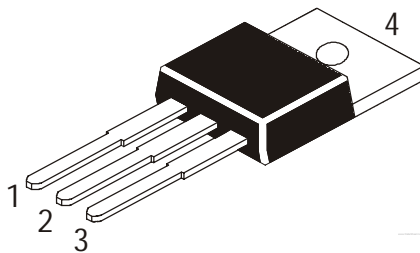
**TO-220
Plastic Package**

TO-220 Plastic Package



| 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 | 7 DEG | |

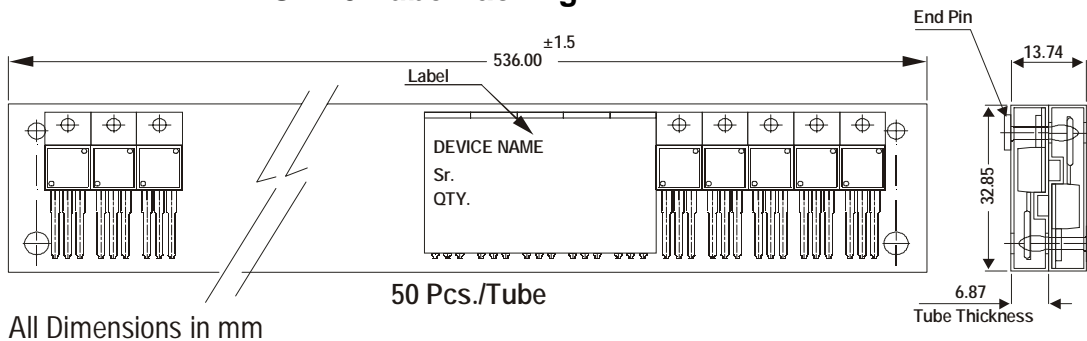
All dimensions in mm.



Pin Configuration

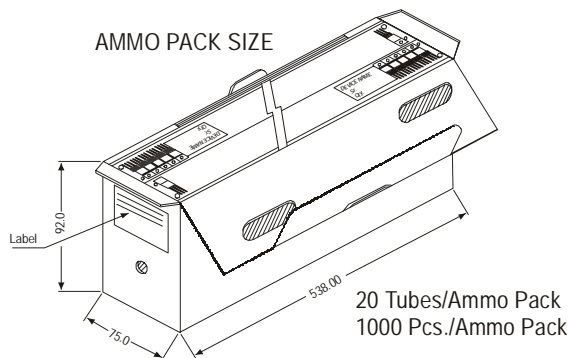
1. Base
2. Collector
3. Emitter
4. Collector

TO-220 Tube Packing



All Dimensions in mm

AMMO PACK SIZE



Packing Detail

| PACKAGE | STANDARD PACK | | INNER CARTON BOX | | OUTER CARTON BOX | | |
|-------------|-----------------|----------------|---------------------|------|-------------------|-------|--------|
| | Details | Net Weight/Qty | Size | Qty | Size | Qty | Gr Wt |
| TO-220 / FP | 200 pcs/polybag | 396 gm/200 pcs | 3" x 7.5" x 7.5" | 1.0K | 17" x 15" x 13.5" | 16.0K | 36 kgs |
| | 50 pcs/tube | 120 gm/50 pcs | 3.5" x 3.7" x 21.5" | 1.0K | 19" x 19" x 19" | 10.0K | 29 kgs |