

BF493S

High Voltage Transistor

PNP Silicon

Features

- Pb-Free Package is Available*

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	-350	Vdc
Collector-Base Voltage	V_{CBO}	-350	Vdc
Emitter-Base Voltage	V_{EBO}	-6.0	Vdc
Collector Current - Continuous	I_C	-500	mA _{dc}
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

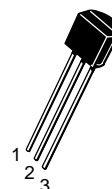
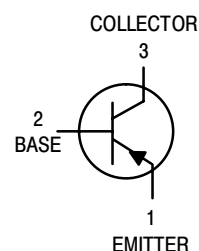
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	200	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	83.3	$^\circ\text{C}/\text{W}$

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.



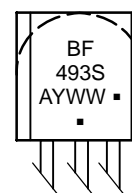
ON Semiconductor®

<http://onsemi.com>



TO-92
CASE 29-11
STYLE 1

MARKING DIAGRAM



BF493S = Device Code
A = Assembly Location
Y = Year
WW = Work Week
■ = Pb-Free Package

(Note: Microdot may be in either location)

ORDERING INFORMATION

Device	Package	Shipping
BF493S	TO-92	5000 Units / Box
BF493SG	TO-92 (Pb-Free)	5000 Units / Box

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

BF493S

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector–Emitter Breakdown Voltage (Note 1) ($I_C = -1.0\text{ mA}$, $I_B = 0$)	$V_{(BR)CEO}$	-350	-	Vdc
Collector–Base Breakdown Voltage ($I_C = -100\text{ }\mu\text{A}$, $I_E = 0$)	$V_{(BR)CBO}$	-350	-	Vdc
Emitter–Base Breakdown Voltage ($I_E = -100\text{ }\mu\text{A}$, $I_C = 0$)	$V_{(BR)EBO}$	-6.0	-	Vdc
Collector Cutoff Current ($V_{CE} = -250\text{ Vdc}$)	I_{CES}	-	-10	nAdc
Emitter Cutoff Current ($V_{EB} = -6.0\text{ Vdc}$, $I_C = 0$)	I_{EBO}	-	0.1	μAdc
Collector Cutoff Current ($V_{CB} = -250\text{ Vdc}$, $I_E = 0$, $T_A = 25^\circ\text{C}$) ($V_{CB} = -250\text{ Vdc}$, $I_E = 0$, $T_A = 100^\circ\text{C}$)	I_{CBO}	- -	-0.005 -1.0	μAdc
ON CHARACTERISTICS				
DC Current Gain ($I_C = -1.0\text{ mA}$, $V_{CE} = -10\text{ Vdc}$) ($I_C = -10\text{ mA}$, $V_{CE} = -10\text{ Vdc}$)	h_{FE}	25 40	- -	-
Collector–Emitter Saturation Voltage ($I_C = -20\text{ mA}$, $I_B = -2.0\text{ mA}$)	$V_{CE(sat)}$	-	-2.0	Vdc
Base–Emitter On Voltage ($I_C = -20\text{ mA}$, $I_B = -2.0\text{ mA}$)	$V_{BE(sat)}$	-	-2.0	Vdc
DYNAMIC CHARACTERISTICS				
Current–Gain – Bandwidth Product ($I_C = -10\text{ mA}$, $V_{CE} = -20\text{ Vdc}$, $f = 20\text{ MHz}$)	f_T	50	-	MHz
Common–Emitter Feedback Capacitance ($V_{CB} = -100\text{ Vdc}$, $I_E = 0$, $f = 1.0\text{ MHz}$)	C_{re}	-	1.6	pF

1. Pulse Test: Pulse Width $\leq 300\text{ }\mu\text{s}$; Duty Cycle $\leq 2.0\%$.

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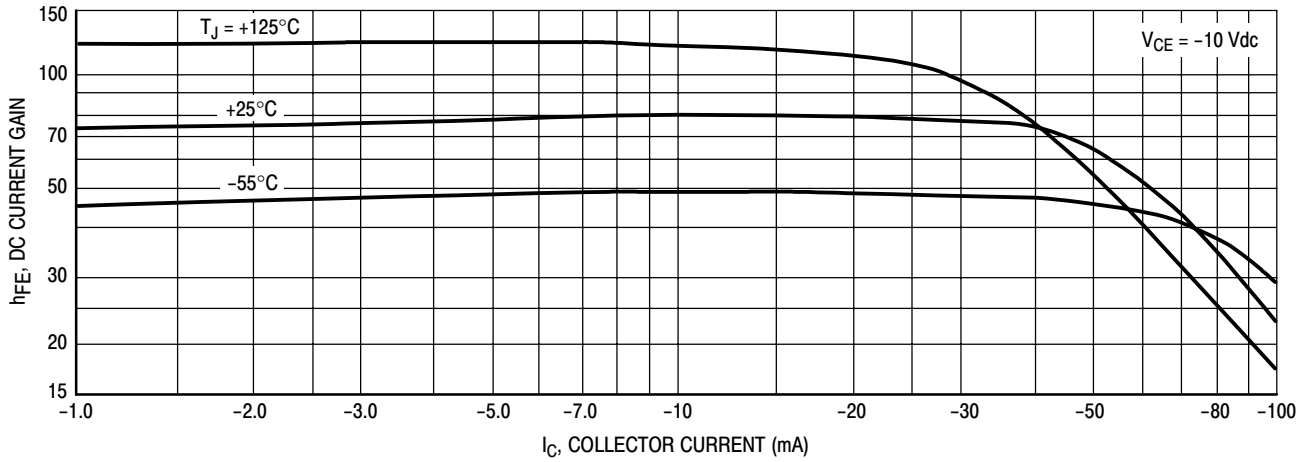


