

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 $\text{mW}/^\circ\text{C}$
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	1.5 12	W $\text{mW}/^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-55 to +150	°C

THERMAL CHARACTERISTICS

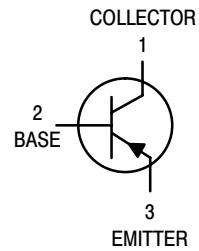
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	200	°C/W
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	83.3	°C/W

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.

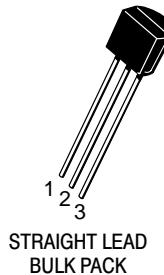


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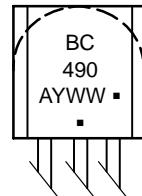
<http://onsemi.com>



TO-92
CASE 29
STYLE 17



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.

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

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage (Note 1) ($I_C = -10 \text{ mA}_\text{dc}$, $I_B = 0$)	$V_{(\text{BR})\text{CEO}}$	-80	-	-	Vdc
Collector-Base Breakdown Voltage ($I_C = -100 \mu\text{A}_\text{dc}$, $I_E = 0$)	$V_{(\text{BR})\text{CBO}}$	-80	-	-	Vdc
Emitter-Base Breakdown Voltage ($I_E = -10 \mu\text{A}_\text{dc}$, $I_C = 0$)	$V_{(\text{BR})\text{EBO}}$	-4.0	-	-	Vdc
Collector Cutoff Current ($V_{CB} = -60 \text{ Vdc}$, $I_E = 0$)	I_{CBO}	-	-	-100	nA dc

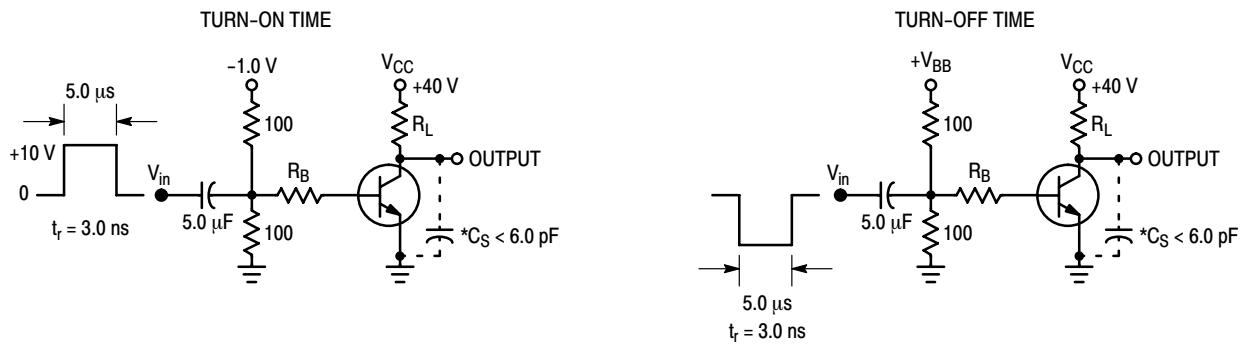
ON CHARACTERISTICS

DC Current Gain ($I_C = -10 \text{ mA}_\text{dc}$, $V_{CE} = -2.0 \text{ Vdc}$) ($I_C = -100 \text{ mA}_\text{dc}$, $V_{CE} = -2.0 \text{ Vdc}$) ($I_C = -1.0 \text{ A}_\text{dc}$, $V_{CE} = -5.0 \text{ Vdc}$)	h_{FE}	40 60 15	-	- 400 -	-
Collector-Emitter Saturation Voltage ($I_C = -500 \text{ mA}_\text{dc}$, $I_B = -50 \text{ mA}_\text{dc}$) ($I_C = -1.0 \text{ A}_\text{dc}$, $I_B = -100 \text{ mA}_\text{dc}$)	$V_{CE(\text{sat})}$	- -	-0.25 -0.5	-0.5 -	Vdc
Base-Emitter Saturation Voltage ($I_C = -500 \text{ mA}_\text{dc}$, $I_B = -50 \text{ mA}_\text{dc}$) ($I_C = -1.0 \text{ A}_\text{dc}$, $I_B = -100 \text{ mA}_\text{dc}$)	$V_{BE(\text{sat})}$	- -	-0.9 -1.0	-1.2 -	Vdc

