

BC490

High Current Transistors

PNP Silicon

Features

- This is a Pb-Free Device*

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	W mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-55 to +150	$^\circ\text{C}$

THERMAL CHARACTERISTICS

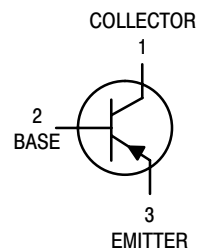
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	200	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	83.3	$^\circ\text{C/W}$

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

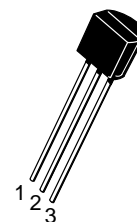


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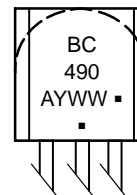


TO-92
CASE 29
STYLE 17



STRAIGHT LEAD
BULK PACK

MARKING DIAGRAM



A = Assembly Location
Y = Year
WW = Work Week
■ = Pb-Free Package
(Note: Microdot may be in either location)

ORDERING INFORMATION

Device	Package	Shipping
BC490G	TO-92 (Pb-Free)	5000 Units / Bulk

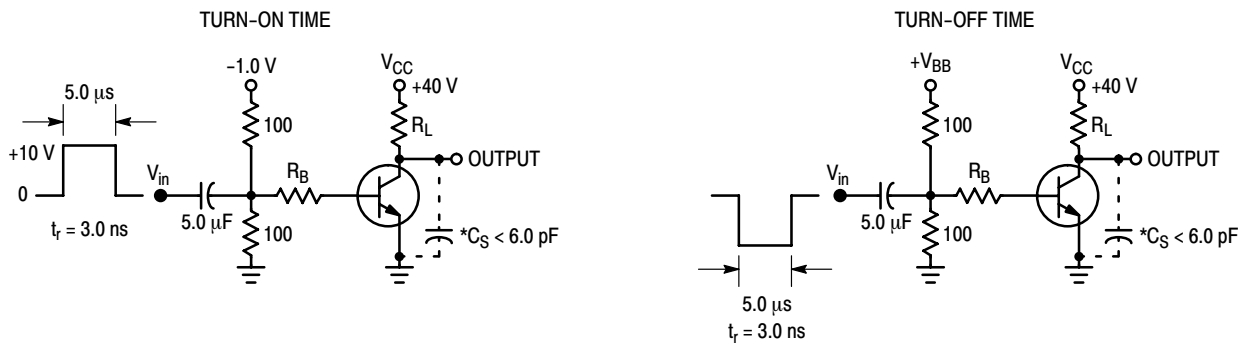
*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector–Emitter Breakdown Voltage (Note 1) (I _C = -10 mA, I _B = 0)	V _{(BR)CEO}	-80	-	-	Vdc
Collector–Base Breakdown Voltage (I _C = -100 μA, I _E = 0)	V _{(BR)CBO}	-80	-	-	Vdc
Emitter–Base Breakdown Voltage (I _E = -10 μA, I _C = 0)	V _{(BR)EBO}	-4.0	-	-	Vdc
Collector Cutoff Current (V _{CB} = -60 Vdc, I _E = 0)	I _{CBO}	-	-	-100	nAdc
ON CHARACTERISTICS					
DC Current Gain (I _C = -10 mA, V _{CE} = -2.0 Vdc) (I _C = -100 mA, V _{CE} = -2.0 Vdc) (I _C = -1.0 A, V _{CE} = -5.0 Vdc)	h _{FE}	40 60 15	- - -	- 400 -	-
Collector–Emitter Saturation Voltage (I _C = -500 mA, I _B = -50 mA) (I _C = -1.0 A, I _B = -100 mA)	V _{CE(sat)}	- -	-0.25 -0.5	-0.5 -	Vdc
Base–Emitter Saturation Voltage (I _C = -500 mA, I _B = -50 mA) (I _C = -1.0 A, I _B = -100 mA)	V _{BE(sat)}	- -	-0.9 -1.0	-1.2 -	Vdc
DYNAMIC CHARACTERISTICS					
Current–Gain – Bandwidth Product (I _C = -50 mA, V _{CE} = -2.0 Vdc, f = 100 MHz)	f _T	-	150	-	MHz
Output Capacitance (V _{CB} = -10 Vdc, I _E = 0, f = 1.0 MHz)	C _{ob}	-	9.0	-	pF
Input Capacitance (V _{EB} = -0.5 Vdc, 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

