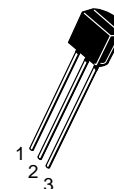


High Current Transistors

PNP Silicon

BC490,A



CASE 29-04, STYLE 17
TO-92 (TO-226AA)

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	–0.5	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	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	$R_{\theta JA}$	200	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction to Case	$R_{\theta JC}$	83.3	$^\circ\text{C}/\text{W}$

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

Characteristic	Symbol	Min	Typ	Max	Unit
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OFF CHARACTERISTICS

Collector–Emitter Breakdown Voltage ⁽¹⁾ ($I_C = -10 \text{ mAdc}, I_E = 0$)	$V_{(BR)CEO}$	–80	—	—	Vdc
Collector–Base Breakdown Voltage ($I_C = -100 \mu\text{Adc}, I_E = 0$)	$V_{(BR)CBO}$	–80	—	—	Vdc
Emitter–Base Breakdown Voltage ($I_E = -10 \mu\text{Adc}, I_C = 0$)	$V_{(BR)EBO}$	–4.0	—	—	Vdc
Collector Cutoff Current ($V_{CB} = -60 \text{ Vdc}, I_E = 0$)	I_{CBO}	—	—	–100	nAdc

ON CHARACTERISTICS*

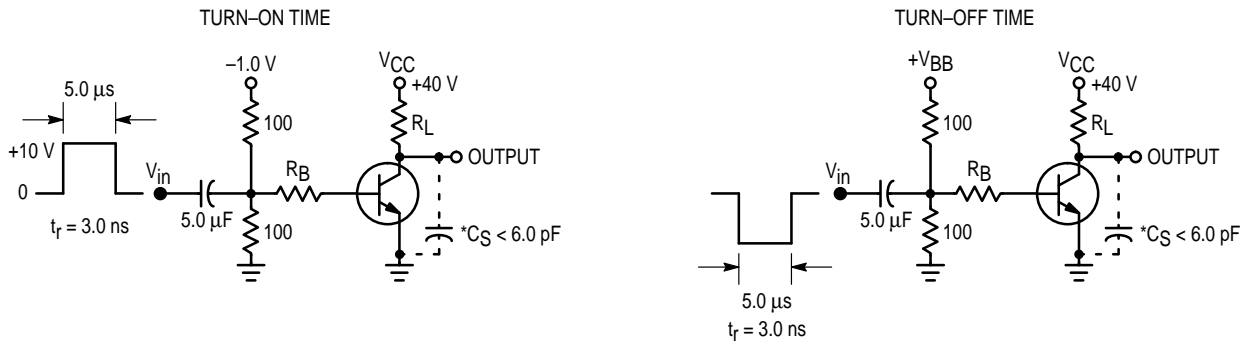
DC Current Gain ($I_C = -10 \text{ mAdc}, V_{CE} = -2.0 \text{ Vdc}$) ($I_C = -100 \text{ mAdc}, V_{CE} = -2.0 \text{ Vdc}$) ($I_C = -1.0 \text{ Adc}, V_{CE} = -5.0 \text{ Vdc}$)	h_{FE}	40 60 100 15	— — 140 —	— 400 250 —	—
	BC490				
	BC490A				

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

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

Characteristic	Symbol	Min	Min	Max	Unit
ON CHARACTERISTICS(1) (Continued)					
Collector–Emitter Saturation Voltage ($I_C = -500\text{ mA dc}$, $I_B = -50\text{ mA dc}$) ($I_C = -1.0\text{ A dc}$, $I_B = -100\text{ mA dc}$)	$V_{CE(\text{sat})}$	—	-0.25	-0.5	Vdc
Base–Emitter Saturation Voltage ($I_C = -500\text{ mA dc}$, $I_B = -50\text{ mA dc}$) ($I_C = -1.0\text{ A dc}$, $I_B = -100\text{ mA dc}$)	$V_{BE(\text{sat})}$	—	-0.9	-1.2	Vdc
DYNAMIC CHARACTERISTICS					
Current–Gain — Bandwidth Product ($I_C = -50\text{ mA dc}$, $V_{CE} = -2.0\text{ V dc}$, $f = 100\text{ MHz}$)	f_T	—	150	—	MHz
Output Capacitance ($V_{CB} = -10\text{ V dc}$, $I_E = 0$, $f = 1.0\text{ MHz}$)	C_{ob}	—	9.0	—	pF
Input Capacitance ($V_{EB} = -0.5\text{ V dc}$, $I_C = 0$, $f = 1.0\text{ MHz}$)	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

