

# BD243B, BD243C (NPN), BD244B, BD244C (PNP)

## Complementary Silicon Plastic Power Transistors

These devices are designed for use in general purpose amplifier and switching applications.

### Features

- High Current Gain Bandwidth Product
- These Devices are Pb-Free and are RoHS Compliant\*

### MAXIMUM RATINGS

| Rating  | Symbol         | Value       | Unit                     |
|---|----------------|-------------|--------------------------|
| Collector-Emitter Voltage<br>BD243B, BD244B<br>BD243C, BD244C                             | $V_{CEO}$      | 80<br>100   | Vdc                      |
| Collector-Base Voltage<br>BD243B, BD244B<br>BD243C, BD244C                                | $V_{CB}$       | 80<br>100   | Vdc                      |
| Emitter-Base Voltage  | $V_{EB}$       | 5.0         | Vdc                      |
| Collector Current – Continuous  | $I_C$          | 6           | Adc                      |
| Collector Current – Peak  | $I_{CM}$       | 10          | Adc                      |
| Base Current  | $I_B$          | 2.0         | Adc                      |
| Total Device Dissipation<br>@ $T_C = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$ | $P_D$          | 65<br>0.52  | W<br>W/ $^\circ\text{C}$ |
| Operating and Storage Junction<br>Temperature Range                                       | $T_J, T_{stg}$ | -65 to +150 | $^\circ\text{C}$         |

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

### THERMAL CHARACTERISTICS

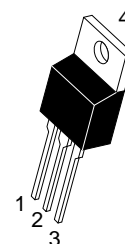
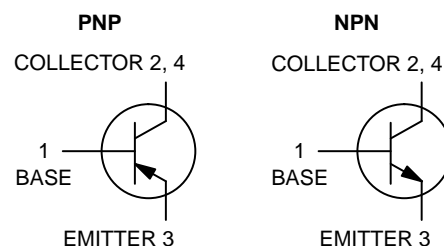
| Characteristics                      | Symbol          | Max  | Unit               |
|--------------------------------------|-----------------|------|--------------------|
| Thermal Resistance, Junction-to-Case | $R_{\theta JC}$ | 1.92 | $^\circ\text{C/W}$ |



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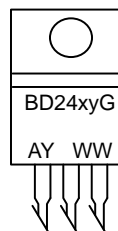
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## 6 AMPERE POWER TRANSISTORS COMPLEMENTARY SILICON 80–100 VOLTS 65 WATTS



TO-220  
CASE 221A  
STYLE 1

### MARKING DIAGRAM



BD24xy = Device Code  
x = 3 or 4  
y = B or C  
A = Assembly Location  
Y = Year  
WW = Work Week  
G = Pb-Free Package

### ORDERING INFORMATION

| Device  | Package             | Shipping        |
|---------|---------------------|-----------------|
| BD243BG | TO-220<br>(Pb-Free) | 50 Units / Rail |
| BD243CG | TO-220<br>(Pb-Free) | 50 Units / Rail |
| BD244BG | TO-220<br>(Pb-Free) | 50 Units / Rail |
| BD244CG | TO-220<br>(Pb-Free) | 50 Units / Rail |

\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

# BD243B, BD243C (NPN), BD244B, BD244C (PNP)

## ELECTRICAL CHARACTERISTICS (T<sub>C</sub> = 25°C unless otherwise noted)

| Characteristic  | Symbol                | Min       | Max        | Unit |
|---|-----------------------|-----------|------------|------|
| Collector–Emitter Sustaining Voltage (Note 1)<br>(I <sub>C</sub> = 30 mAdc, I <sub>B</sub> = 0)<br>BD243B, BD244B<br>BD243C, BD244C                                 | V <sub>CEO(sus)</sub> | 80<br>100 | –<br>–     | Vdc  |
| Collector Cutoff Current<br>(V <sub>CE</sub> = 60 Vdc, I <sub>B</sub> = 0)<br>BD243B, BD243C, BD244B, BD244C  | I <sub>CEO</sub>      | –         | 0.7        | mAdc |
| Collector Cutoff Current<br>(V <sub>CE</sub> = 80 Vdc, V <sub>EB</sub> = 0)<br>BD243B, BD244B<br>(V <sub>CE</sub> = 100 Vdc, V <sub>EB</sub> = 0)<br>BD243C, BD244C | I <sub>CES</sub>      | –<br>–    | 400<br>400 | μAdc |
| Emitter Cutoff Current<br>(V <sub>BE</sub> = 5.0 Vdc, I <sub>C</sub> = 0)   | I <sub>EBO</sub>      | –         | 1.0        | mAdc |