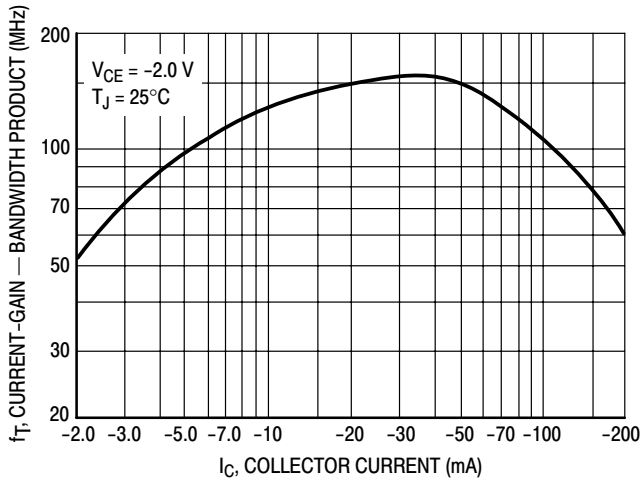


Figure 2. Current-Gain — Bandwidth Product

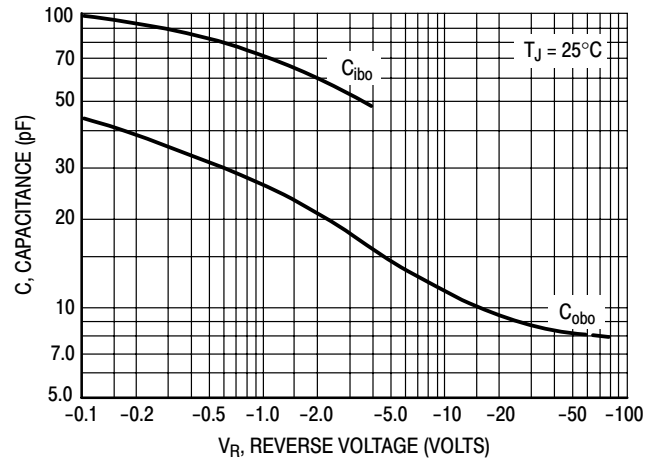


Figure 3. Capacitance

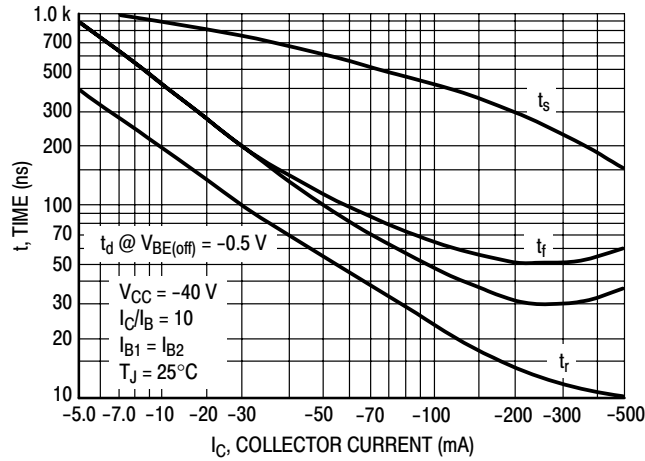


Figure 4. Switching Time

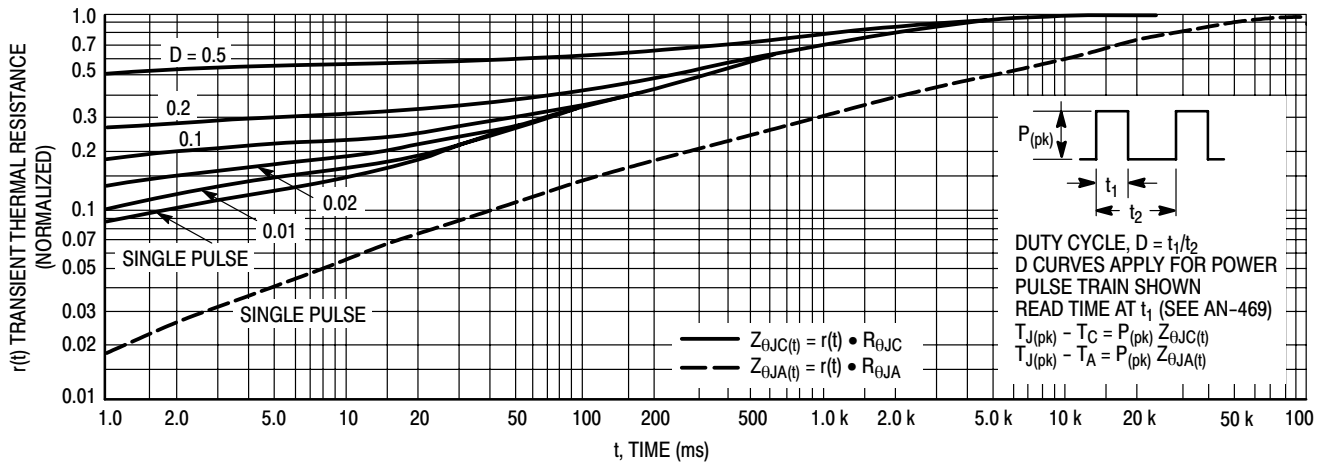


Figure 5. Thermal Response

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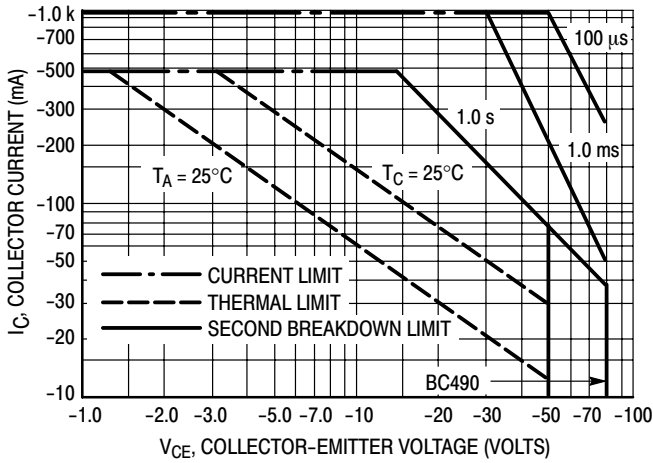


