

BC490, BC490A, BC490B

High Current Transistors

PNP Silicon

- Device Marking: 490
490A
490B

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	-80	Vdc
Collector-Base Voltage	V_{CBO}	-80	Vdc
Emitter-Base Voltage	V_{EBO}	-4.0	Vdc
Collector Current — Continuous	I_C	-1.0	Adc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	625 5.0	mW mW/ $^\circ\text{C}$
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	1.5 12	Watts mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-55 to +150	$^\circ\text{C}$

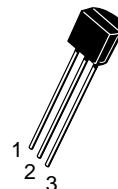
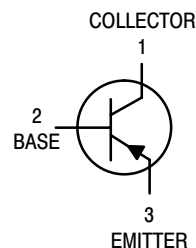
THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	200	$^\circ\text{C/W}$
Thermal Resistance, Junction to Case	$R_{\theta JC}$	83.3	$^\circ\text{C/W}$



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CASE 29
TO-92
STYLE 17

ORDERING INFORMATION

Device	Package	Shipping
BC490	TO-92	5000 Units/Box
BC490A	TO-92	5000 Units/Box
BC490AZL1	TO-92	2000/Ammo Pack
BC490BZL1	TO-92	2000/Ammo Pack

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

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector–Emitter Breakdown Voltage ⁽¹⁾ (I _C = –10 mA _{dc} , I _B = 0)	V _{(BR)CEO}	–80	—	—	V _{dc}
Collector–Base Breakdown Voltage (I _C = –100 μA _{dc} , I _E = 0)	V _{(BR)CBO}	–80	—	—	V _{dc}
Emitter–Base Breakdown Voltage (I _E = –10 μA _{dc} , I _C = 0)	V _{(BR)EBO}	–4.0	—	—	V _{dc}
Collector Cutoff Current (V _{CB} = –60 V _{dc} , I _E = 0)	I _{CBO}	—	—	–100	nA _{dc}

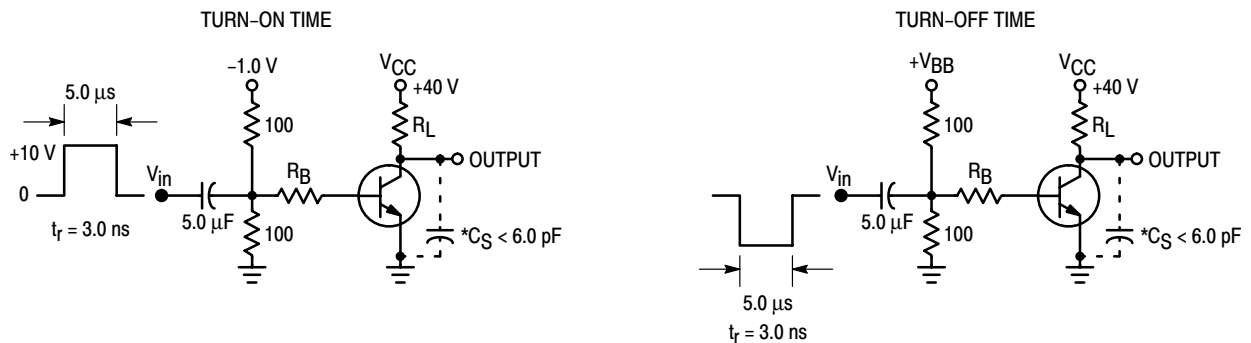
ON CHARACTERISTICS*

DC Current Gain (I _C = –10 mA _{dc} , V _{CE} = –2.0 V _{dc}) (I _C = –100 mA _{dc} , V _{CE} = –2.0 V _{dc}) (I _C = –1.0 A _{dc} , V _{CE} = –5.0 V _{dc})	h _{FE}	40 60 100 160 15	— — 140 — —	— 400 250 400 —	—
Collector–Emitter Saturation Voltage (I _C = –500 mA _{dc} , I _B = –50 mA _{dc}) (I _C = –1.0 A _{dc} , I _B = –100 mA _{dc})	V _{CE(sat)}	— —	–0.25 –0.5	–0.5 —	V _{dc}
Base–Emitter Saturation Voltage (I _C = –500 mA _{dc} , I _B = –50 mA _{dc}) (I _C = –1.0 A _{dc} , I _B = –100 mA _{dc})	V _{BE(sat)}	— —	–0.9 –1.0	–1.2 —	V _{dc}