## ON CHARACTERISTICS (Note 1)

|   |                      |          |        |     |
|---|----------------------|----------|--------|-----|
| DC Current Gain<br>(I <sub>C</sub> = 0.3 Adc, V <sub>CE</sub> = 4.0 Vdc)<br>(I <sub>C</sub> = 3.0 Adc, V <sub>CE</sub> = 4.0 Vdc) | h <sub>FE</sub>      | 30<br>15 | –<br>– | –   |
| Collector–Emitter Saturation Voltage<br>(I <sub>C</sub> = 6.0 Adc, I <sub>B</sub> = 1.0 Adc)                                      | V <sub>CE(sat)</sub> | –        | 1.5    | Vdc |
| Base–Emitter On Voltage<br>(I <sub>C</sub> = 6.0 Adc, V <sub>CE</sub> = 4.0 Vdc)  | V <sub>BE(on)</sub>  | –        | 2.0    | Vdc |

## DYNAMIC CHARACTERISTICS

|   |                 |     |   |     |
|---|-----------------|-----|---|-----|
| Current–Gain – Bandwidth Product (Note 2)<br>(I <sub>C</sub> = 500 mAdc, V <sub>CE</sub> = 10 Vdc, f <sub>test</sub> = 1.0 MHz) | f <sub>T</sub>  | 3.0 | – | MHz |
| Small–Signal Current Gain<br>(I <sub>C</sub> = 0.5 Adc, V <sub>CE</sub> = 10 Vdc, f = 1.0 kHz)                                  | h <sub>fe</sub> | 20  | – | –   |