DYNAMIC CHARACTERISTICS

Current-Gain - Bandwidth Product ($I_C = -50 \text{ mA}_\text{dc}$, $V_{CE} = -2.0 \text{ Vdc}$, $f = 100 \text{ MHz}$)	f_T	-	150	-	MHz
Output Capacitance ($V_{CB} = -10 \text{ Vdc}$, $I_E = 0$, $f = 1.0 \text{ MHz}$)	C_{ob}	-	9.0	-	pF
Input Capacitance ($V_{EB} = -0.5 \text{ Vdc}$, $I_C = 0$, $f = 1.0 \text{ MHz}$)	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

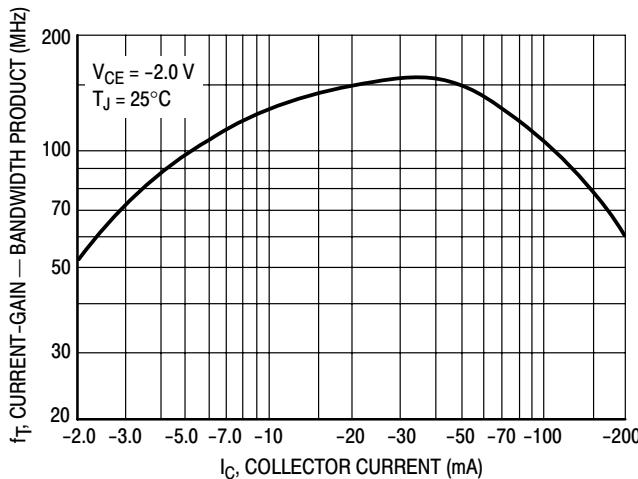


