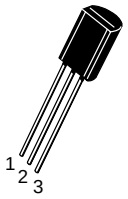
One Watt Amplifier Transistor

NPN Silicon

BDC01D



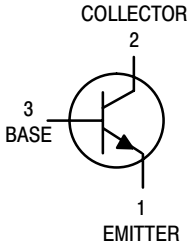
CASE 29–10, STYLE 14
TO–92 (TO–226AE)

MAXIMUM RATINGS

Rating	Symbol	BDC01D	Unit
Collector–Emitter Voltage	V_{CEO}	100	Vdc
Collector–Base Voltage	V_{CBO}	100	Vdc
Emitter–Base Voltage	V_{EBO}	5.0	Vdc
Collector Current — Continuous	I_C	0.5	Adc
Total Device Dissipation @ T_A = 25°C Derate above 25°C	P_D	1.0 8.0	Watts mW/°C
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	2.5 20	Watts mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	–55 to +150	°C

THERMAL CHARACTERISTICS

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



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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector–Emitter Voltage (I_C = 10 mA, I_B = 0)	$V_{(BR)CEO}$	100	—	Vdc
Collector Cutoff Current (V_{CB} = 100 V, I_E = 0)	I_{CBO}	—	0.1	μAdc
Emitter Cutoff Current (I_C = 0, V_{EB} = 5.0 V)	I_{EBO}	—	100	nAdc

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted) (Continued)