Figure 1. DC Current Gain

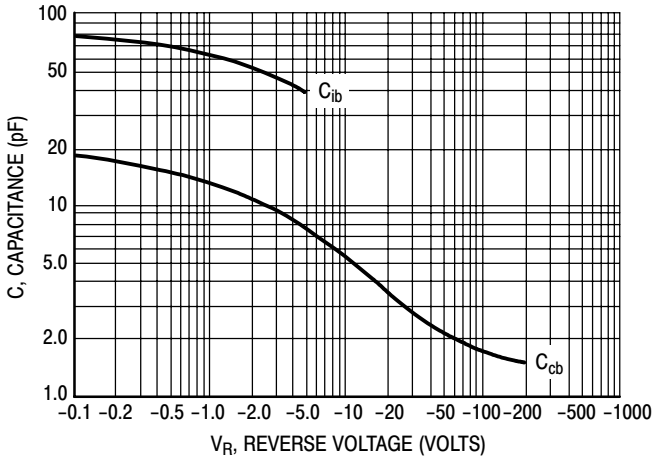


Figure 2. Capacitances

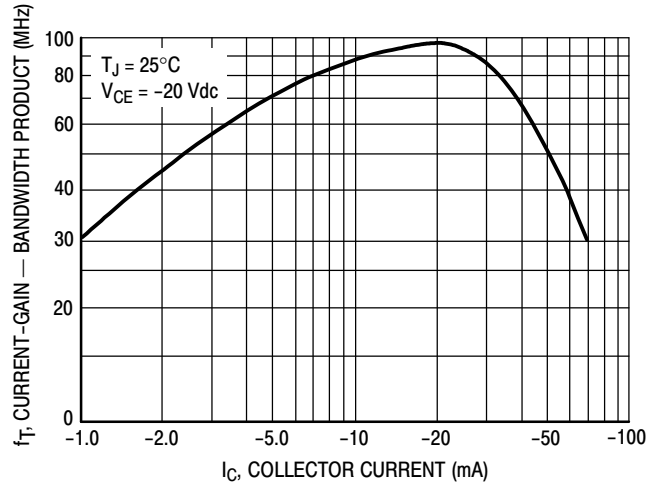


Figure 3. Current-Gain — Bandwidth Product

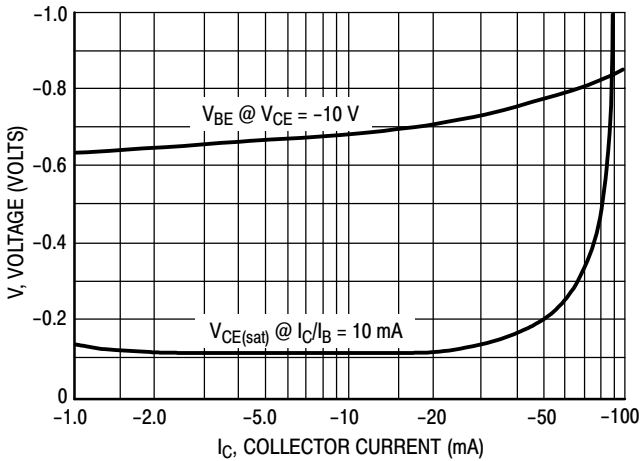


Figure 4. "On" Voltages

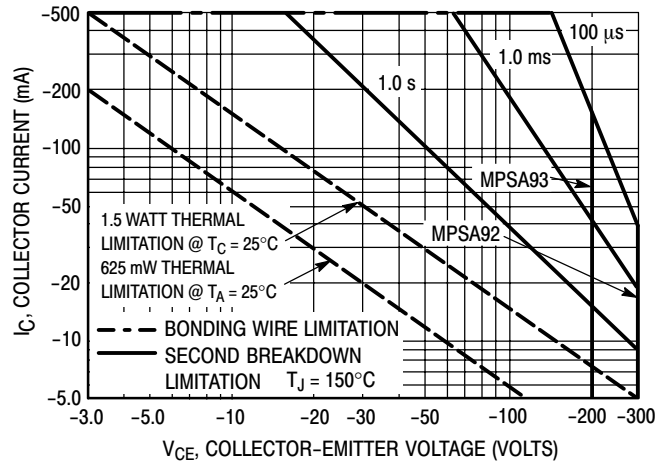
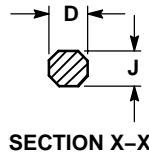
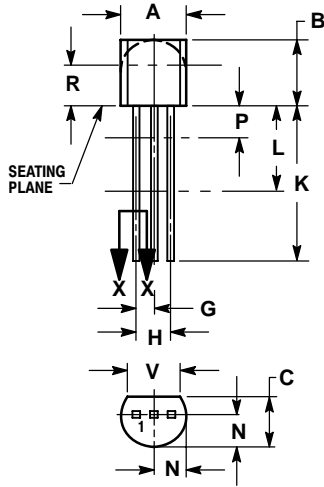


Figure 5. Active Region — Safe Operating Area

BF493S

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 1:

1. EMITTER
2. BASE
3. COLLECTOR

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