Figure 6. Active Region, Safe Operating Area

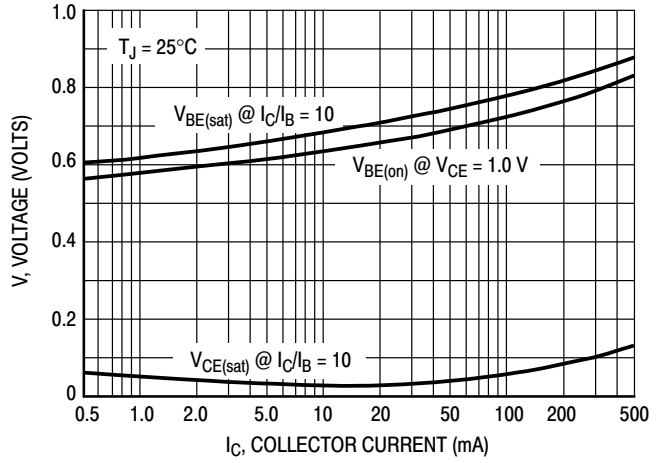


Figure 7. "On" Voltages

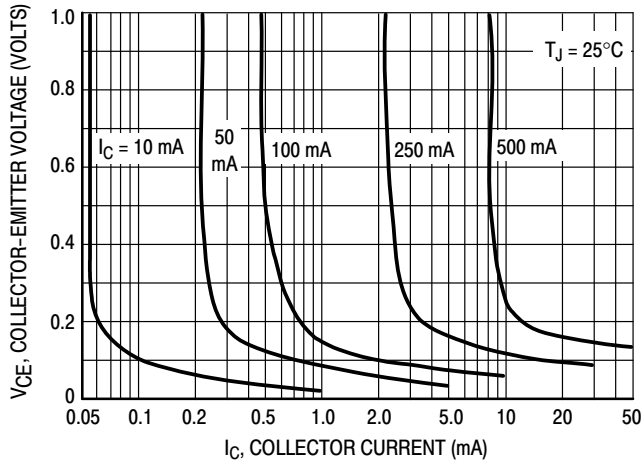


Figure 8. Collector Saturation Region

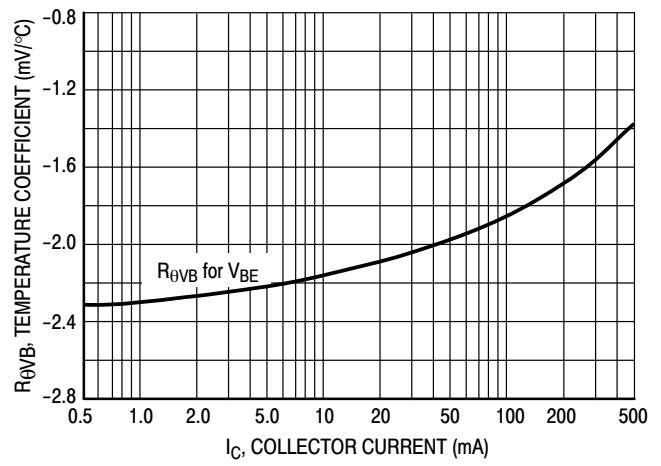