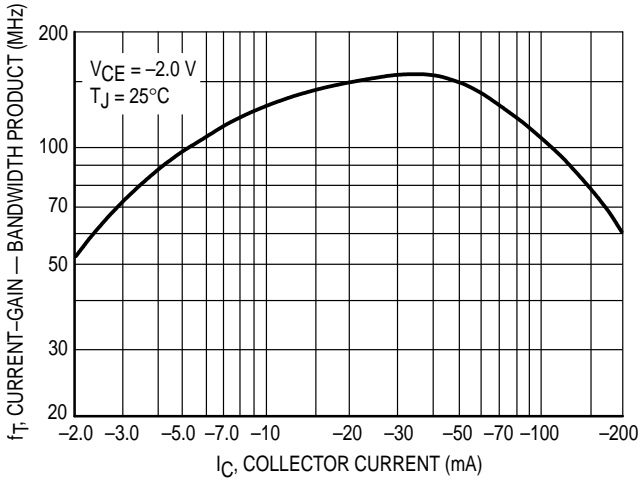


Figure 2. Current-Gain — Bandwidth Product

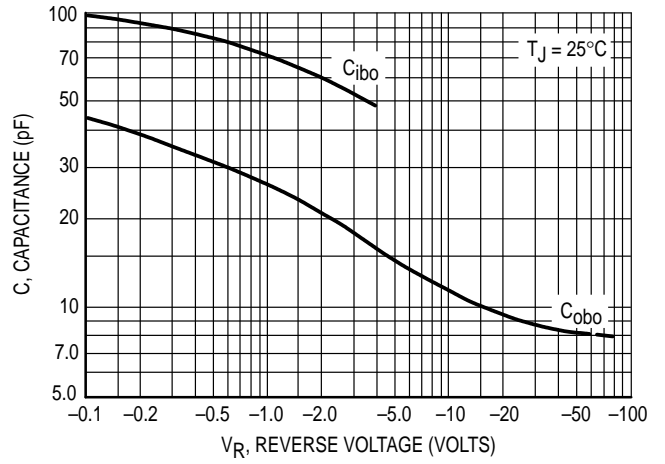


Figure 3. Capacitance

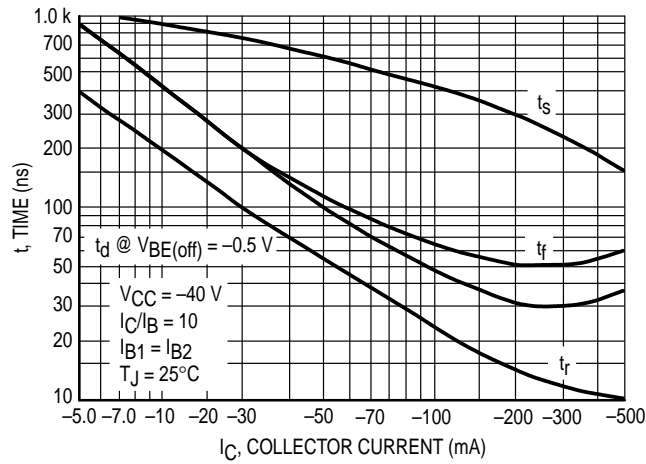


Figure 4. Switching Time

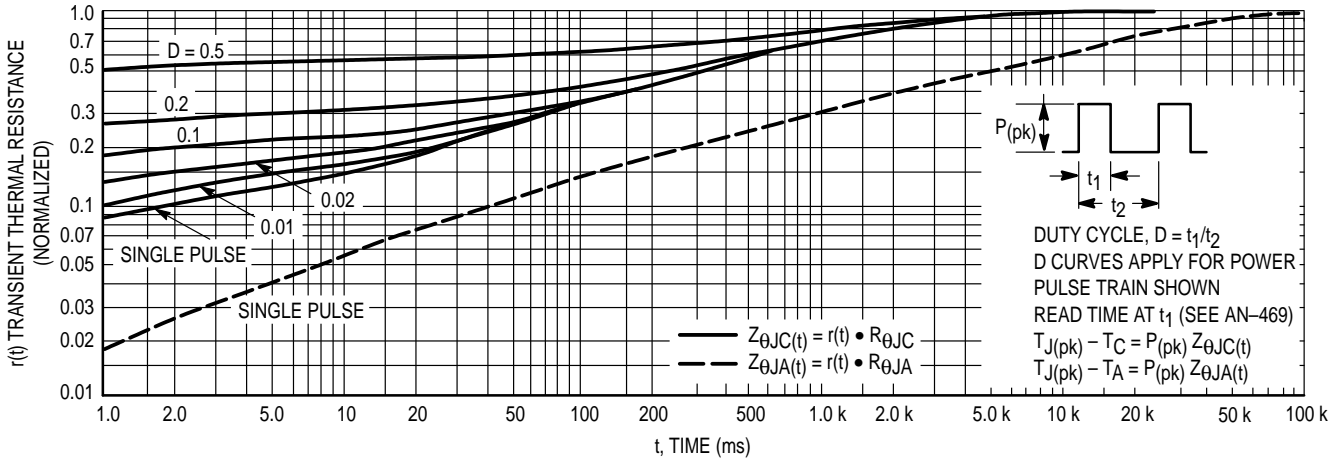


Figure 5. Thermal Response

BC490,A

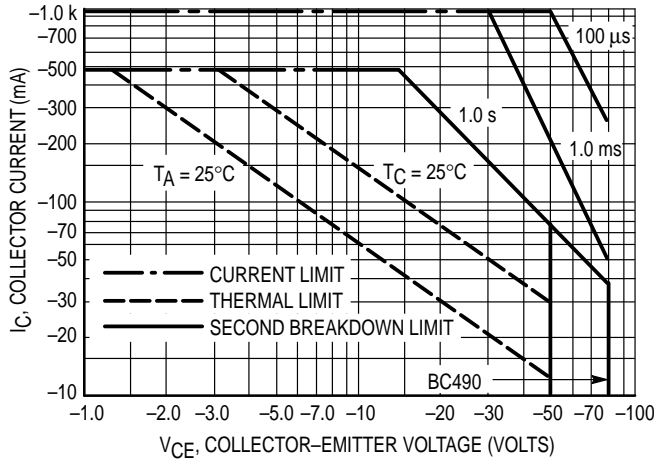