Figure 2. Current-Gain — Bandwidth Product

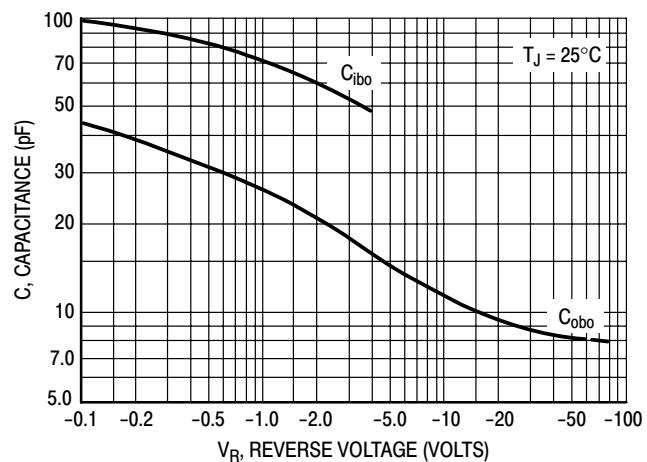


Figure 3. Capacitance

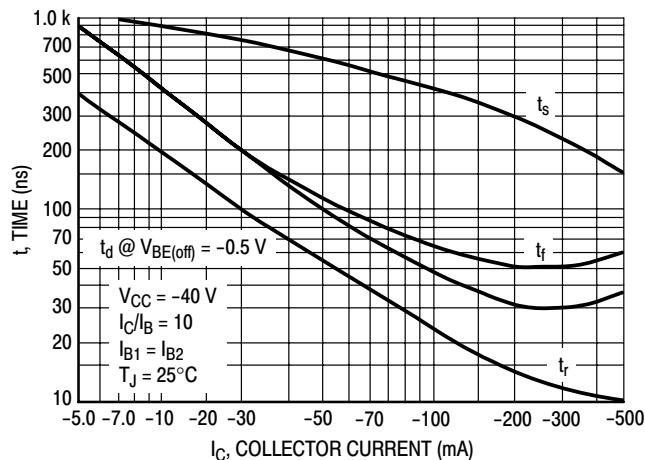


Figure 4. Switching Time

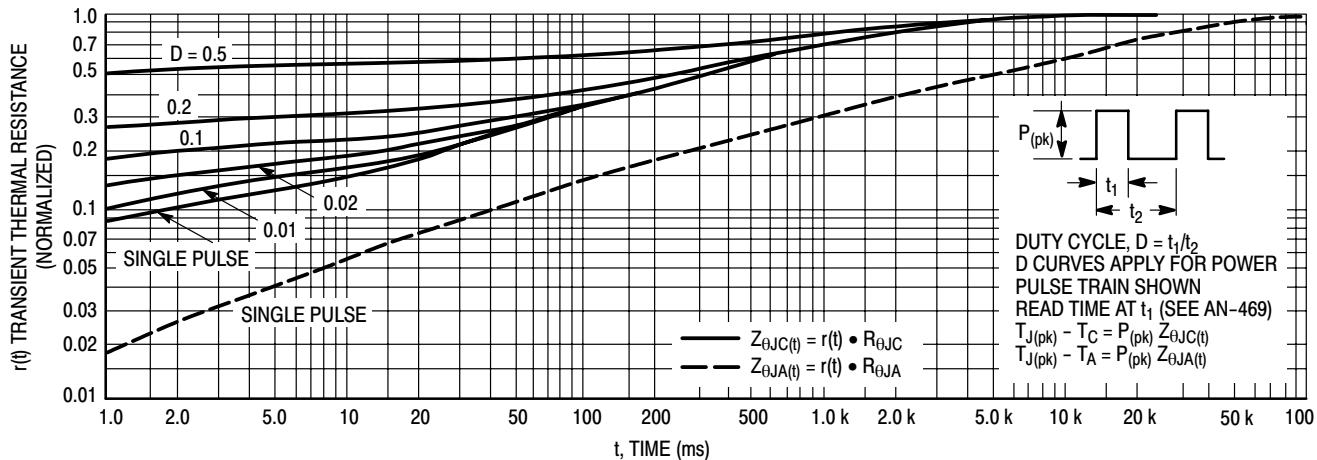


Figure 5. Thermal Response

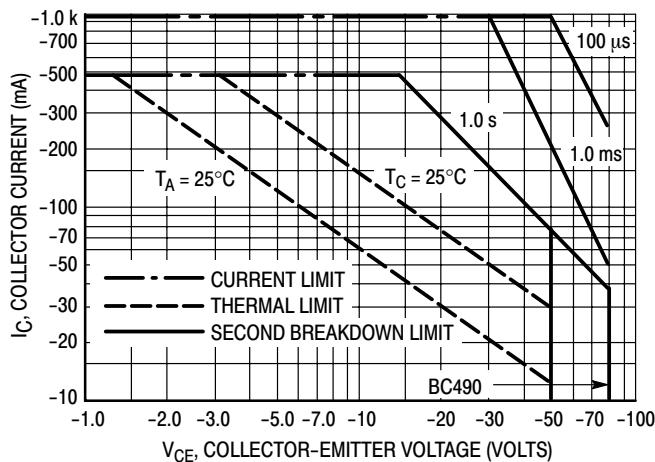


Figure 6. Active Region, Safe Operating Area

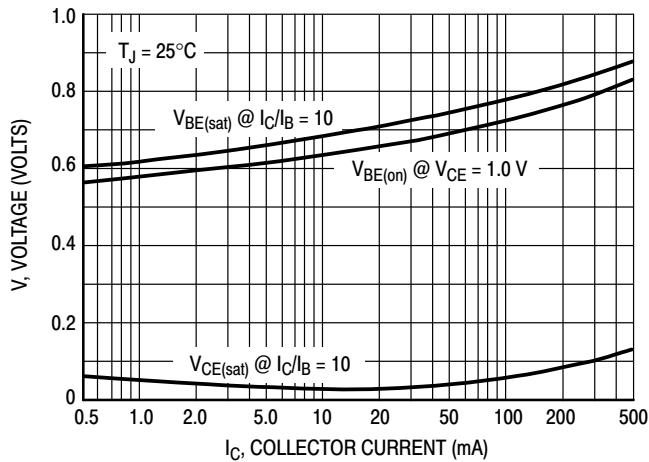


Figure 7. "On" Voltages

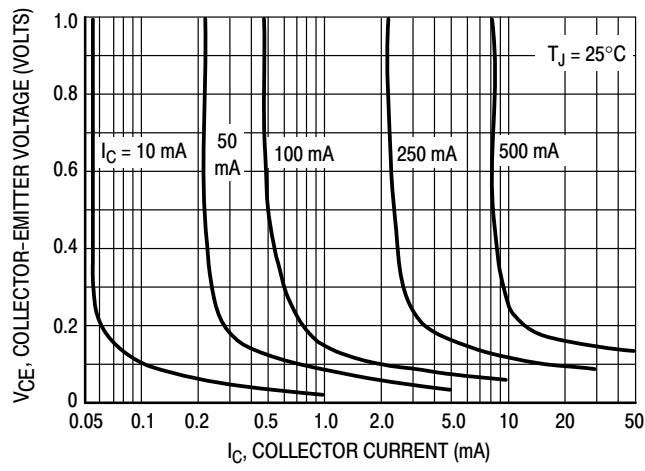


