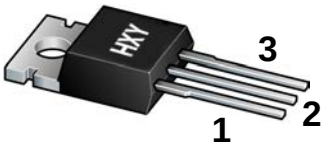
BD244CG

PNP Plastic-Encapsulate Transistors

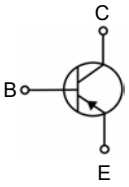
Features

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



1.BASE
2.COLLECTOR
3.EMITTER

TO-220C



Maximum Ratings (Ta=25°C unless otherwise noted)

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	-100	V
V_{CEO}	Collector-Emitter Voltage	-100	V
V_{EBO}	Emitter-Base Voltage	-5	V
I_C	Collector Current	-6	A
P_D	Total Device Dissipation	65	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case	1.92	°C/W
T_j, T_{stg}	Operation Junction and Storage Temperature Range	-65~+150	°C

Electrical Characteristics (Ta=25°C unless otherwise specified)

Characteristic	Symbol	Min	Max	Unit
Collector−Emitter Sustaining Voltage (Note 1) (I_C = -30 mAdc, I_B = 0)	$V_{CEO(sus)}$	100		Vdc
Collector Cutoff Current (V_{CE} = -60 Vdc, I_B = 0)	I_{CEO}		0.7	mAdc
Collector Cutoff Current (V_{CE} = -100 Vdc, V_{EB} = 0)	I_{CES}		400	μAdc
Emitter Cutoff Current (V_{BE} = -5.0 Vdc, I_C = 0)	I_{EBO}		1.0	mAdc
DC Current Gain (Note 1) (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 (Note 1) (I_C = -6.0 Adc, I_B = -1.0 Adc)	$V_{CE(sat)}$		1.5	Vdc
Base−Emitter On Voltage (Note 1) (I_C = -6.0 Adc, V_{CE} = -4.0 Vdc)	$V_{BE(on)}$		2.0	Vdc
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. $f_T = h_{fe} \bullet f_{test}$