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

1. Pulse Test: Pulse Width ≤ 300 μs; Duty Cycle 2.0%.

March, 2001 – Rev. 1
Publication Order Number:
BDC01D/D

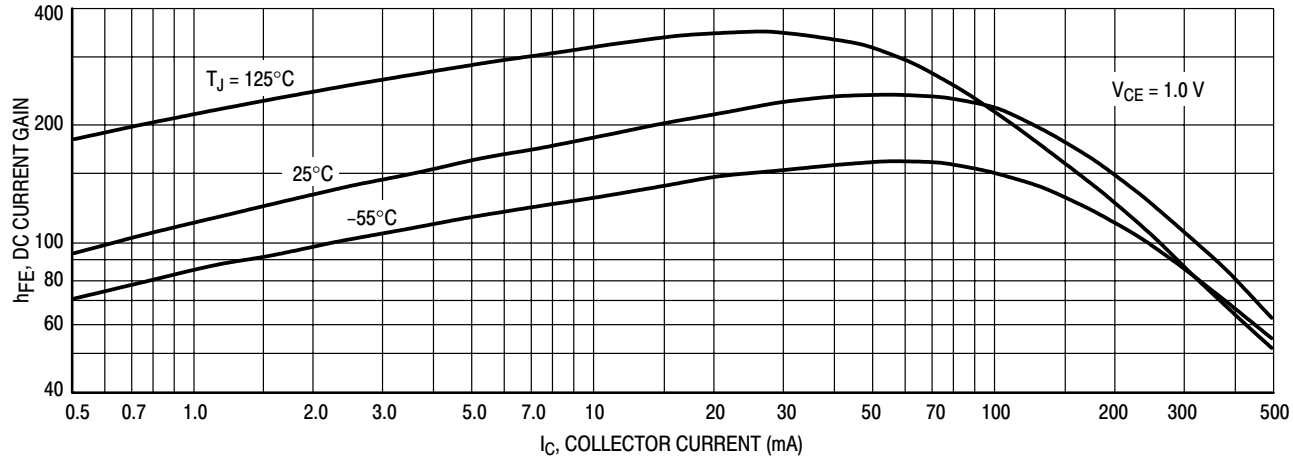


Figure 1. DC Current Gain

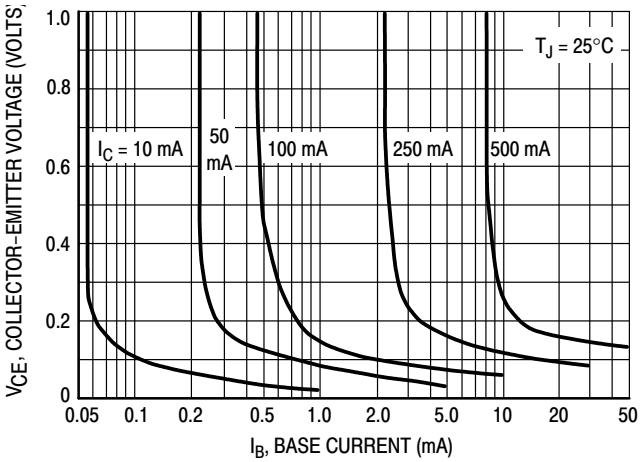


Figure 2. Collector Saturation Region

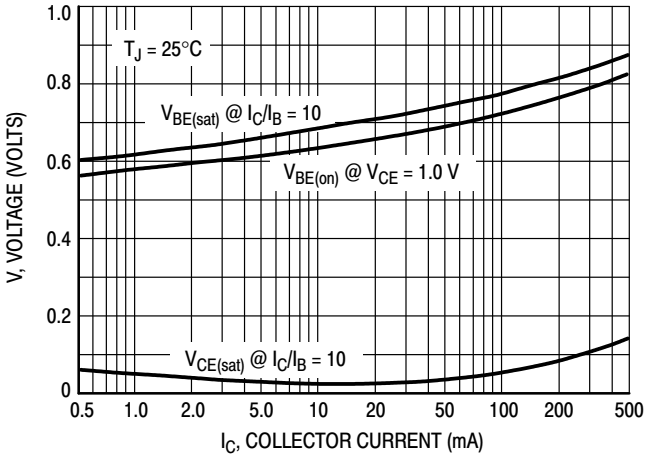


Figure 3. “On” Voltages

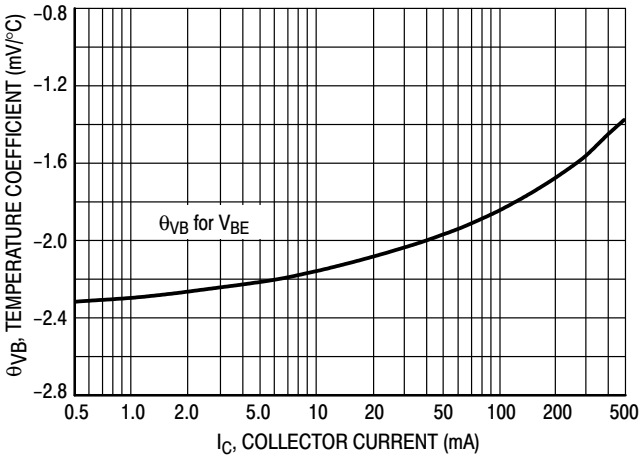


Figure 4. Base–Emitter Temperature Coefficient

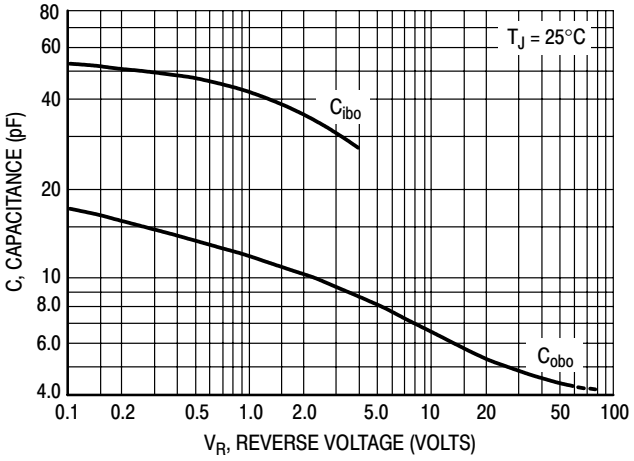


Figure 5. Capacitance

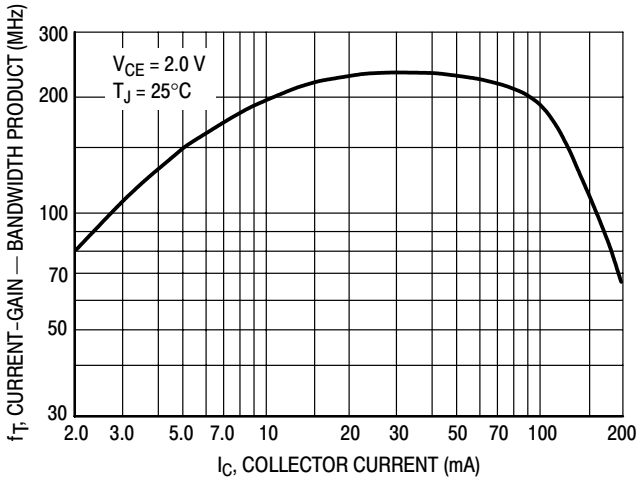


Figure 6. Current–Gain — Bandwidth Product

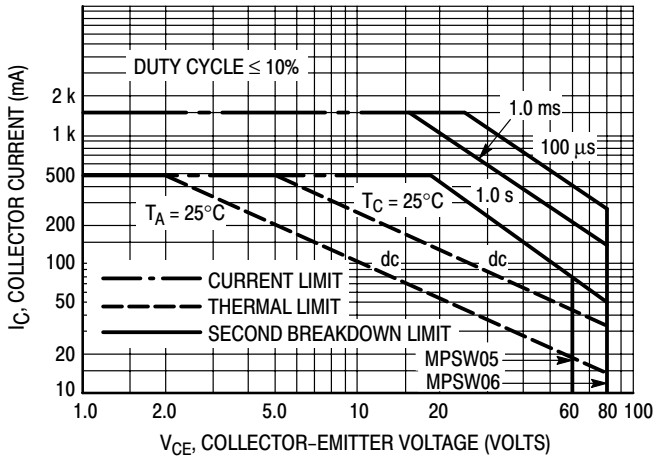
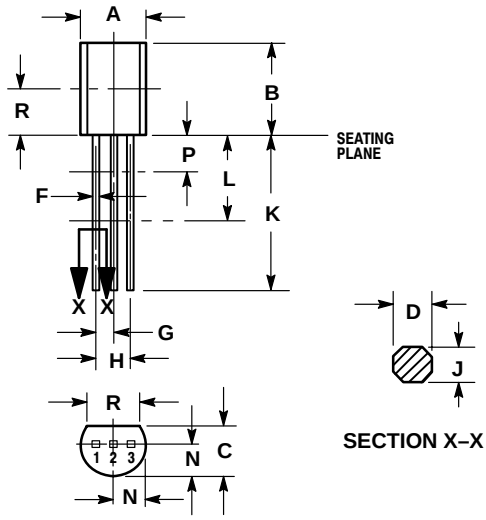


Figure 7. Active Region — Safe Operating Area

BDC01D

PACKAGE DIMENSIONS

TO–92 (TO–226)
CASE 29–10
ISSUE AL



SECTION X–X

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 MIMIMUM. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

	INCHES		MILLIMETERS	
DIM	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	0.021	0.457	0.533
F	0.016	0.019	0.407	0.482
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	---

YLE 14:
PIN 1. EMITTER
2. COLLECTOR
3. BASE

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