DYNAMIC CHARACTERISTICS

Current–Gain — Bandwidth Product (I _C = –50 mA _{dc} , V _{CE} = –2.0 V _{dc} , f = 100 MHz)	f _T	—	150	—	MHz
Output Capacitance (V _{CB} = –10 V _{dc} , I _E = 0, f = 1.0 MHz)	C _{ob}	—	9.0	—	pF
Input Capacitance (V _{EB} = –0.5 V _{dc} , I _C = 0, f = 1.0 MHz)	C _{ib}	—	110	—	pF

1. Pulse Test: Pulse Width = 300 μs, Duty Cycle 2%.



*Total Shunt Capacitance of Test Jig and Connectors
For PNP Test Circuits, Reverse All Voltage Polarities

Figure 1. Switching Time Test Circuits

BC490, BC490A, BC490B

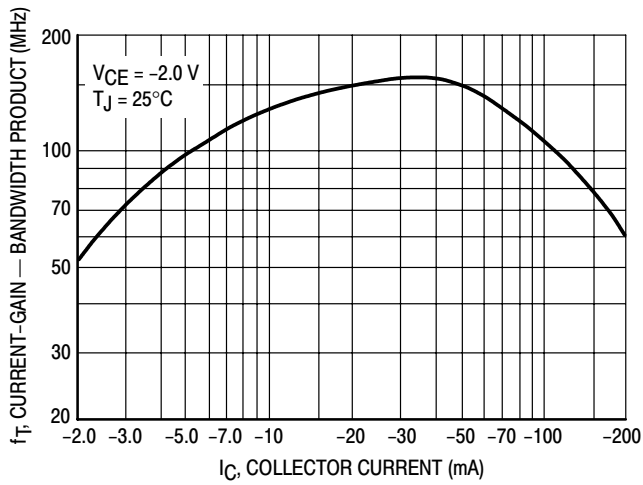


Figure 2. Current-Gain — Bandwidth Product

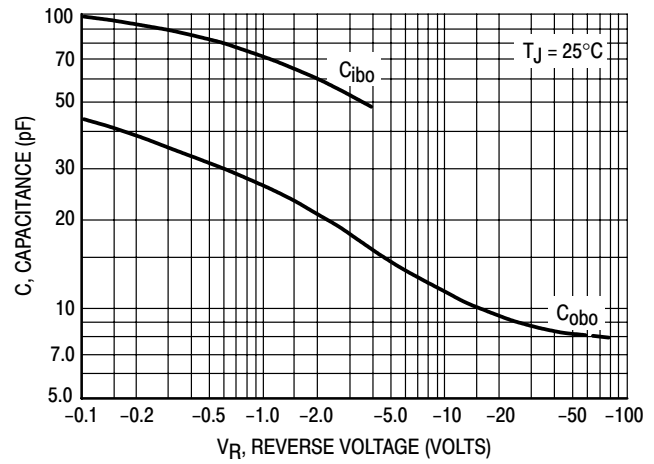


Figure 3. Capacitance

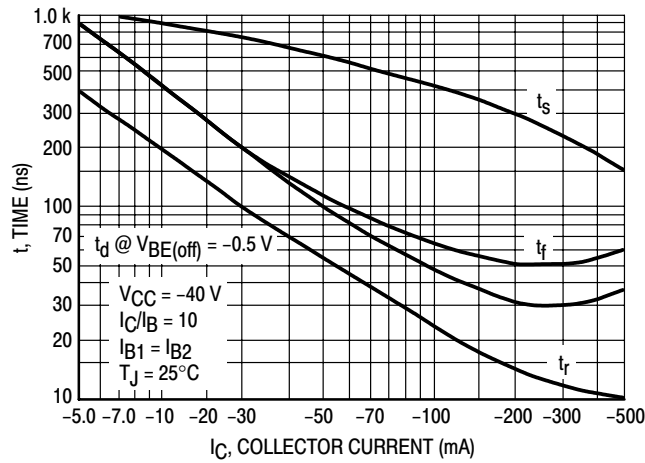


Figure 4. Switching Time

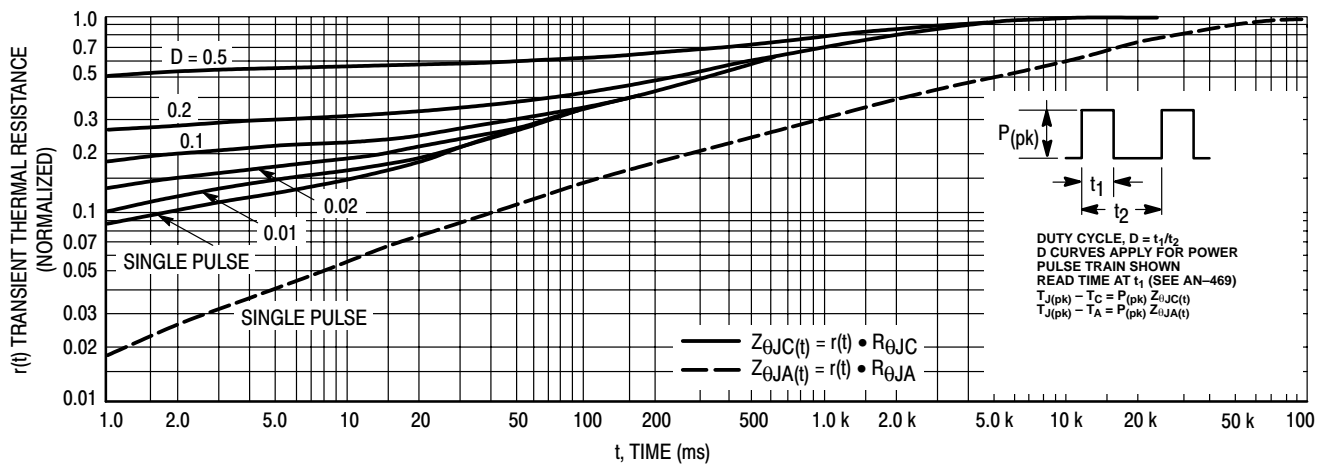


Figure 5. Thermal Response

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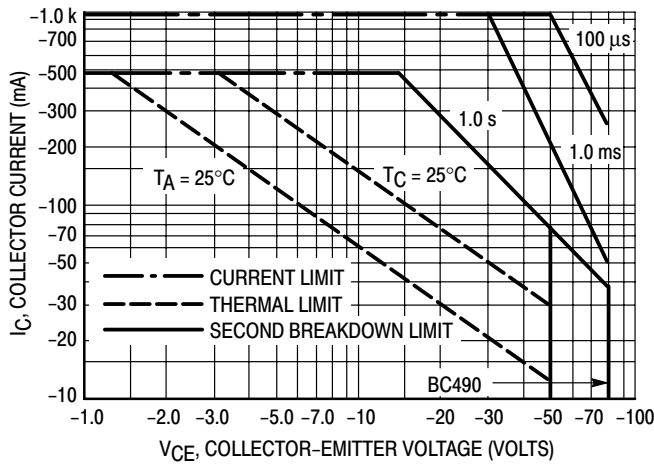