Typical Characteristics

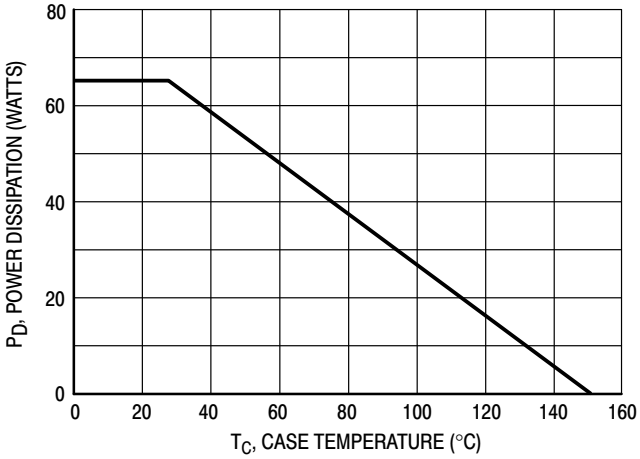


Figure 1. Power Derating

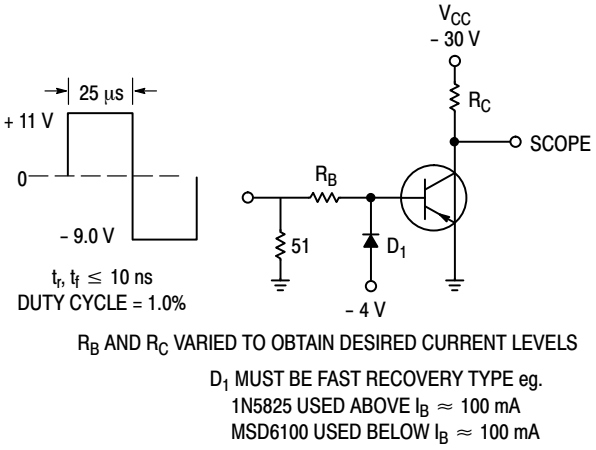


Figure 2. Switching Time Test Circuit

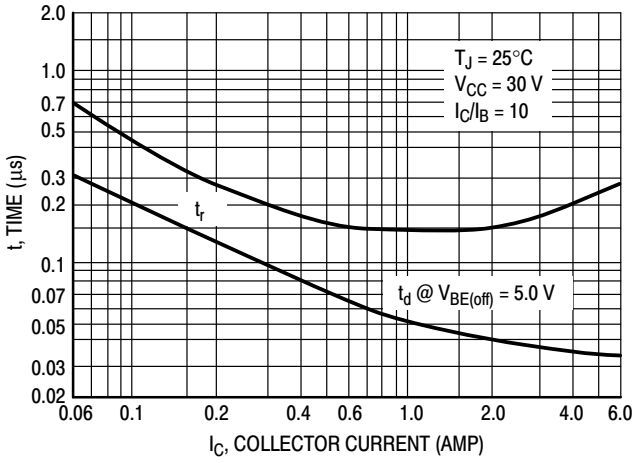


Figure 3. Turn−On Time

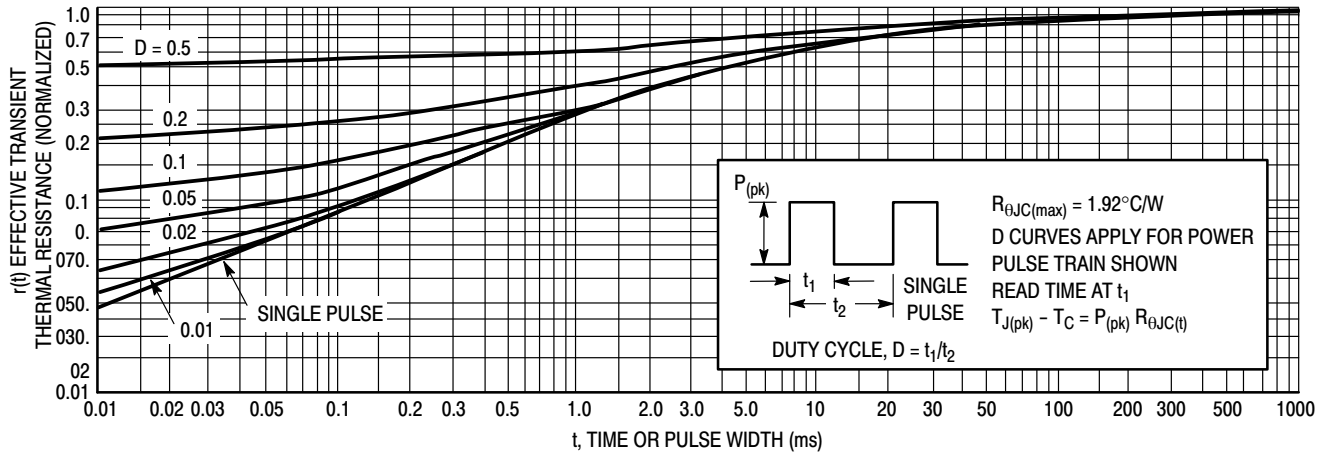


Figure 4. Thermal Response

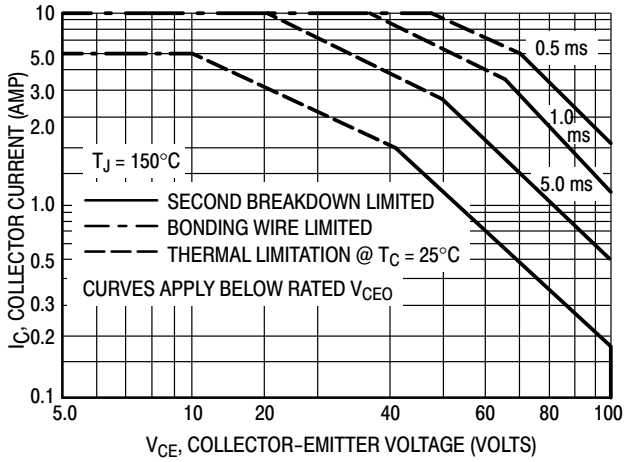


Figure 5. Active Region Safe Operating Area

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.

