ON Semiconductor

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BF420, BF422

High Voltage Transistors

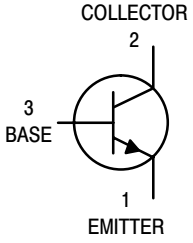
NPN Silicon

ON Semiconductor®

http://onsemi.com

Features

- Pb−Free Package is Available*



MAXIMUM RATINGS

Rating	Symbol	BF420	BF422	Unit
Collector−Emitter Voltage	V_{CEO}	300	250	Vdc
Collector−Base Voltage	V_{CBO}	300	250	Vdc
Emitter−Base Voltage	V_{EBO}	5.0		Vdc
Collector Current − Continuous	I_C	50		mAdc
Collector Current − Peak	I_{CM}	100		mA
Total Device Dissipation (Note 1) @ T_A = 25°C Derate above 25°C	P_D	 830 6.6		 mW mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	−55 to +150		°C

THERMAL CHARACTERISTICS

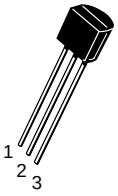
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction−to−Ambient	$R_{\theta JA}$	150	°C/W
Thermal Resistance, Junction−to−Lead	$R_{\theta JL}$	68	°C/W

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.

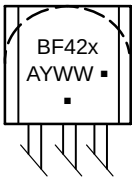
1. Mounted on a FR4 board with 200 mm^2 of 1 oz copper and lead length of 5 mm.

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

MARKING DIAGRAM



TO−92
CASE 29
STYLE 14



BF42x = Device Code
x = 0 or 2
A = Assembly Location
Y = Year
WW = Work Week
▪ = Pb−Free Package
(Note: Microdot may be in either location)

ORDERING INFORMATION

Device	Package	Shipping†
BF420ZL1	TO−92	2000/Ammo Box
BF420ZL1G	TO−92 (Pb−Free)	2000/Ammo Box
BF422	TO−92	5000 Units/Box
BF422G	TO−92 (Pb−Free)	5000 Units/Box
BF422RL1	TO−92	2000/Tape & Reel
BF422RL1G	TO−92 (Pb−Free)	2000/Tape & Reel
BF422ZL1	TO−92	2000/Ammo Pack
BF422ZL1G	TO−92 (Pb−Free)	2000/Ammo Pack

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

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

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector−Emitter Breakdown Voltage (Note 1) (I_C = 1.0 mAdc, I_B = 0)	BF420 BF422	$V_{(BR)CEO}$	 300 250	 − −	Vdc
Collector−Base Breakdown Voltage (I_C = 100 μAdc, I_E = 0)	BF420 BF422	$V_{(BR)CBO}$	 300 250	 − −	Vdc
Emitter−Base Breakdown Voltage (I_E = 100 μAdc, I_C = 0)	BF420 BF422	$V_{(BR)EBO}$	 5.0 5.0	 − −	Vdc
Collector Cutoff Current (V_{CB} = 200 Vdc, I_E = 0)	BF420 BF422	I_{CBO}	 − −	 0.01 −	μAdc
Emitter Cutoff Current (V_{EB} = 5.0 Vdc, I_C = 0)	BF420 BF422	I_{EBO}	 − −	 100 −	nAdc
ON CHARACTERISTICS					
DC Current Gain (I_C = 25 mAdc, V_{CE} = 20 Vdc)	BF420 BF422	h_{FE}	 50 50	 − −	−
Collector−Emitter Saturation Voltage (I_C = 20 mAdc, I_B = 2.0 mAdc)		$V_{CE(sat)}$	−	0.5	Vdc
Base−Emitter Saturation Voltage (I_C = 20 mAdc, I_B = 2.0 mAdc)		$V_{BE(sat)}$	−	2.0	Vdc
SMALL−SIGNAL CHARACTERISTICS					
Current Gain − Bandwidth Product (I_C = 10 mAdc, V_{CE} = 10 Vdc, f = 20 MHz)		f_T	60	−	MHz
Common Emitter Feedback Capacitance (V_{CB} = 30 Vdc, I_E = 0, f = 1.0 MHz)		C_{re}	−	1.6	pF