Figure 6. Active Region, Safe Operating Area

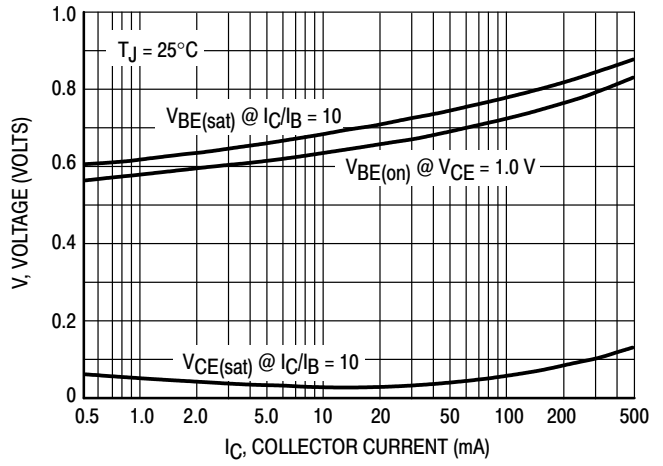


Figure 7. "On" Voltages

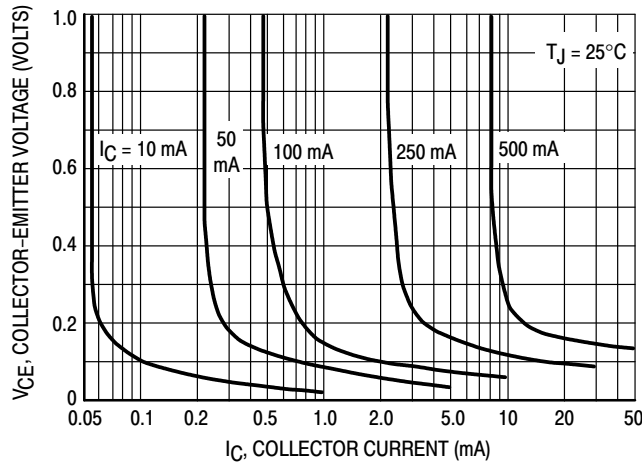


Figure 8. Collector Saturation Region

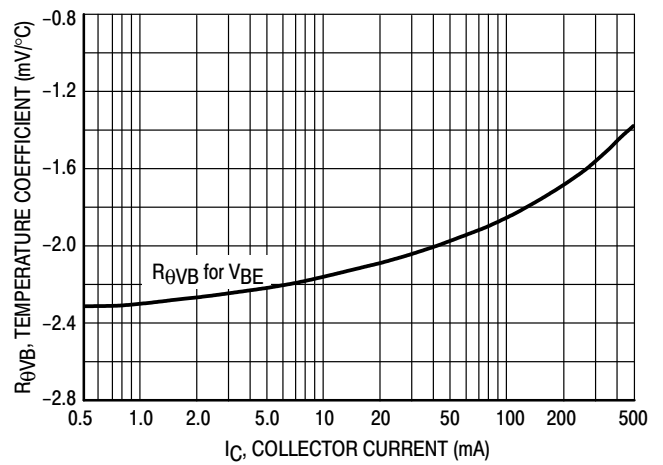


Figure 9. Base-Emitter Temperature Coefficient

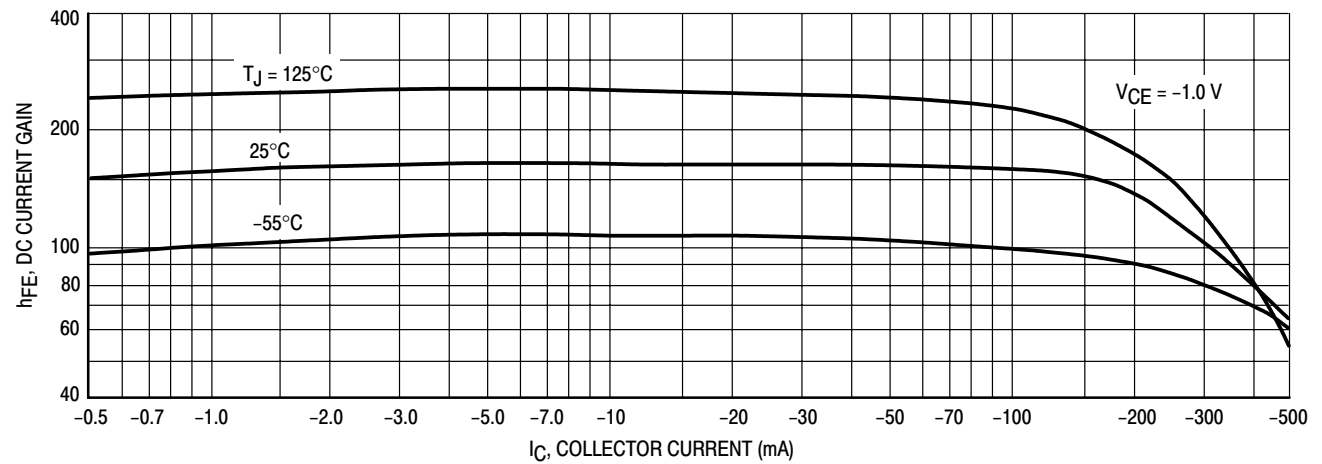


Figure 10. DC Current Gain

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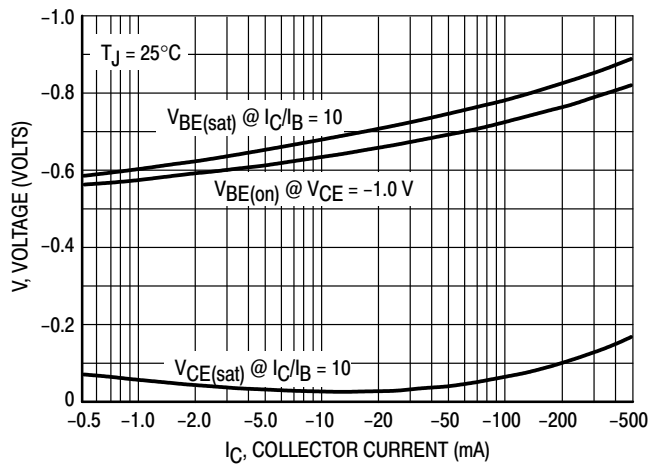


Figure 11. "On" Voltages

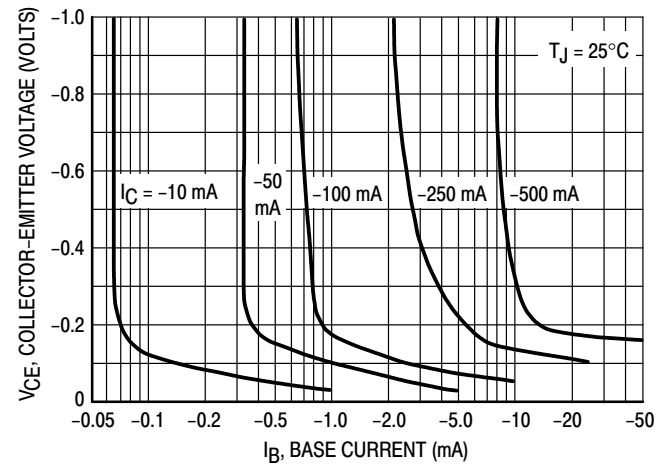


Figure 12. Collector Saturation Region

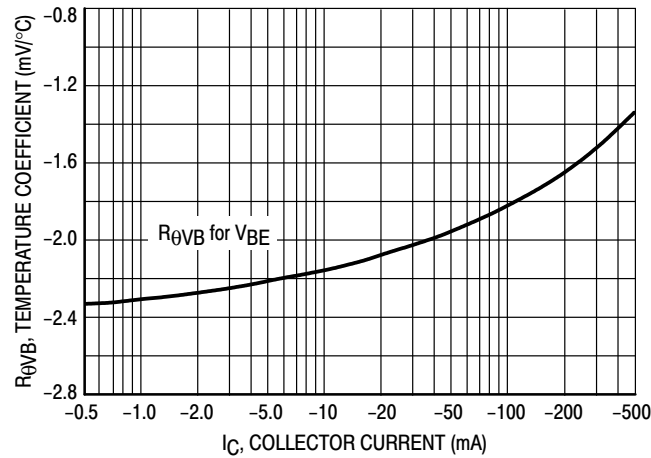
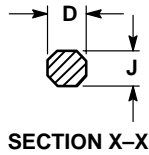
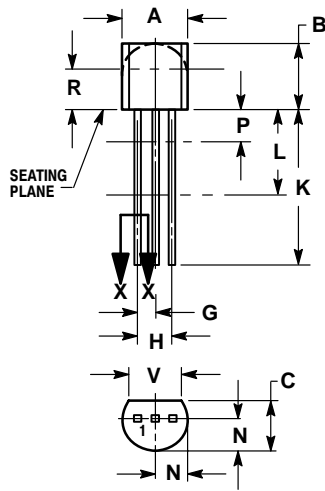


Figure 13. Base-Emitter Temperature Coefficient

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PACKAGE DIMENSIONS

TO-92
(TO-226)
CASE 29-11
ISSUE AL



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.


DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.175	0.205	4.45	5.20
B	0.170	0.210	4.32	5.33
C	0.125	0.165	3.18	4.19
D	0.016	0.021	0.407	0.533
G	0.045	0.055	1.15	1.39
H	0.095	0.105	2.42	2.66
J	0.015	0.020	0.39	0.50
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	0.115	---	2.93	---
V	0.135	---	3.43	---

STYLE 17:

1. COLLECTOR
2. BASE
3. EMITTER

Notes

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