# **High Voltage Transistor**

# **PNP Silicon**

#### Features

• Pb-Free Package is Available\*

#### **MAXIMUM RATINGS**

Rating	Symbol	Value	Unit
Collector – Emitter Voltage	V <sub>CEO</sub>	-350	Vdc
Collector-Base Voltage	V <sub>CBO</sub>	-350	Vdc
Emitter-Base Voltage	V <sub>EBO</sub>	-6.0	Vdc
Collector Current – Continuous	۱ <sub>C</sub>	-500	mAdc
Total Device Dissipation @ $T_A = 25^{\circ}C$ Derate above = $25^{\circ}C$	P <sub>D</sub>	625 5.0	mW mW/°C
Total Device Dissipation @ $T_C = 25^{\circ}C$ Derate above $25^{\circ}C$	PD	1.5 12	W mW/°C
Operating and Storage Junction Temperature Range	T <sub>J</sub> , T <sub>stg</sub>	-55 to +150	°C

#### THERMAL CHARACTERISTICS

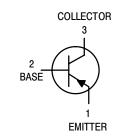
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Ambient	$R_{\thetaJA}$	200	°C/W
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	83.3	°C/W

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.



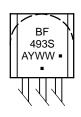
### **ON Semiconductor®**

http://onsemi.com





#### MARKING DIAGRAM



BF493S = Device Code А

= Assembly Location

= Year

Υ

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

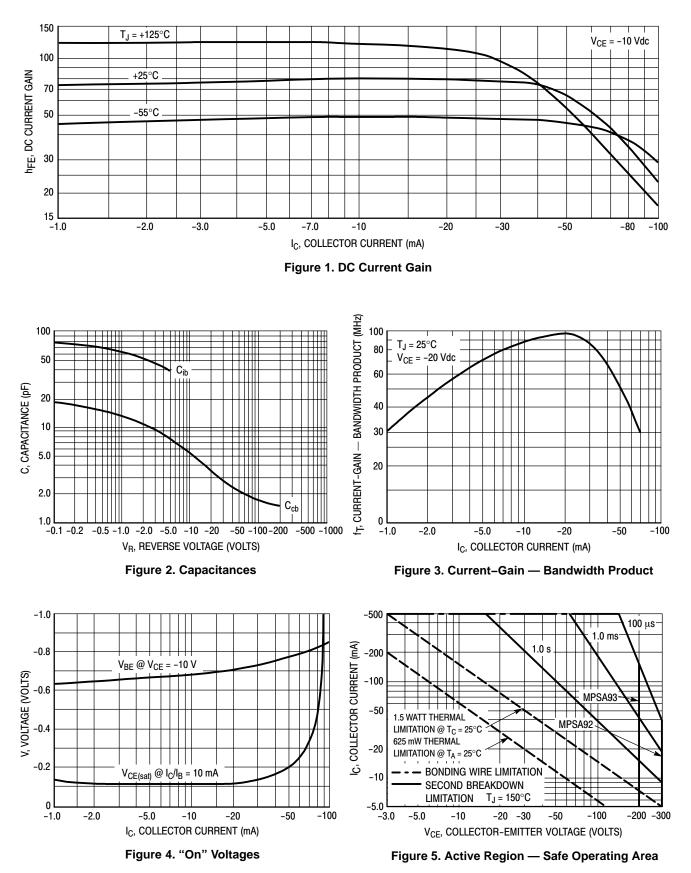
\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

# **BF493S**

## **ELECTRICAL CHARACTERISTICS** (T<sub>A</sub> = $25^{\circ}$ C unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector – Emitter Breakdown Voltage (Note 1) $(I_C = -1.0 \text{ mAdc}, I_B = 0)$	V <sub>(BR)CEO</sub>	-350	-	Vdc
Collector – Base Breakdown Voltage $(I_{C} = -100 \ \mu Adc, I_{E} = 0)$	V <sub>(BR)CBO</sub>	-350	-	Vdc
Emitter – Base Breakdown Voltage ( $I_E = -100 \ \mu Adc, I_C = 0$ )	V <sub>(BR)EBO</sub>	-6.0	-	Vdc
Collector Cutoff Current (V <sub>CE</sub> = -250 Vdc)	ICES	-	-10	nAdc
Emitter Cutoff Current ( $V_{EB} = -6.0 \text{ Vdc}, I_C = 0$ )	I <sub>EBO</sub>	-	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 <sub>CBO</sub>		-0.005 -1.0	μAdc
ON CHARACTERISTICS		1		
DC Current Gain (I <sub>C</sub> = $-1.0$ mAdc, V <sub>CE</sub> = $-10$ Vdc) (I <sub>C</sub> = $-10$ mAdc, V <sub>CE</sub> = $-10$ Vdc)	h <sub>FE</sub>	25 40		-
Collector – Emitter Saturation Voltage ( $I_C = -20$ mAdc, $I_B = -2.0$ mAdc)	V <sub>CE(sat)</sub>	-	-2.0	Vdc
Base – Emitter On Voltage ( $I_C = -20 \text{ mA}, I_B = -2.0 \text{ mA}$ )	V <sub>BE(sat)</sub>	-	-2.0	Vdc
DYNAMIC CHARACTERISTICS		1		
Current-Gain – Bandwidth Product (I <sub>C</sub> = –10 mAdc, V <sub>CE</sub> = –20 Vdc, f = 20 MHz)	fT	50	-	MHz
Common–Emitter Feedback Capacitance ( $V_{CB} = -100$ Vdc, $I_E = 0$ , f = 1.0 MHz)	C <sub>re</sub>	-	1.6	pF
Pulso Tost: Pulso Width < 200 us: Duty Cyclo < 2.0%	•			

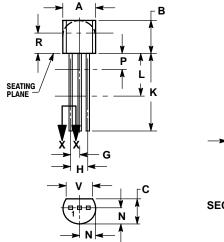
1. Pulse Test: Pulse Width  $\leq$  300 µs; Duty Cycle  $\leq$  2.0%.



#### **BF493S**

#### PACKAGE DIMENSIONS

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





NOTES 1.

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

	INCHES MILLIME		IETERS	
DIM	MIN	MAX	MIN	MAX
Α	0.175	0.205	4.45	5.20
В	0.170	0.210	4.32	5.33
С	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
Η	0.095	0.105	2.42	2.66
J	0.015	0.020	0.39	0.50
K	0.500		12.70	
Г	0.250		6.35	
Ν	0.080	0.105	2.04	2.66
Ρ		0.100		2.54
R	0.115		2.93	
۷	0.135		3.43	
STYLE 1: PIN 1. EMITTER				

BASE
COLLECTOR

ON Semiconductor and 💷 are registered trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications Intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

#### PUBLICATION ORDERING INFORMATION

#### LITERATURE FULFILLMENT:

Literature Distribution Center for ON Semiconductor P.O. Box 61312, Phoenix, Arizona 85082-1312 USA Phone: 480–829–7710 or 800–344–3860 Toll Free USA/Canada Fax: 480–829–7709 or 800–344–3867 Toll Free USA/Canada Email: orderlit@onsemi.com

N. American Technical Support: 800-282-9855 Toll Free USA/Canada

Japan: ON Semiconductor, Japan Customer Focus Center 2-9-1 Kamimeguro, Meguro-ku, Tokyo, Japan 153-0051 Phone: 81-3-5773-3850

ON Semiconductor Website: http://onsemi.com

Order Literature: http://www.onsemi.com/litorder

For additional information, please contact your local Sales Representative.