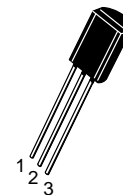
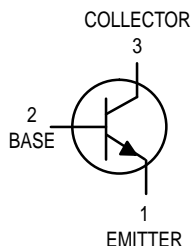


One Watt Amplifier Transistors

NPN Silicon

BDB01C,D



CASE 29-05, STYLE 1
TO-92 (TO-226AE)

MAXIMUM RATINGS

Rating	Symbol	BDB01C	BDB01D	Unit
Collector–Emitter Voltage	V_{CE0}	80	100	Vdc
Collector–Base Voltage	V_{CES}	80	100	Vdc
Emitter–Base Voltage	V_{EBO}	5.0		Vdc
Collector Current — Continuous	I_C	0.5		Adc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	1.0	8.0	Watt mW/ $^\circ\text{C}$
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	2.5	20	Watt mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	–55 to +150		$^\circ\text{C}$

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	125	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction to Case	$R_{\theta JC}$	50	$^\circ\text{C}/\text{W}$

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
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OFF CHARACTERISTICS

Collector–Emitter Voltage ($I_C = 10\text{ mA}, I_B = 0$)	BDB01C BDB01D	$V_{(BR)CE0}$	80 100	— —	Vdc
Collector Cutoff Current ($V_{CB} = 80\text{ V}, I_E = 0$) ($V_{CB} = 100\text{ V}, I_E = 0$)	BDB01C BDB01D	I_{CBO}	— —	0.01 0.01	μAdc
Emitter Cutoff Current ($I_C = 0, V_{EB} = 5.0\text{ V}$)		I_{EBO}	—	100	nAdc

BDB01C,D

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted) (Continued)

Characteristic	Symbol	Min	Max	Unit
ON CHARACTERISTICS				
DC Current Gain ($I_C = 100\text{ mA}$, $V_{CE} = 1.0\text{ V}$) ($I_C = 500\text{ mA}$, $V_{CE} = 2.0\text{ V}$)	h_{FE}	40 25	400 —	—
Collector–Emitter Saturation Voltage ⁽¹⁾ ($I_C = 1000\text{ mA}$, $I_B = 100\text{ mA}$)	$V_{CE(sat)}$	—	0.7	Vdc
Collector–Emitter On Voltage ⁽¹⁾ ($I_C = 1000\text{ mA}$, $V_{CE} = 1.0\text{ V}$)	$V_{BE(on)}$	—	1.2	Vdc
DYNAMIC CHARACTERISTICS				
Current Gain Bandwidth Product ($I_C = 200\text{ mA}$, $V_{CE} = 5.0\text{ V}$, $f = 20\text{ MHz}$)	f_T	50	—	MHz
Output Capacitance ($V_{CB} = 10\text{ V}$, $I_E = 0$, $f = 1.0\text{ MHz}$)	C_{ob}	—	30	pF

