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 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	I_C	6	Adc
Collector Current − Peak	I_{CM}	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

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

THERMAL CHARACTERISTICS

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

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

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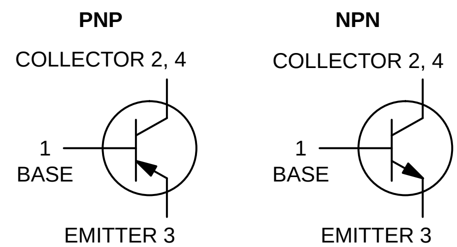
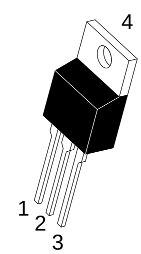
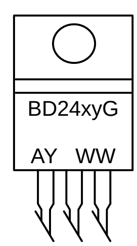
6 AMPERE
POWER TRANSISTORS
COMPLEMENTARY SILICON
80−100 VOLTS
65 WATTS





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 (Pb−Free)	50 Units / Rail
BD243CG	TO−220 (Pb−Free)	50 Units / Rail
BD244BG	TO−220 (Pb−Free)	50 Units / Rail
BD244CG	TO−220 (Pb−Free)	50 Units / Rail

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	−	−

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

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

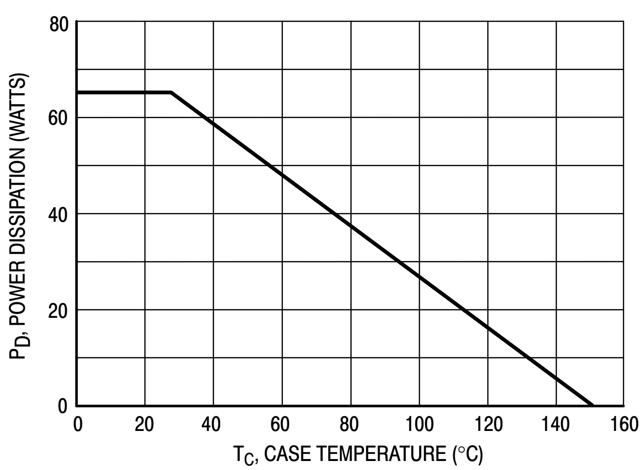


Figure 1. Power Derating

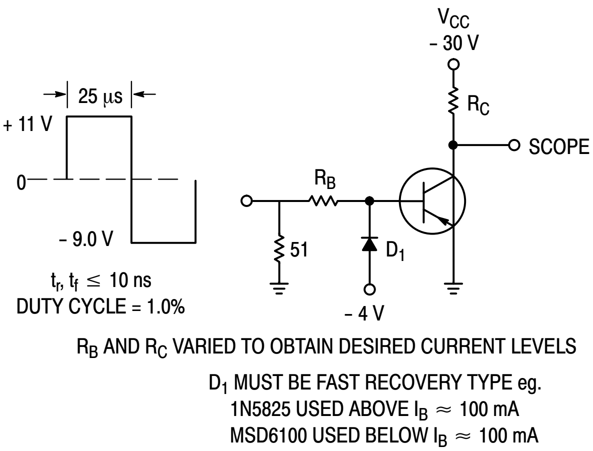


Figure 2. Switching Time Test Circuit

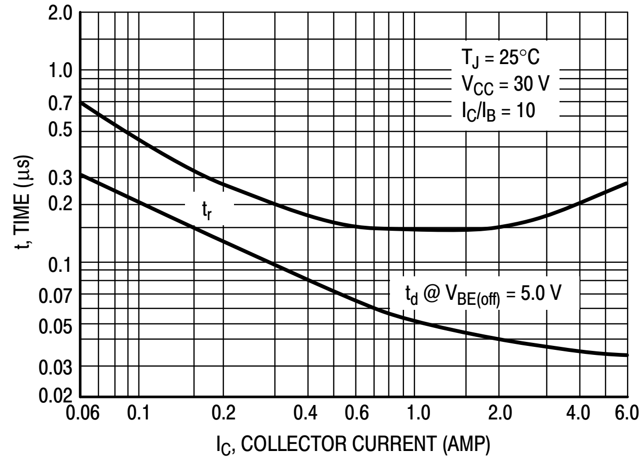


Figure 3. Turn−On Time

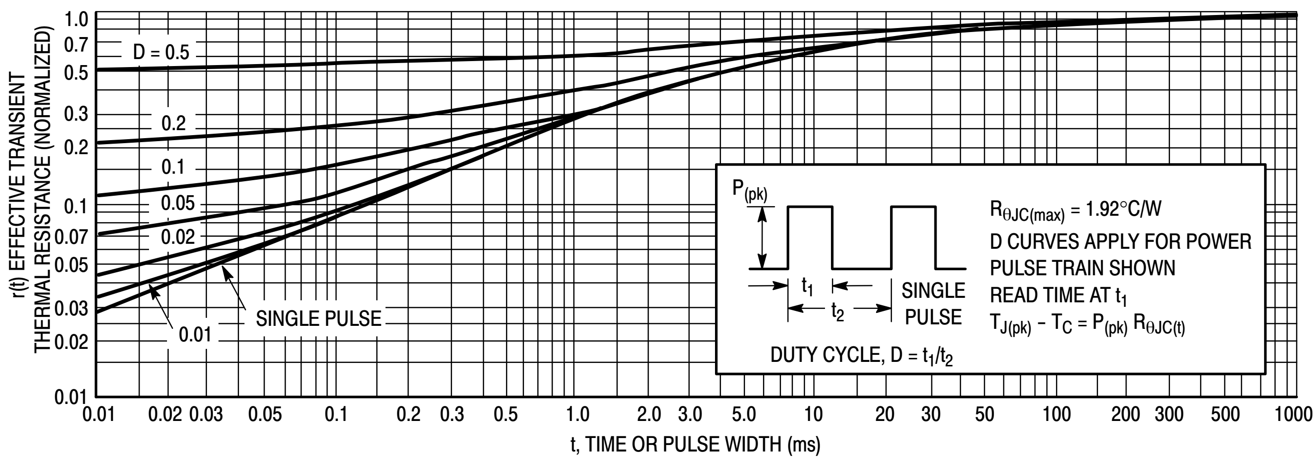


Figure 4. Thermal Response

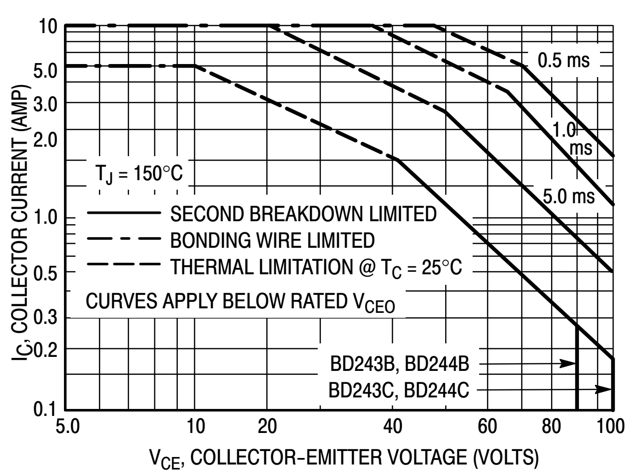


Figure 5. Active Region Safe Operating Area

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.