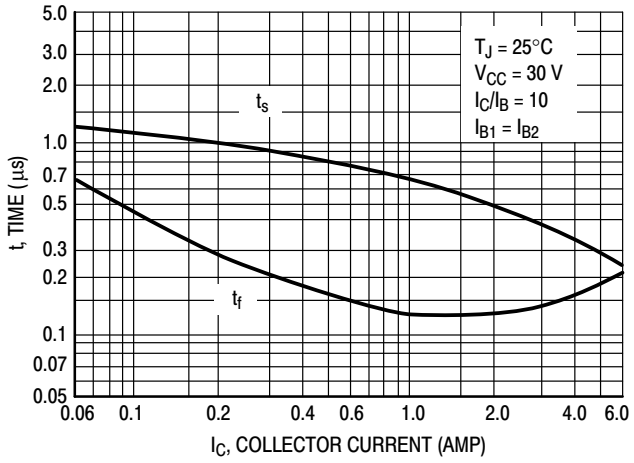


Figure 6. Turn-Off Time

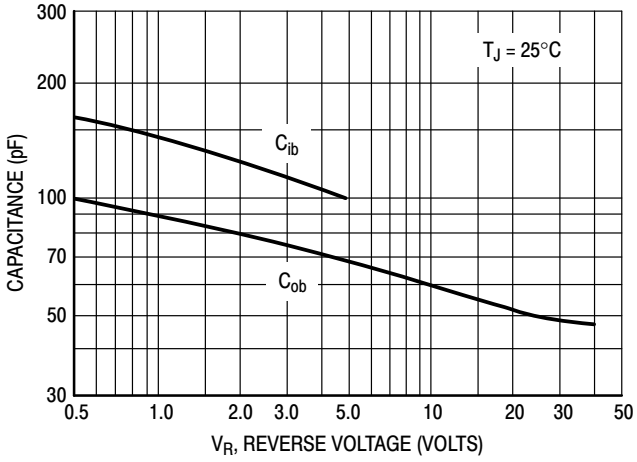


Figure 7. Capacitance

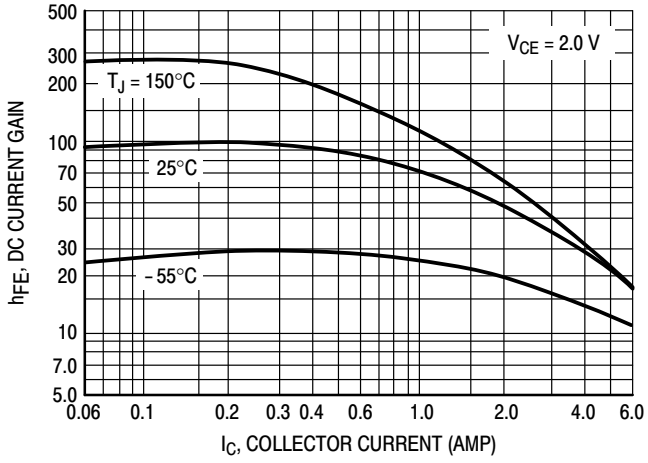


Figure 8. DC Current Gain

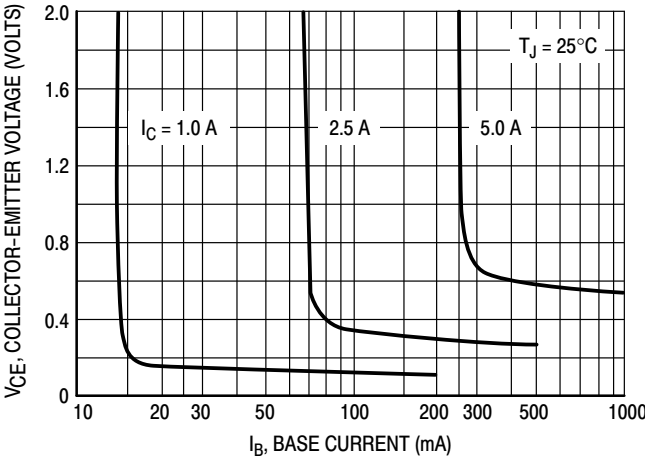


Figure 9. Collector Saturation Region

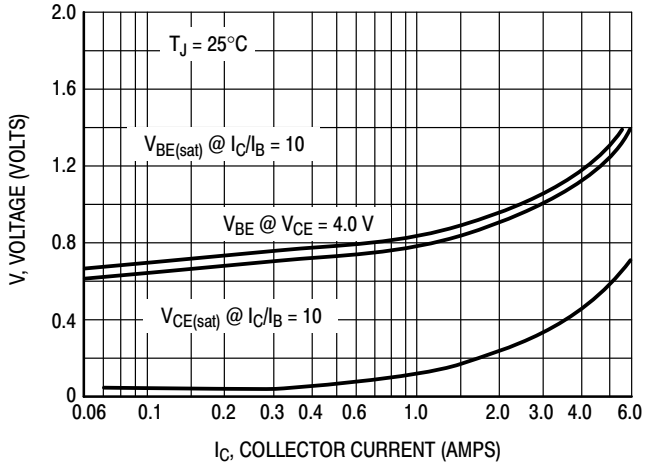


Figure 10. "On" Voltages

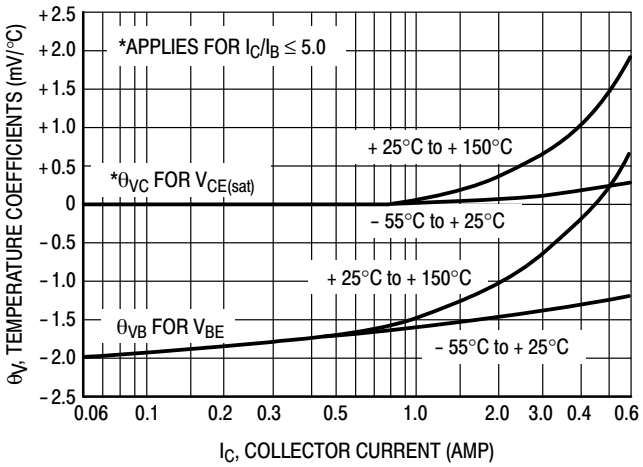


Figure 11. Temperature Coefficients

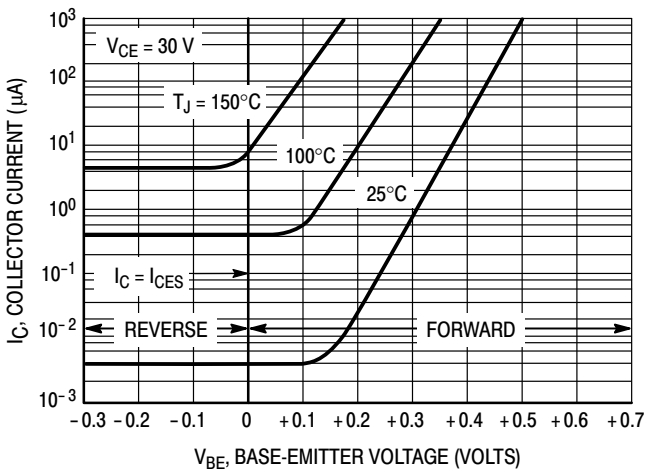


Figure 12. Collector Cut-Off Region

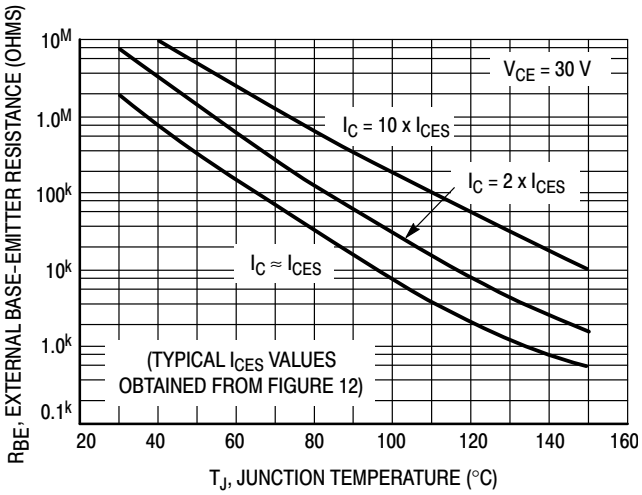