Figure 9. Base-Emitter Temperature Coefficient

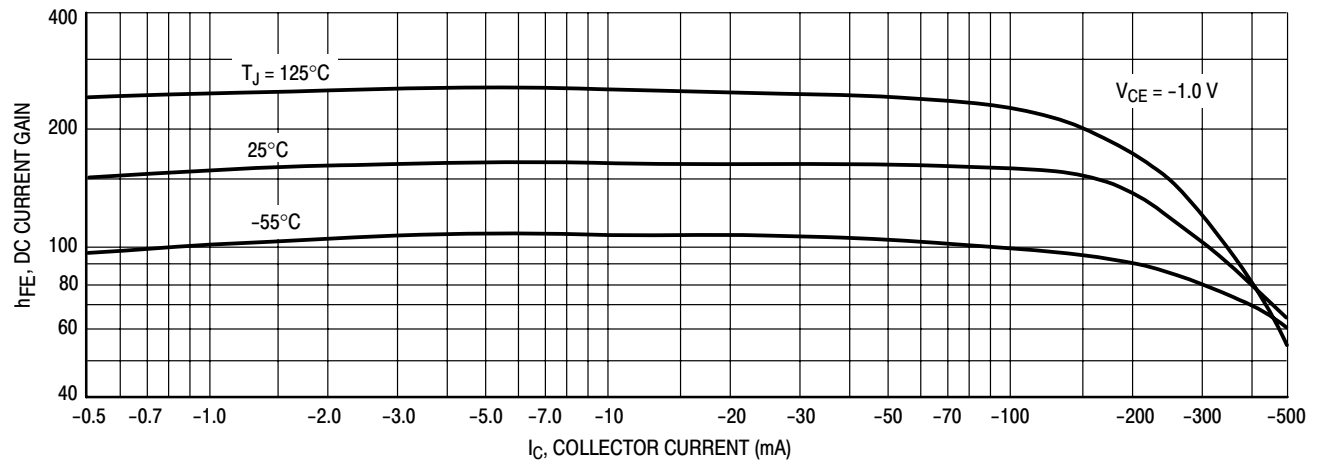


Figure 10. DC Current Gain

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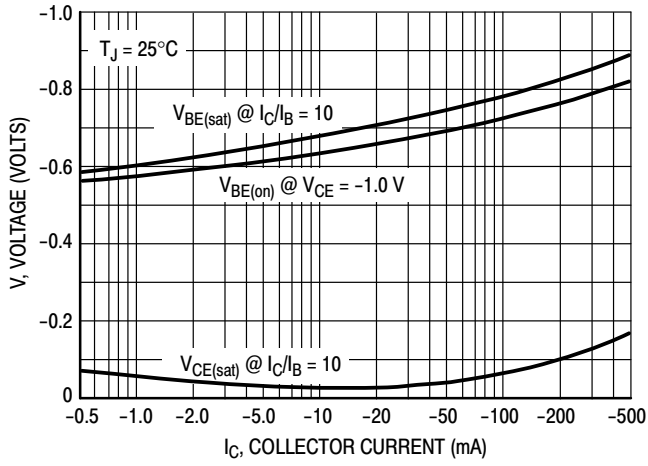