Figure 6. Active Region, Safe Operating Area

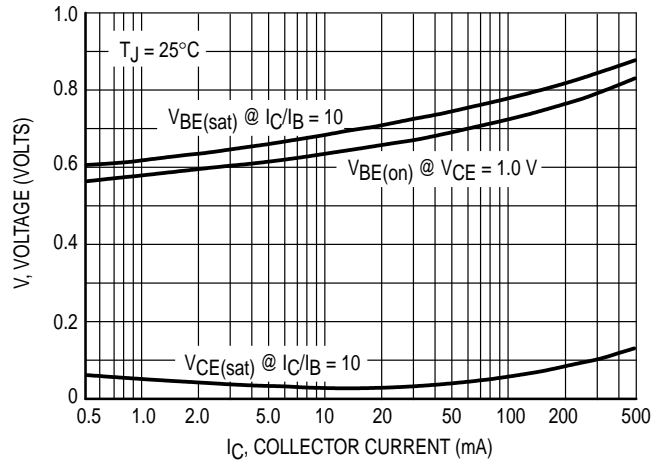


Figure 7. "On" Voltages

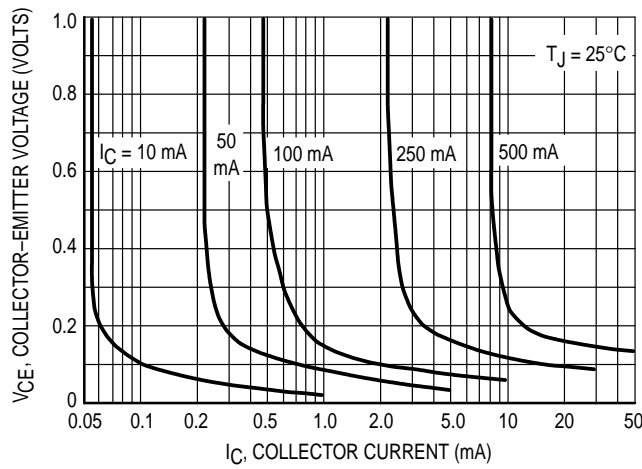


Figure 8. Collector Saturation Region

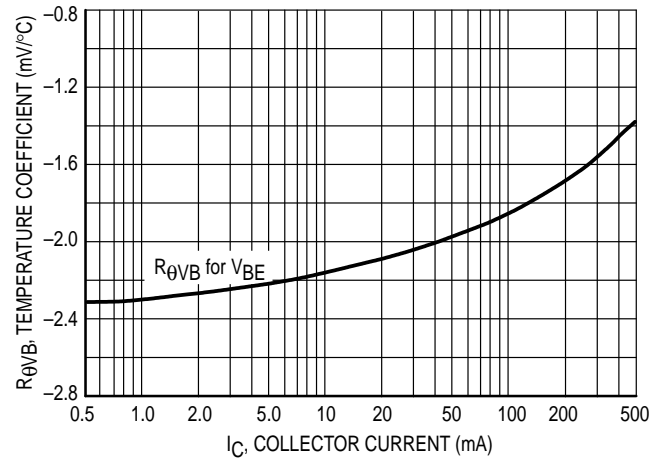


Figure 9. Base-Emitter Temperature Coefficient

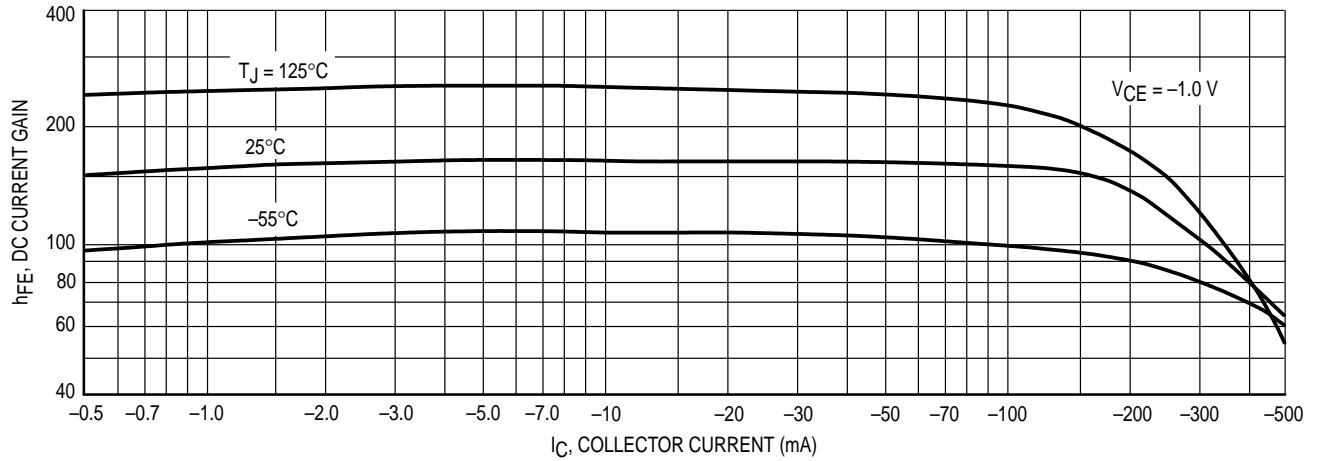