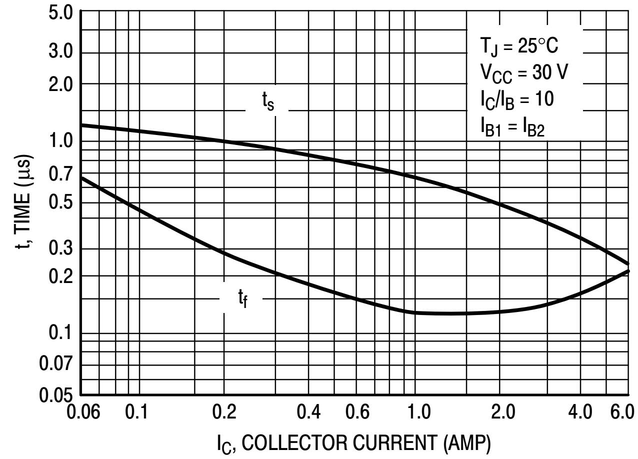


Figure 6. Turn-Off Time

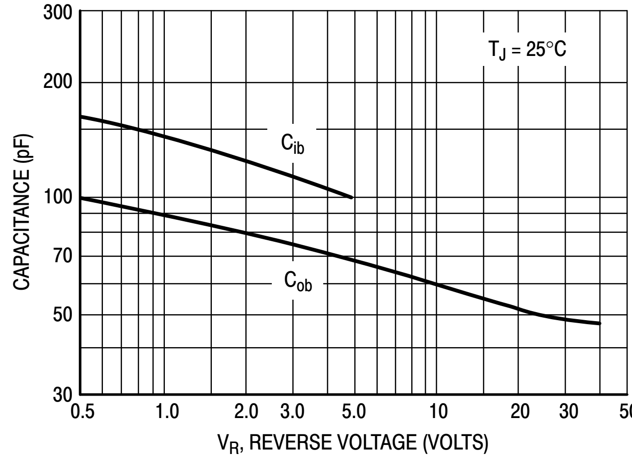


Figure 7. Capacitance

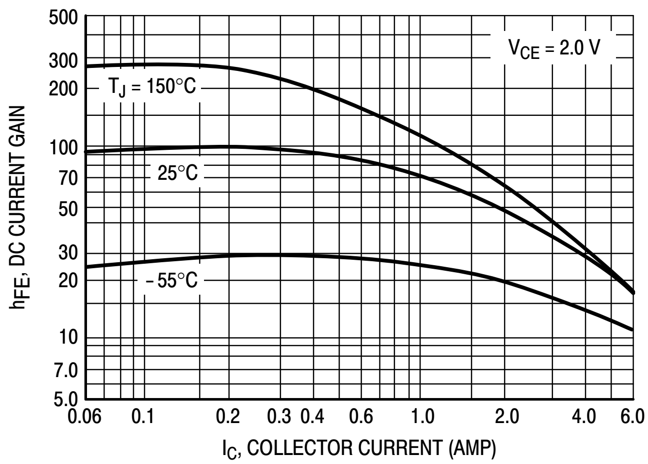


Figure 8. DC Current Gain

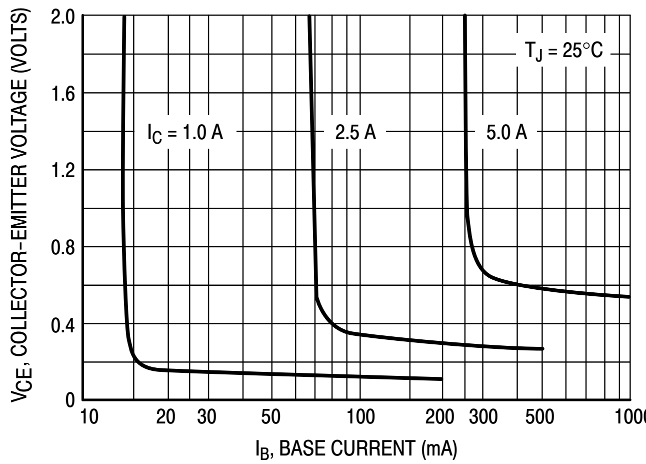


Figure 9. Collector Saturation Region

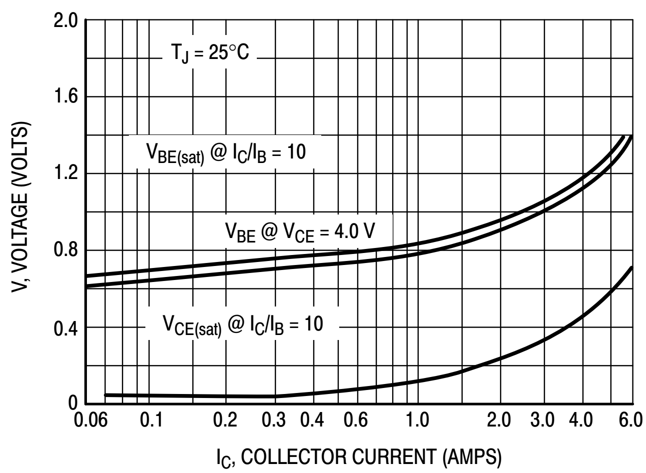


Figure 10. “On” Voltages

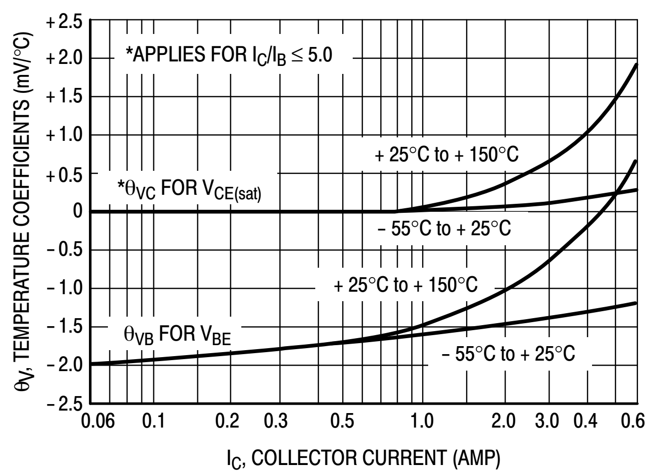


Figure 11. Temperature Coefficients

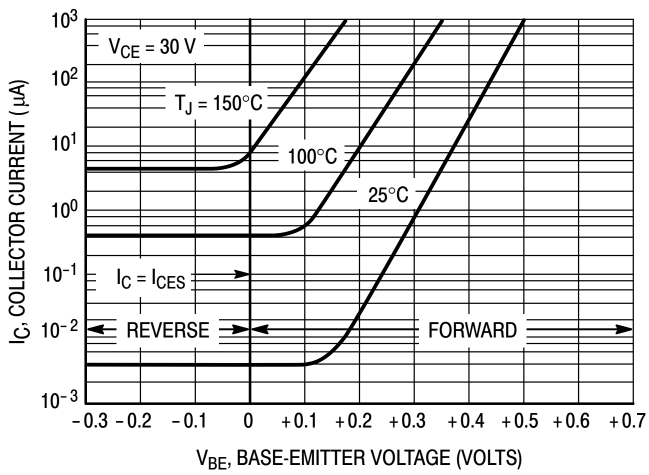