1. Pulse Test: Pulsetwidth ≤ 300 μs, Duty Cycle ≤ 2.0%.

2. f<sub>T</sub> = h<sub>fe</sub> • f<sub>test</sub>

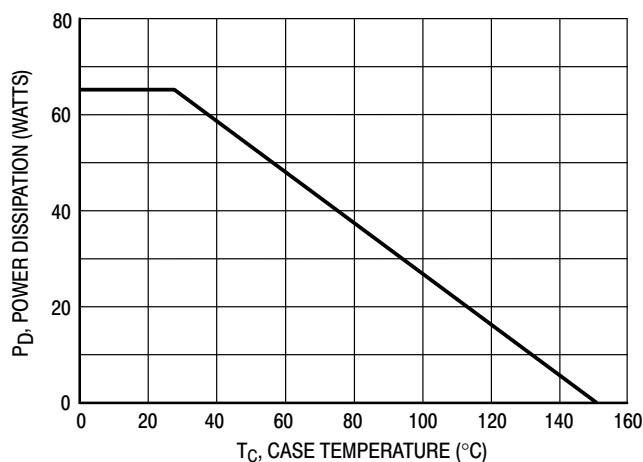
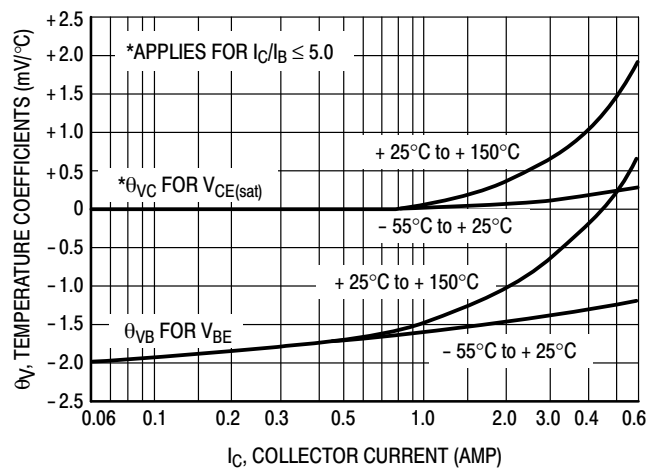
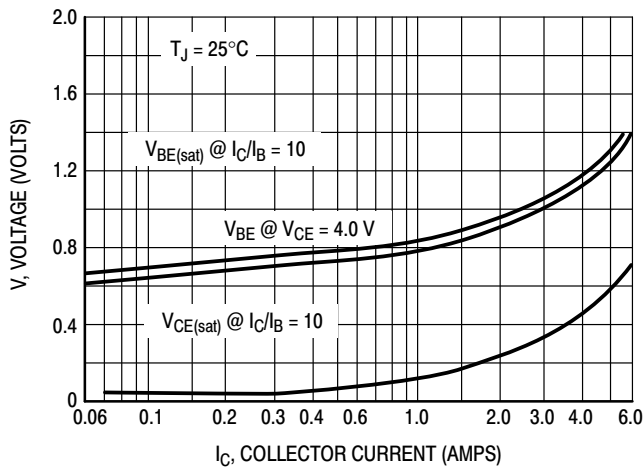
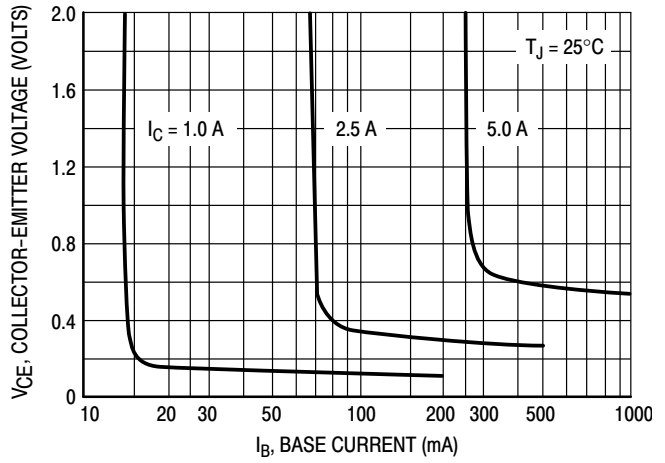
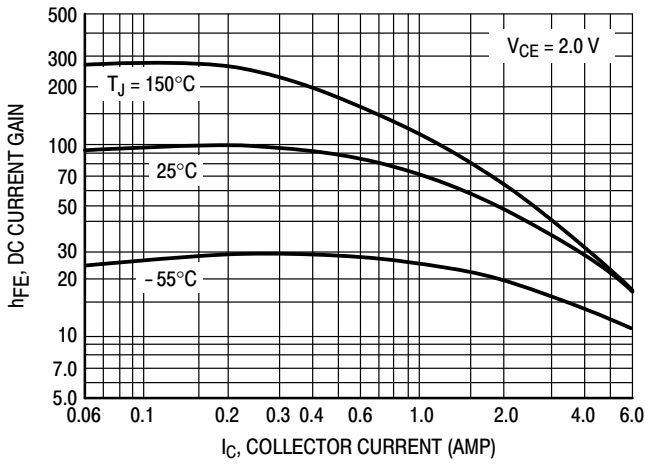
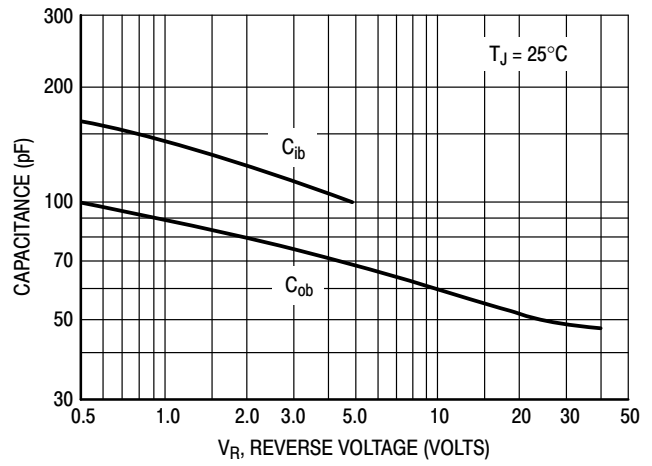
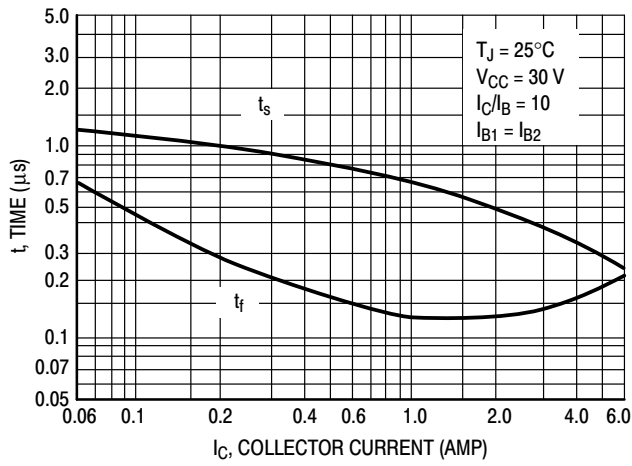