1. Pulse Test: Pulse Width $\leq 300\ \mu\text{s}$, Duty Cycle 2.0%.

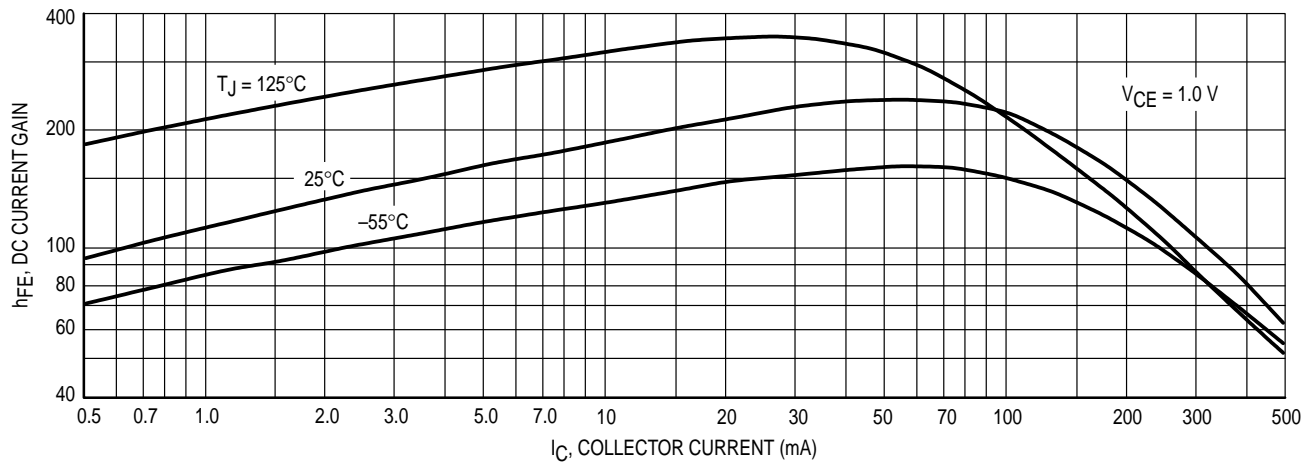


Figure 1. DC Current Gain

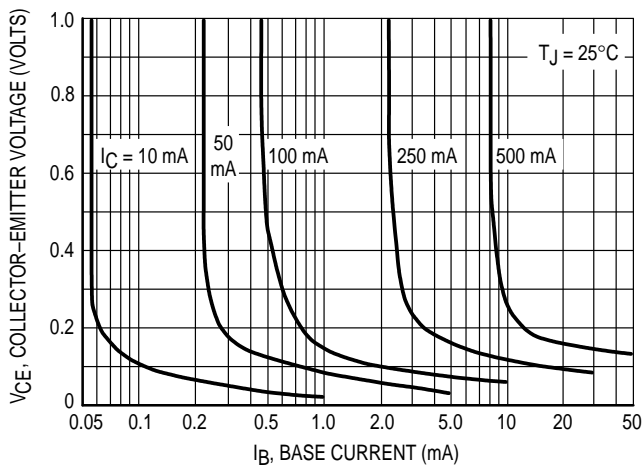


Figure 2. Collector Saturation Region

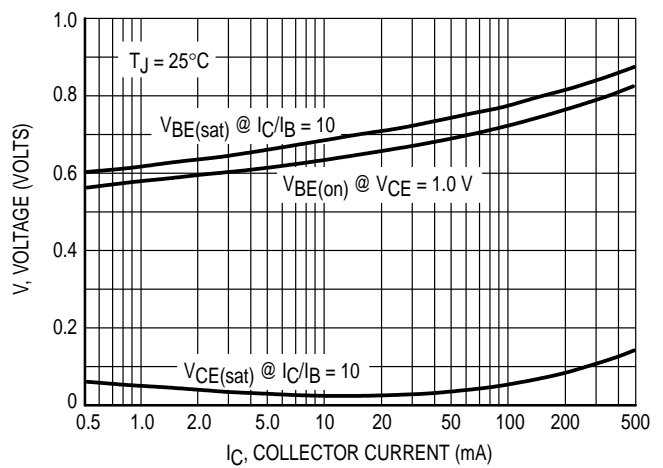


Figure 3. On Voltages

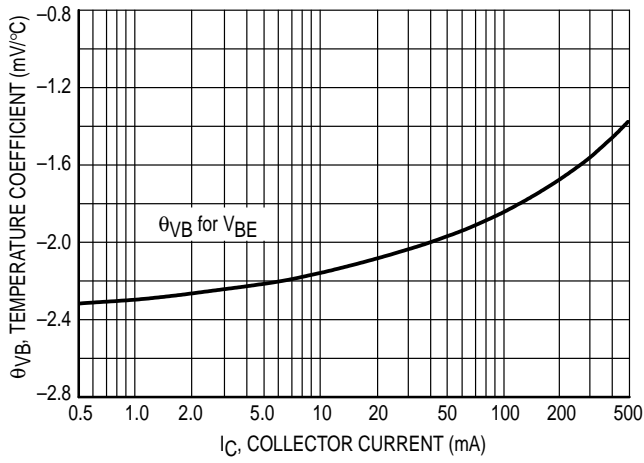


Figure 4. Base-Emitter Temperature Coefficient

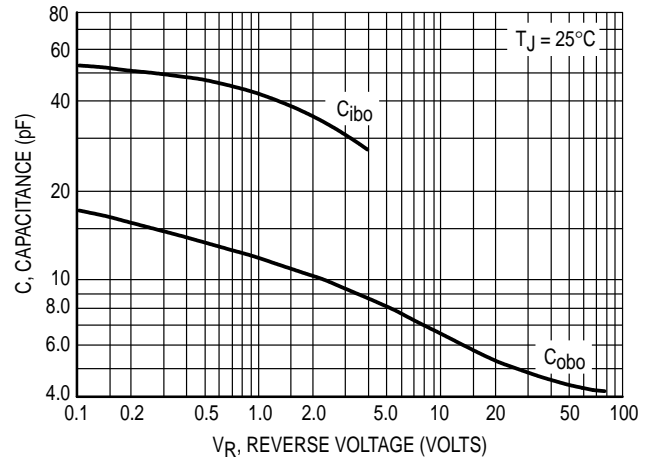


Figure 5. Capacitance

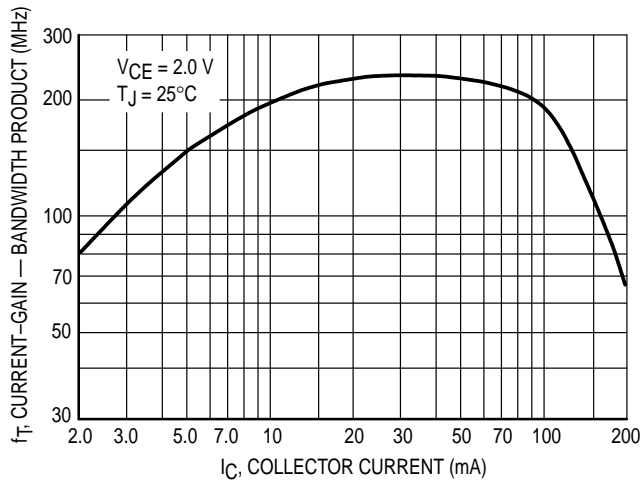


Figure 6. Current-Gain — Bandwidth Product

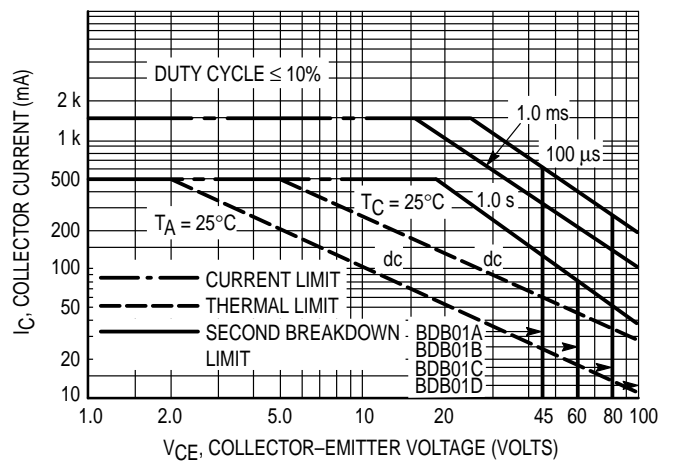
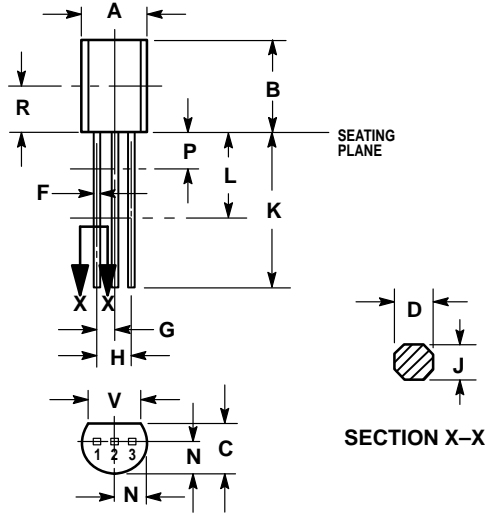


Figure 7. Active Region-Safe Operating Area

PACKAGE DIMENSIONS




- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.
 3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
 4. DIMENSION F APPLIES BETWEEN P AND L. DIMENSIONS D AND J APPLY BETWEEN L AND K MINIMUM. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.175	0.205	4.44	5.21
B	0.290	0.310	7.37	7.87
C	0.125	0.165	3.18	4.19
D	0.018	0.022	0.46	0.56
F	0.016	0.019	0.41	0.48
G	0.045	0.055	1.15	1.39
H	0.095	0.105	2.42	2.66
J	0.018	0.024	0.46	0.61
K	0.500	—	12.70	—
L	0.250	—	6.35	—
N	0.080	0.105	2.04	2.66
P	—	0.100	—	2.54
R	0.135	—	3.43	—
V	0.135	—	3.43	—

**CASE 029-05
(TO-226AE)
ISSUE AD**

- STYLE 1:
1. EMITTER
 2. BASE
 3. COLLECTOR

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