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

BD243C and BD244C are Preferred Devices

Complementary Silicon Plastic Power Transistors

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

Features

- Collector − Emitter Saturation Voltage −
  $V_{CE(sat)}$ = 1.5 Vdc (Max) @ I_C = 6.0 Adc
- Collector Emitter Sustaining Voltage −
  $V_{CEO(sus)}$ = 80 Vdc (Min) − BD243B, BD244B
  = 100 Vdc (Min) − BD243C, BD244C
- High Current Gain Bandwidth Product
  f_T = 3.0 MHz (Min) @ I_C = 500 mAdc
- Pb−Free Packages are Available*

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector−Emitter Voltage BD243B, BD244B BD243C, BD244C	V_{CEO}	 80 100	Vdc
Collector−Base Voltage BD243B, BD244B BD243C, BD244C	V_{CB}	 80 100	Vdc
Emitter−Base Voltage	V_{EB}	5.0	Vdc
Collector Current − Continuous − Peak	I_C	6 10	Adc
Base Current	I_B	2.0	Adc
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	65 0.52	W W/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	−65 to +150	°C

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max	Unit
Thermal Resistance, Junction−to−Case	$R_{\theta JC}$	1.92	°C/W

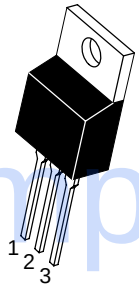
Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

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

ON Semiconductor®

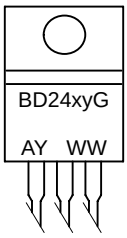
http://onsemi.com

6 AMPERE
POWER TRANSISTORS
COMPLEMENTARY SILICON
80−100 VOLTS
65 WATTS



TO−220AB
CASE 221A−09
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

See detailed ordering and shipping information in the package dimensions section on page 5 of this data sheet.

Preferred devices are recommended choices for future use and best overall value.

Datasheet.Company

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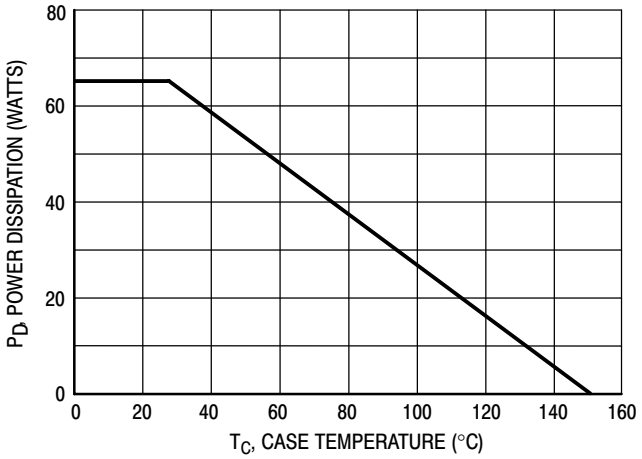


Figure 1. Power Derating

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
Collector−Emitter Sustaining Voltage (Note 1) (I_C = 30 mAdc, I_B = 0) BD243B, BD244B BD243C, BD244C	$V_{CEO(sus)}$	 80 100	 − −	Vdc
Collector Cutoff Current (V_{CE} = 60 Vdc, I_B = 0) BD243B, BD243C, BD244B, BD244C	I_{CEO}	−	0.7	mAdc
Collector Cutoff Current (V_{CE} = 80 Vdc, V_{EB} = 0) BD243B, BD244B (V_{CE} = 100 Vdc, V_{EB} = 0) BD243C, BD244C	I_{CES}	 − −	 400 400	μAdc
Emitter Cutoff Current (V_{BE} = 5.0 Vdc, I_C = 0)	I_{EBO}	−	1.0	mAdc
ON CHARACTERISTICS (Note 1)				
DC Current Gain (I_C = 0.3 Adc, V_{CE} = 4.0 Vdc) (I_C = 3.0 Adc, V_{CE} = 4.0 Vdc)	h_{FE}	 30 15	 − −	−
Collector−Emitter Saturation Voltage (I_C = 6.0 Adc, I_B = 1.0 Adc)	$V_{CE(sat)}$	−	1.5	Vdc
Base−Emitter On Voltage (I_C = 6.0 Adc, V_{CE} = 4.0 Vdc)	$V_{BE(on)}$	−	2.0	Vdc
DYNAMIC CHARACTERISTICS				
Current−Gain − Bandwidth Product (Note 2) (I_C = 500 mAdc, V_{CE} = 10 Vdc, f_{test} = 1.0 MHz)	f_T	3.0	−	MHz
Small−Signal Current Gain (I_C = 0.5 Adc, V_{CE} = 10 Vdc, f = 1.0 kHz)	h_{fe}	20	−	−