Figure 10. DC Current Gain

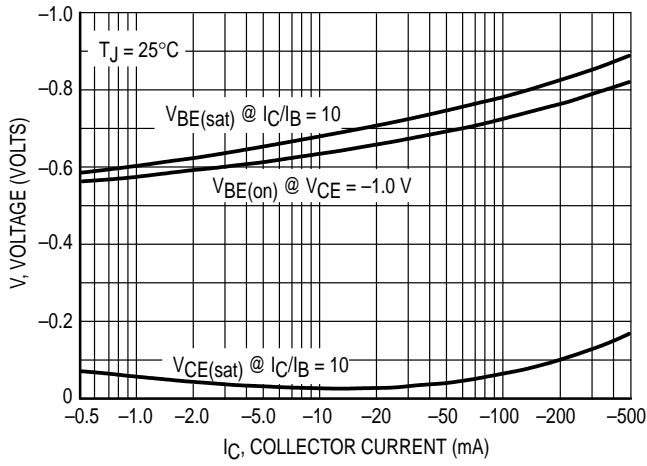


Figure 11. "On" Voltages

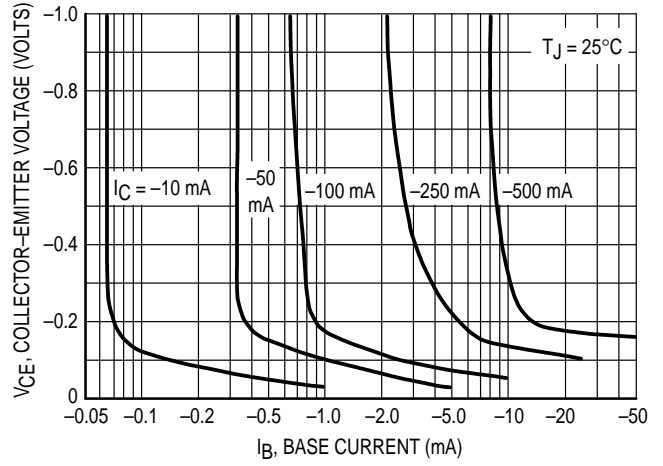


Figure 12. Collector Saturation Region

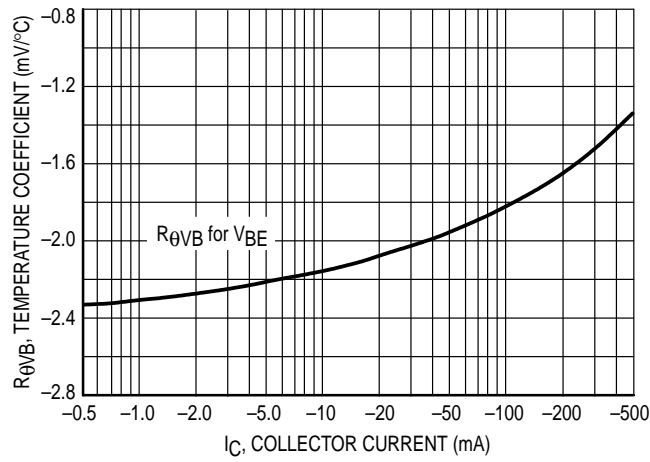


Figure 13. Base-Emitter Temperature Coefficient

PACKAGE DIMENSIONS



CASE 029-04
(TO-226AA)
ISSUE AD

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. DIMENSION 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	4.45	5.20
B	0.170	0.210	4.32	5.33
C	0.125	0.165	3.18	4.19
D	0.016	0.022	0.41	0.55
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	0.015	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

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