Figure 11. "On" Voltages

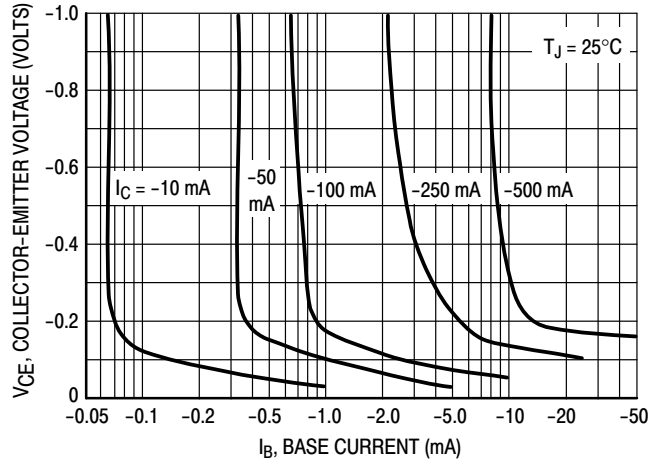


Figure 12. Collector Saturation Region

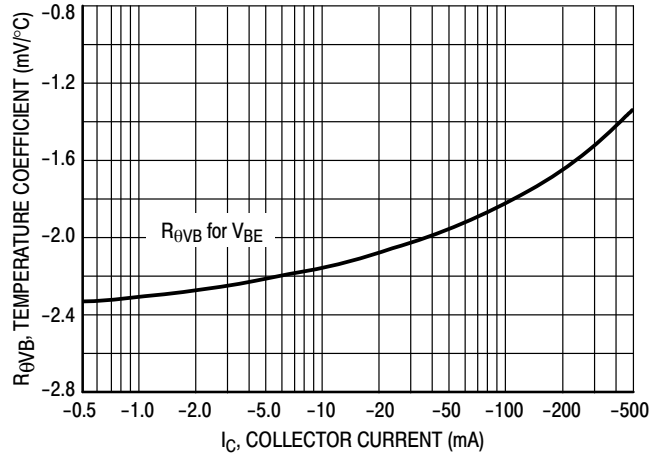
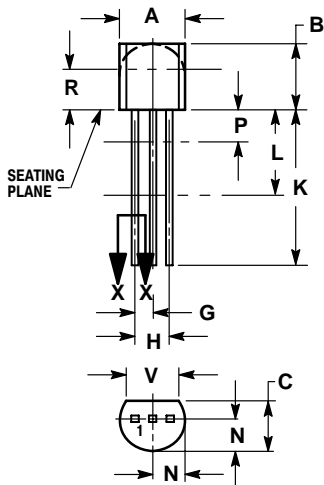


Figure 13. Base-Emitter Temperature Coefficient

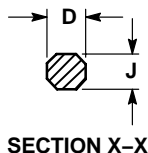
BC490

PACKAGE DIMENSIONS

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



STRAIGHT LEAD
BULK PACK

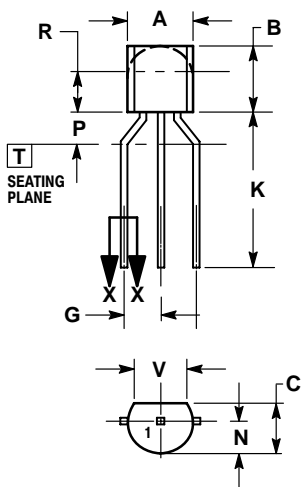


SECTION X-X

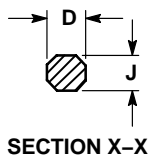
NOTES:

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



BENT LEAD
TAPE & REEL
AMMO PACK



SECTION X-X

NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

DIM	MILLIMETERS	
	MIN	MAX
A	4.45	5.20
B	4.32	5.33
C	3.18	4.19
D	0.40	0.54
G	2.40	2.80
J	0.39	0.50
K	12.70	---
N	2.04	2.66
P	1.50	4.00
R	2.93	---
V	3.43	---

STYLE 17:

1. COLLECTOR
2. BASE
3. EMITTER

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