Figure 12. Collector Cut-Off Region

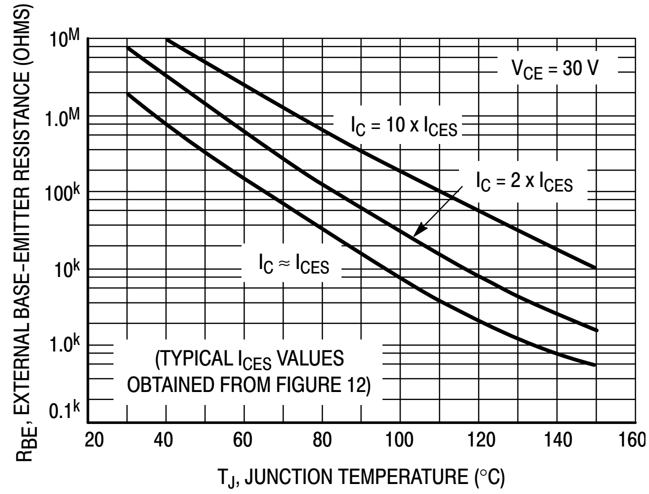
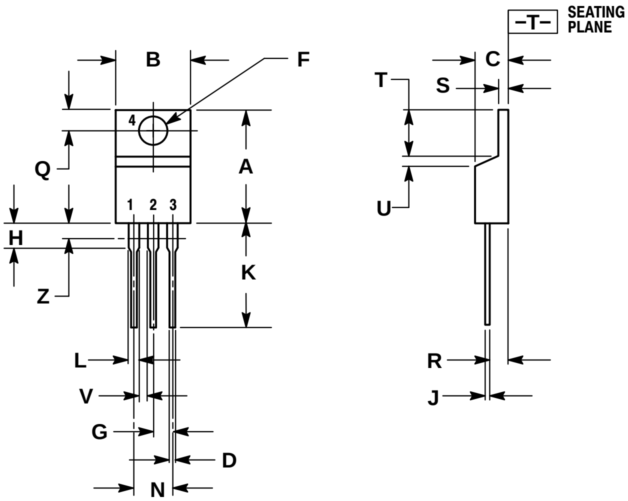


Figure 13. Effects of Base−Emitter Resistance

PACKAGE DIMENSIONS

TO−220
CASE 221A−09
ISSUE AH



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	0.415	9.66	10.53
C	0.160	0.190	4.07	4.83
D	0.025	0.038	0.64	0.96
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	0.024	0.36	0.61
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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