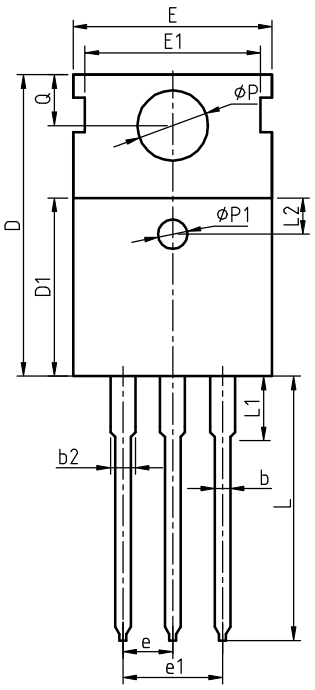
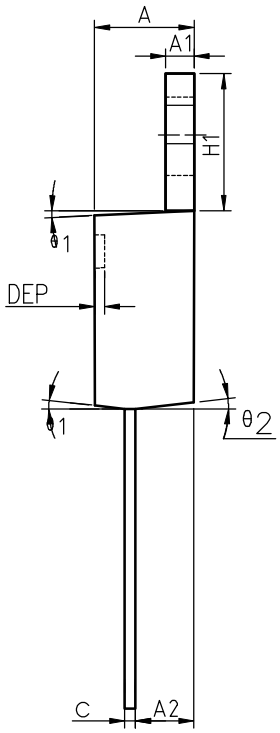
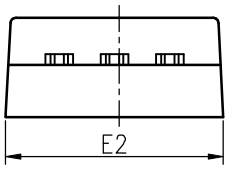


Figure 13. Effects of Base−Emitter Resistance

Package Information
TO-220C







COMMON DIMENSIONS

SYMBOL	MIN	NOM	MAX	MIN	NOM	MAX
A	4.40	4.57	4.70	0.173	0.180	0.185
A1	1.27	1.30	1.33	0.050	0.051	0.052
A2	2.35	2.40	2.50	0.093	0.094	0.098
b	0.77	0.80	0.90	0.030	0.031	0.035
b2	1.17	1.27	1.36	0.046	0.050	0.054
c	0.48	0.50	0.56	0.019	0.020	0.022
D	15.40	15.60	15.80	0.606	0.614	0.622
D1	9.00	9.10	9.20	0.354	0.358	0.362
DEP	0.05	0.10	0.20	0.002	0.004	0.008
E	9.80	10.00	10.20	0.386	0.394	0.402
E1	-	8.70	-	-	0.343	-
E2	9.80	10.00	10.20	0.386	0.394	0.402
e		2.54	BSC		0.100	BSC
e1		5.08	BSC		0.200	BSC
H1	6.40	6.50	6.60	0.252	0.256	0.260
L	12.75	13.50	13.65	0.502	0.531	0.537
L1	-	3.10	3.30	-	0.122	0.130
L2		2.50	REF		0.098	REF
P	3.50	3.60	3.63	0.138	0.142	0.143
P1	3.50	3.60	3.63	0.138	0.142	0.143
Q	2.73	2.80	2.87	0.107	0.110	0.113
θ1	5°	7°	9°	5°	7°	9°
θ2	1°	3°	5°	1°	3°	5°
θ3	1°	3°	5°	1°	3°	5°

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