1. Pulse Test: Pulsewidth ≤ 300 μs, Duty Cycle ≤ 2.0%.
2. $f_T = h_{fe} \bullet f_{test}$

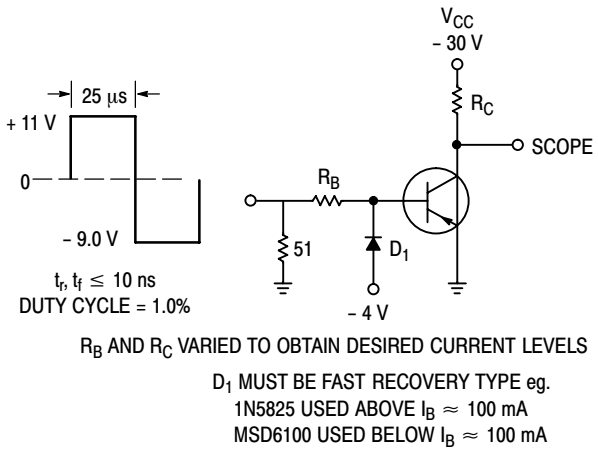


Figure 2. Switching Time Test Circuit

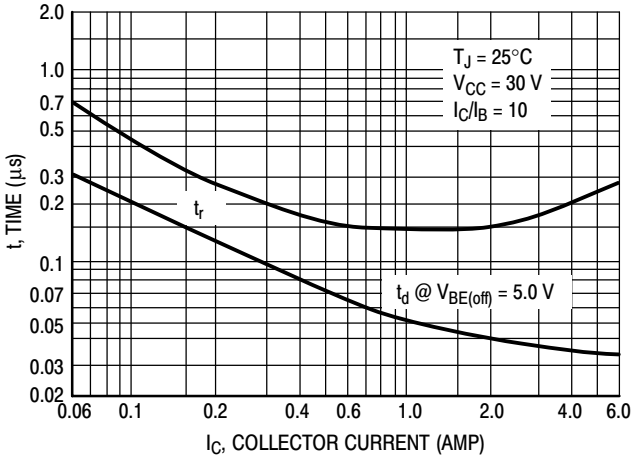


Figure 3. Turn−On Time

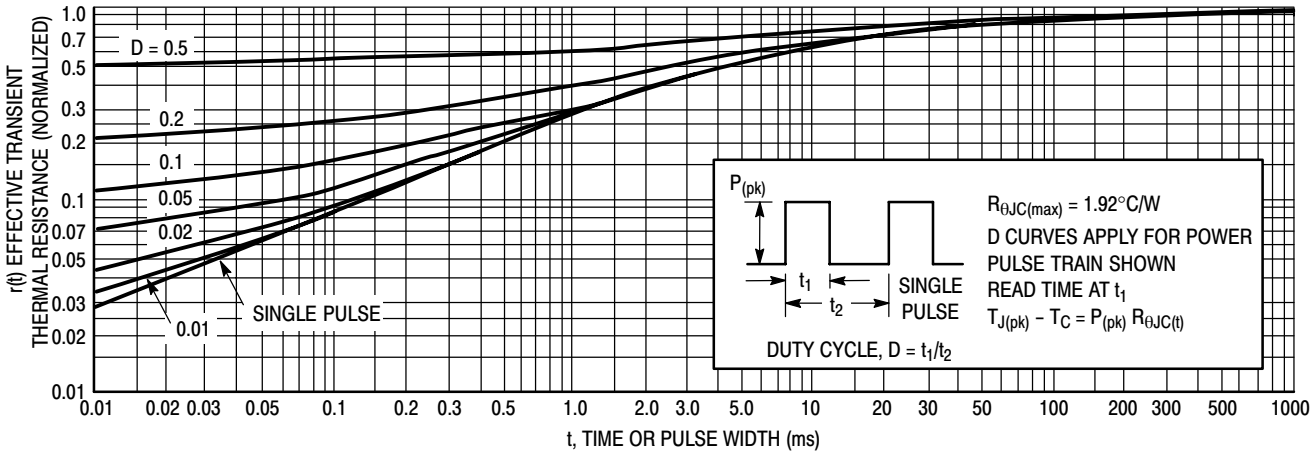


Figure 4. Thermal Response

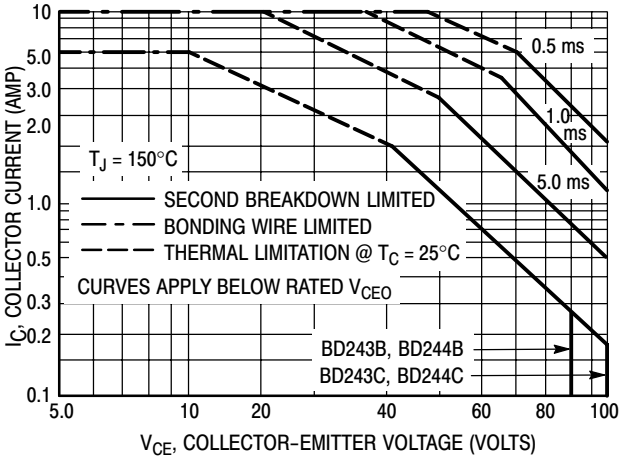


Figure 5. Active Region Safe Operating Area

There are two limitations on the power handling ability of a transistor: average junction temperature and second breakdown. Safe operating area curves indicate $I_C - V_{CE}$ limits of the transistor that must be observed for reliable operation, i.e., the transistor must not be subjected to greater dissipation than the curves indicate.

The data of Figure 5 is based on $T_{J(pk)}$ = 150°C: T_C is variable depending on conditions. Second breakdown pulse limits are valid for duty cycles to 10% provided $T_{J(pk)} \leq 150°C$, $T_{J(pk)}$ may be calculated from the data in Figure 4. At high case temperatures, thermal limitations will reduce the power that can be handled to values less than the limitations imposed by second breakdown.