Figure 8. Collector Saturation Region

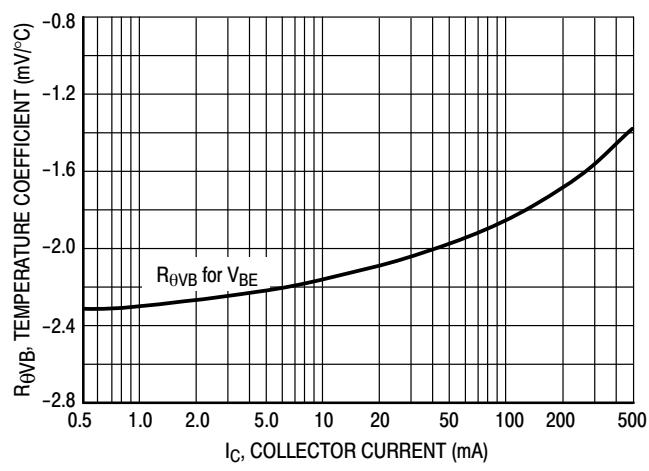


Figure 9. Base-Emitter Temperature Coefficient

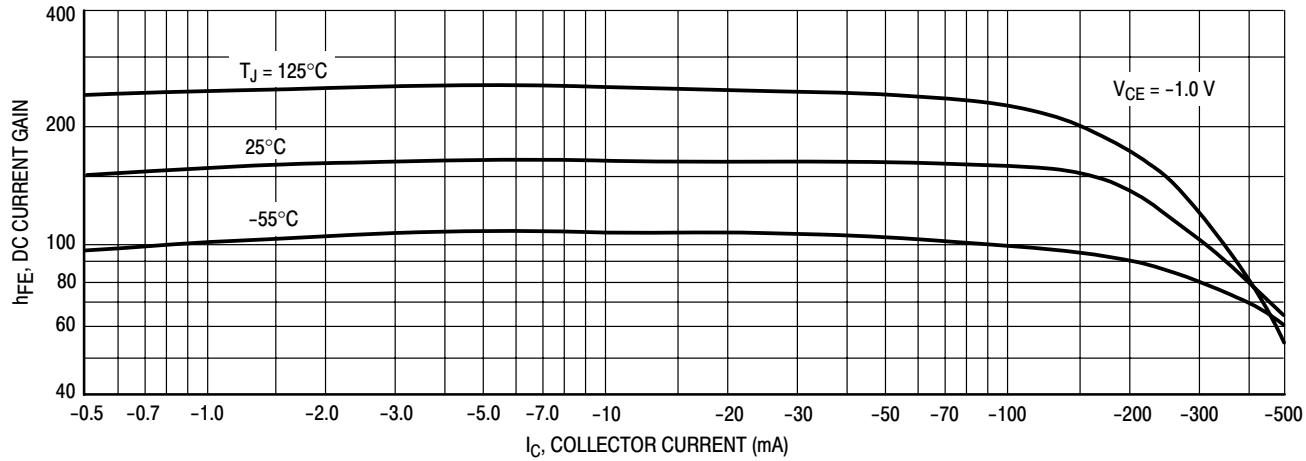


Figure 10. DC Current Gain

BC490

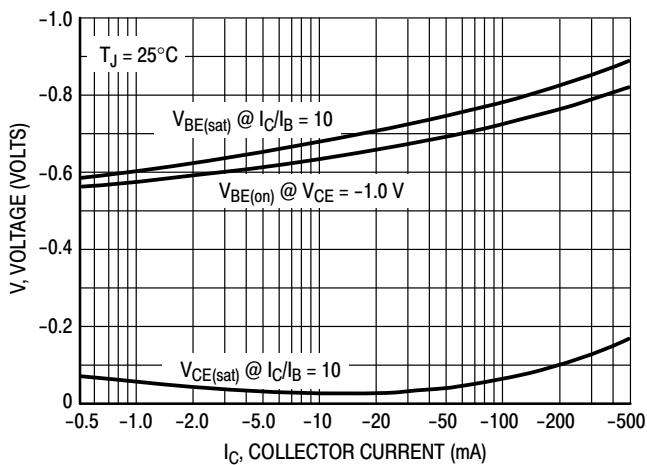


Figure 11. "On" Voltages

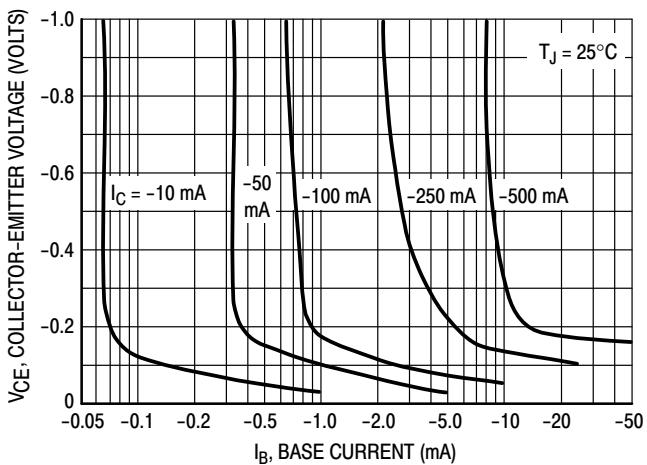


Figure 12. Collector Saturation Region

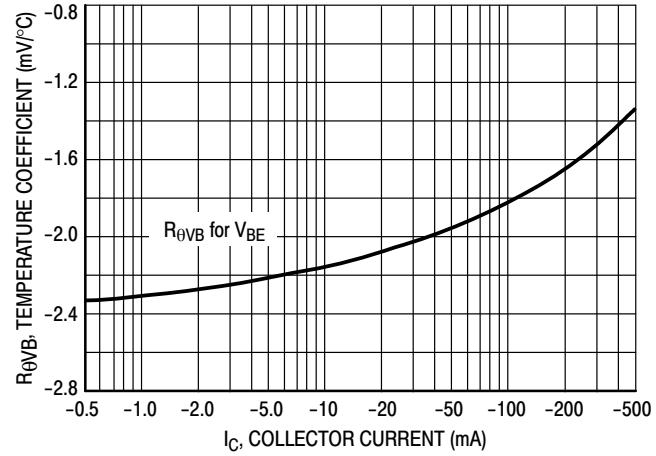