Figure 1. Power Derating



# BD243B, BD243C (NPN), BD244B, BD244C (PNP)



## BD243B, BD243C (NPN), BD244B, BD244C (PNP)

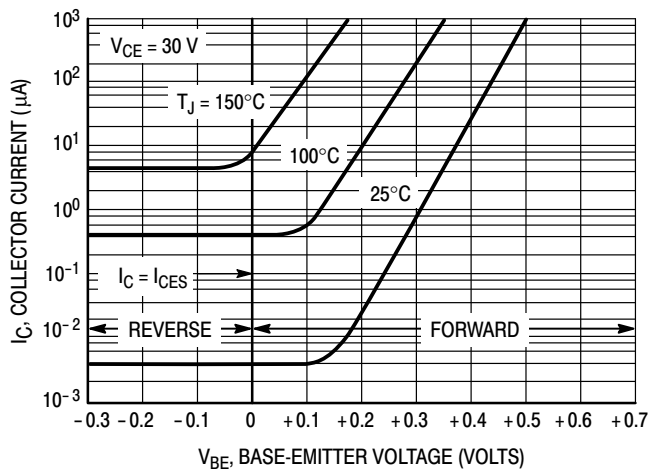


Figure 12. Collector Cut-Off Region

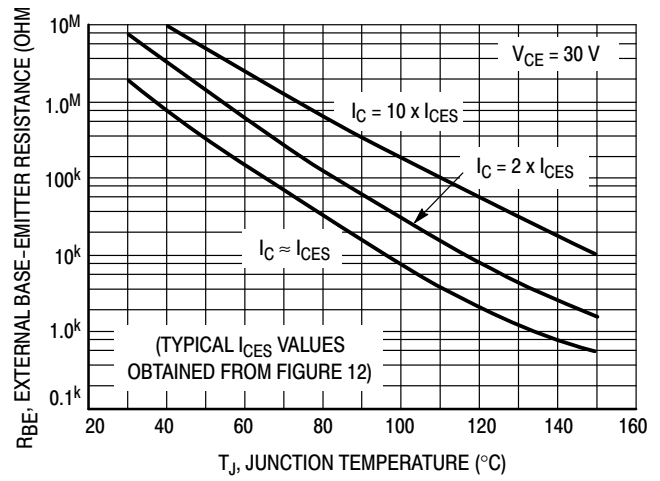
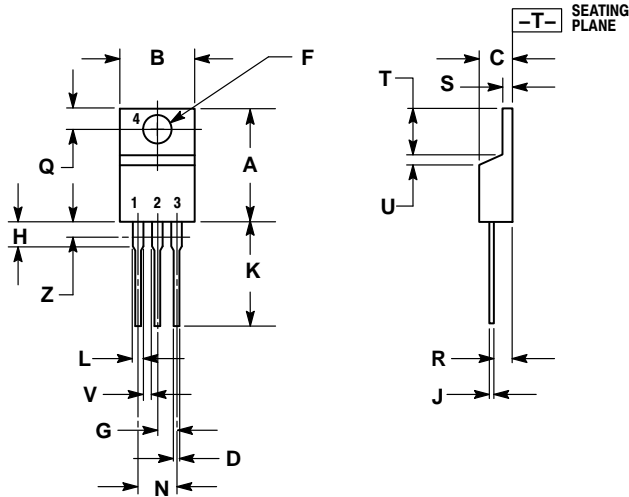


Figure 13. Effects of Base-Emitter Resistance

# BD243B, BD243C (NPN), BD244B, BD244C (PNP)

## PACKAGE DIMENSIONS

TO-220  
CASE 221A-09  
ISSUE AG




### NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSION Z DEFINES A ZONE WHERE ALL BODY AND LEAD IRREGULARITIES ARE ALLOWED.

| DIM | INCHES |       | MILLIMETERS |       |
|-----|--------|-------|-------------|-------|
|     | MIN    | MAX   | MIN         | MAX   |
| A   | 0.570  | 0.620 | 14.48       | 15.75 |
| B   | 0.380  | 0.405 | 9.66        | 10.28 |
| C   | 0.160  | 0.190 | 4.07        | 4.82  |
| D   | 0.025  | 0.036 | 0.64        | 0.91  |
| F   | 0.142  | 0.161 | 3.61        | 4.09  |
| G   | 0.095  | 0.105 | 2.42        | 2.66  |
| H   | 0.110  | 0.161 | 2.80        | 4.10  |
| J   | 0.014  | 0.025 | 0.36        | 0.64  |
| K   | 0.500  | 0.562 | 12.70       | 14.27 |
| L   | 0.045  | 0.060 | 1.15        | 1.52  |
| N   | 0.190  | 0.210 | 4.83        | 5.33  |
| Q   | 0.100  | 0.120 | 2.54        | 3.04  |
| R   | 0.080  | 0.110 | 2.04        | 2.79  |
| S   | 0.045  | 0.055 | 1.15        | 1.39  |
| T   | 0.235  | 0.255 | 5.97        | 6.47  |
| U   | 0.000  | 0.050 | 0.00        | 1.27  |
| V   | 0.045  | ---   | 1.15        | ---   |
| Z   | ---    | 0.080 | ---         | 2.04  |

### STYLE 1:

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

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