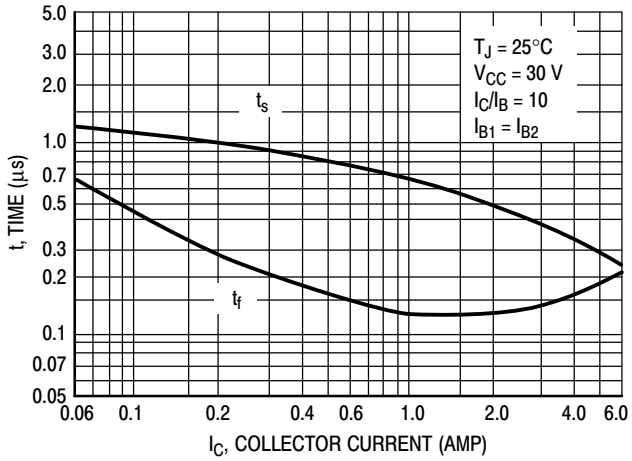


Figure 6. Turn-Off Time

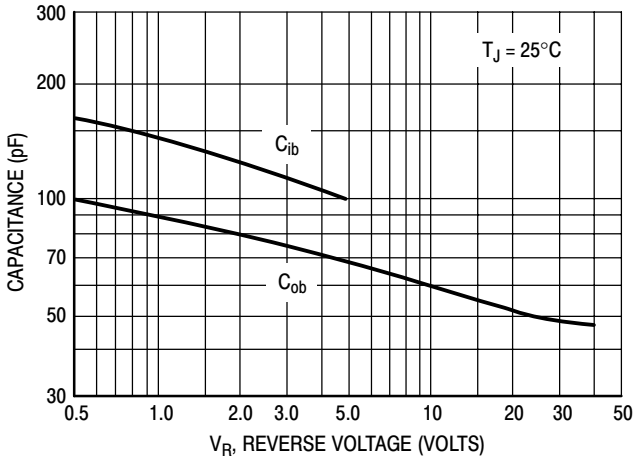


Figure 7. Capacitance

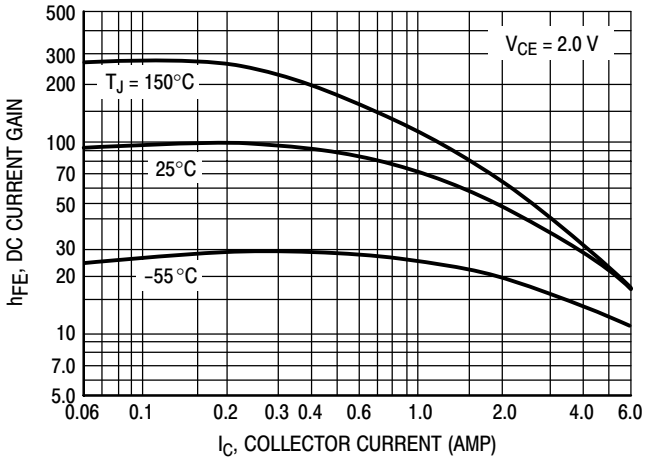


Figure 8. DC Current Gain

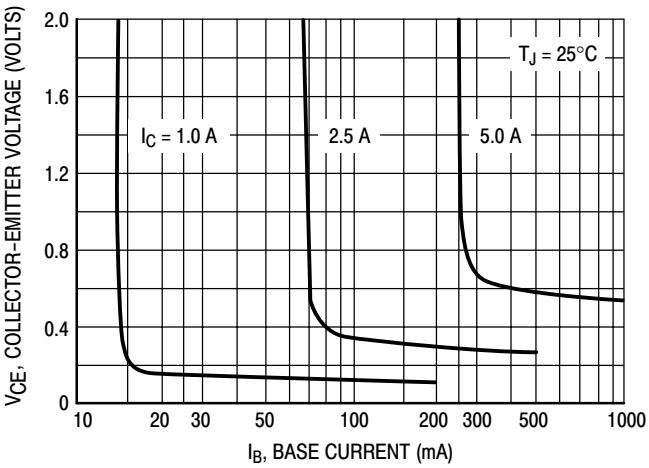


Figure 9. Collector Saturation Region

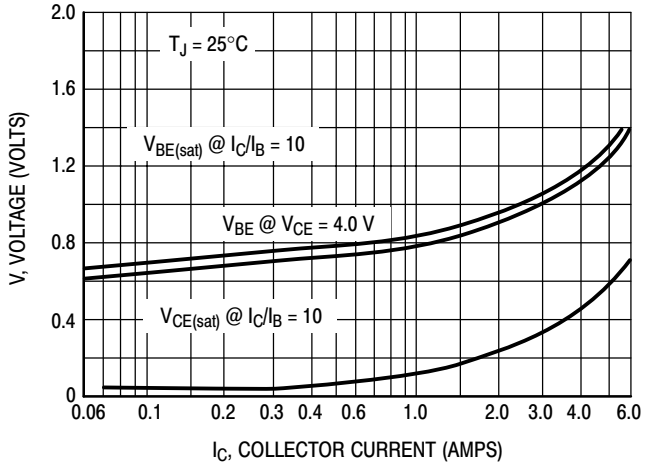


Figure 10. "On" Voltages

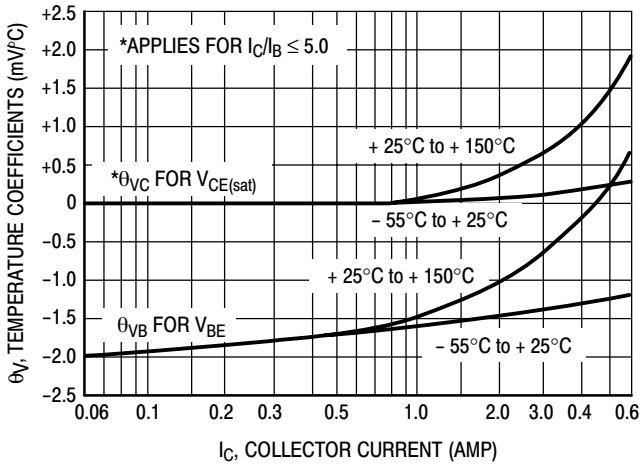


Figure 11. Temperature Coefficients

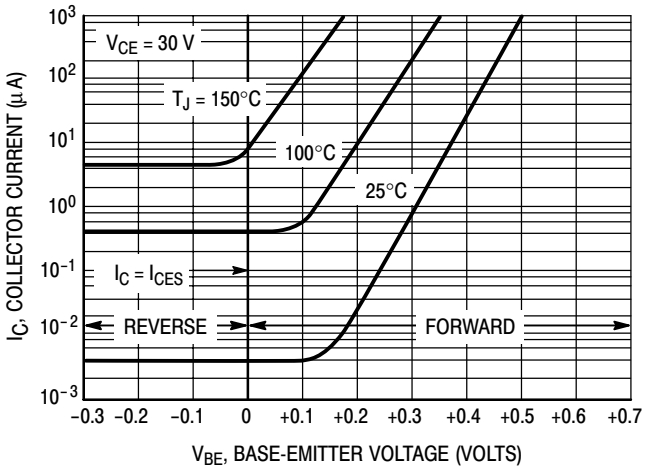