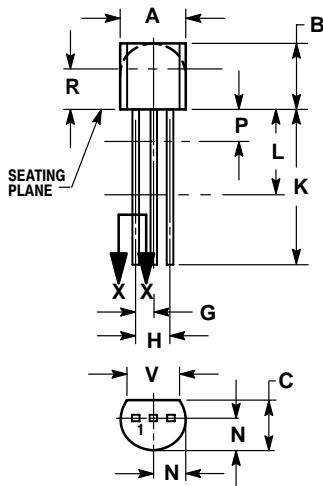


Figure 13. Base-Emitter Temperature Coefficient

PACKAGE DIMENSIONS

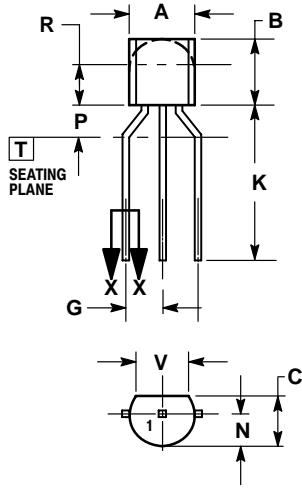
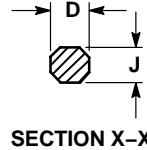
TO-92 (TO-226)
CASE 29-11
ISSUE AM

STRAIGHT LEAD BULK PACK

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

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:
PIN 1. COLLECTOR
2. BASE
3. Emitter

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