1. Pulse Test: Pulse Width ≤ 300 μs; Duty Cycle ≤ 2.0%.

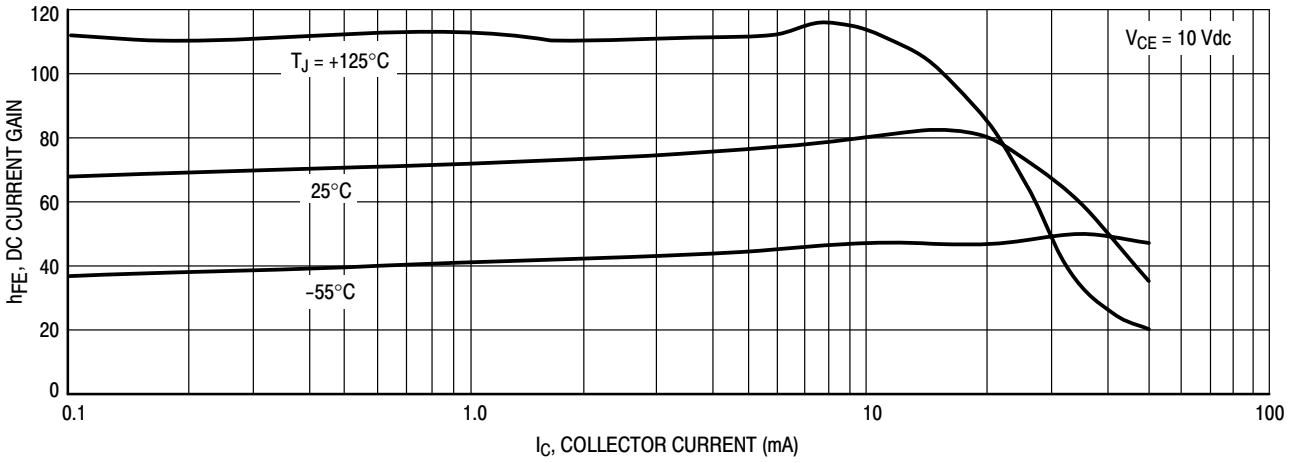


Figure 1. DC Current Gain

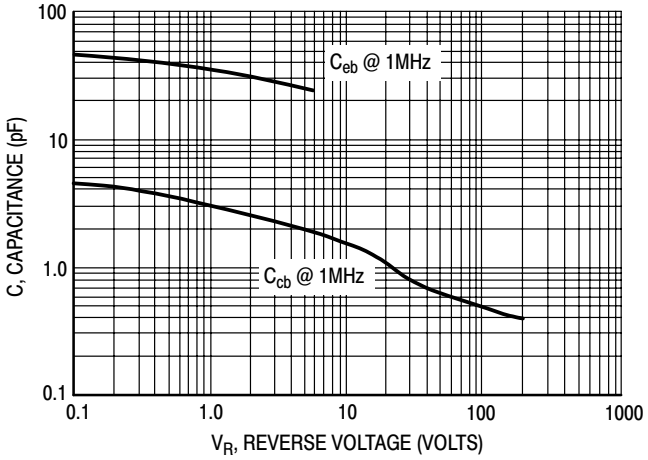


Figure 2. Capacitance

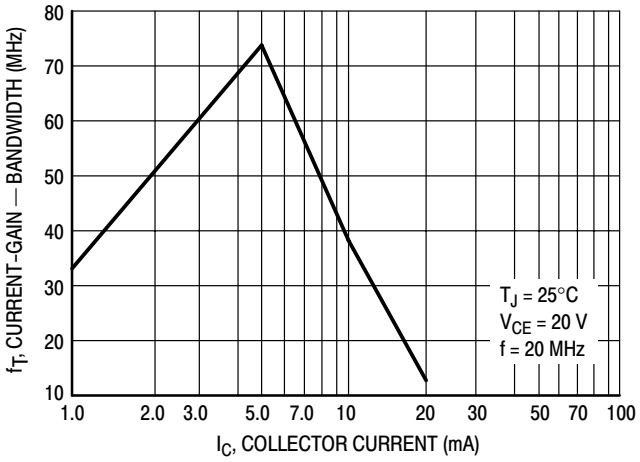
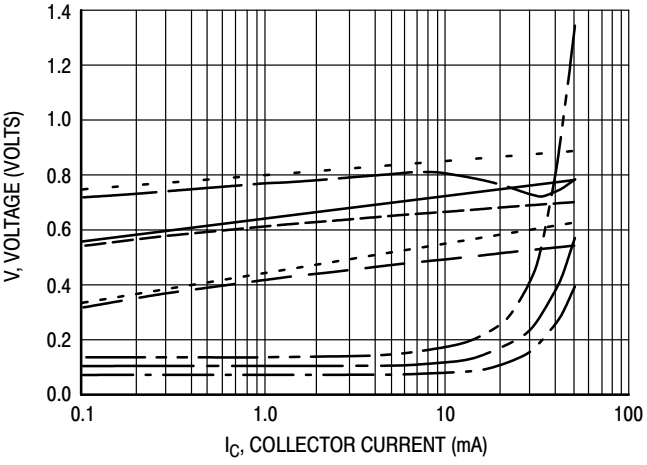


Figure 3. Current−Gain − Bandwidth



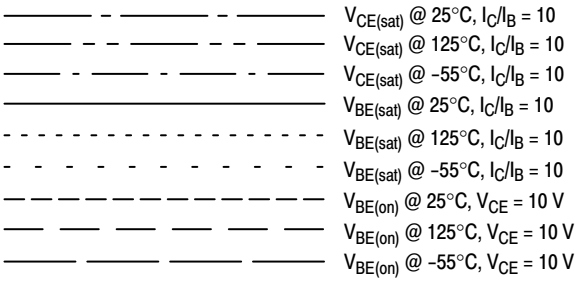
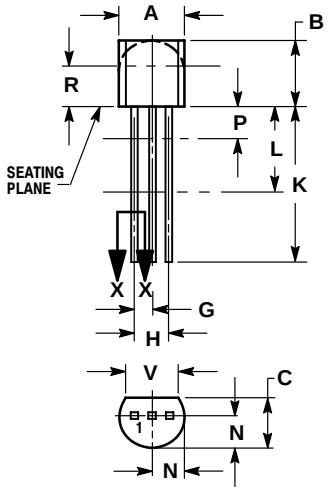
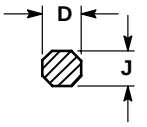


Figure 4. "ON" Voltages

PACKAGE DIMENSIONS

TO−92
(TO−226)
CASE 029−11
ISSUE AL





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.

	INCHES		MILLIMETERS	
DIM	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 14:
PIN 1. EMITTER
2. COLLECTOR
3. BASE

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
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ON Semiconductor Website: http://onsemi.com

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

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