Figure 12. Collector Cut-Off Region

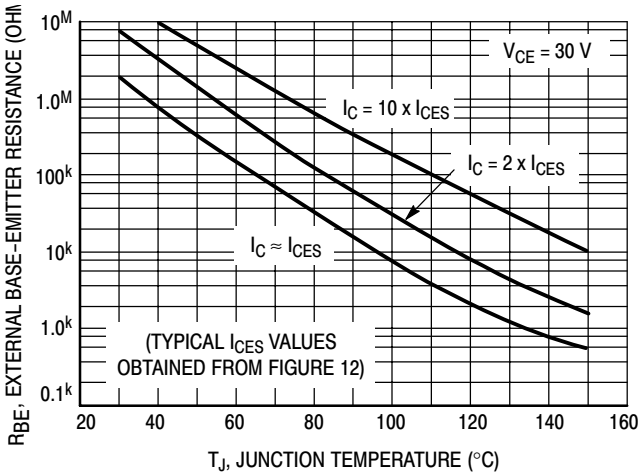


Figure 13. Effects of Base−Emitter Resistance

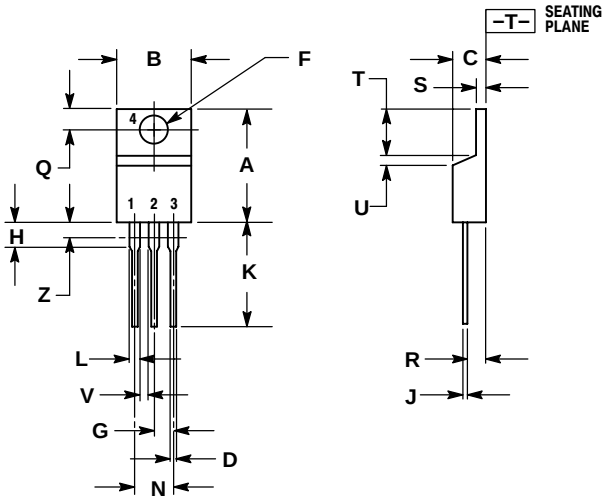
ORDERING INFORMATION

Device	Package	Shipping†
BD243B	TO−220	50 Units / Rail
BD243BG	TO−220 (Pb−Free)	
BD243C	TO−220	50 Units / Rail
BD243CG	TO−220 (Pb−Free)	
BD244B	TO−220	50 Units / Rail
BD244BG	TO−220 (Pb−Free)	
BD244C	TO−220	50 Units / Rail
BD244CG	TO−220 (Pb−Free)	

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

PACKAGE DIMENSIONS

TO−220AB
CASE 221A−09
ISSUE AA



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.

	INCHES		MILLIMETERS	
DIM	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	0.035	0.64	0.88
F	0.142	0.147	3.61	3.73
G	0.095	0.105	2.42	2.66
H	0.110	0.155	2.80	3.93
J	0.018	0.025	0.46	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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