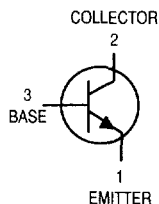


High Voltage Transistors

NPN Silicon



BF420
BF422



CASE 29-04, STYLE 14
TO-92 (TO-226AA)

MAXIMUM RATINGS

Rating	Symbol	BF420	BF422	Unit
Collector-Emitter Voltage	V_{CE0}	300	250	Vdc
Collector-Base Voltage	V_{CBO}	300	250	Vdc
Emitter-Base Voltage	V_{EBO}	5.0		Vdc
Collector Current — Continuous	I_C	500		mAdc
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	Watts 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	$^\circ\text{C/W}$
Thermal Resistance, Junction to Case	$R_{\theta JC}$	83.3	$^\circ\text{C/W}$

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

Characteristic	Symbol	Min	Max	Unit
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OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage ⁽¹⁾ ($I_C = 1.0 \text{ mAdc}, I_E = 0$)	BF420 BF422	$V_{(BR)CE0}$	300 250	— —	Vdc
Collector-Base Breakdown Voltage ($I_C = 100 \mu\text{Adc}, I_E = 0$)	BF420 BF422	$V_{(BR)CBO}$	300 250	— —	Vdc
Emitter-Base Breakdown Voltage ($I_E = 100 \mu\text{Adc}, I_C = 0$)	BF420 BF422	$V_{(BR)EBO}$	5.0 5.0	— —	Vdc
Collector Cutoff Current ($V_{CB} = 200 \text{ Vdc}, I_E = 0$)	BF420 BF422	I_{CBO}	— —	0.01 —	μAdc
Emitter Cutoff Current ($V_{EB} = 5.0 \text{ Vdc}, I_C = 0$)	BF420 BF422	I_{EBO}	— —	100 —	nAdc

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

BF420 BF422**ELECTRICAL CHARACTERISTICS** ($T_A = 25^\circ\text{C}$ unless otherwise noted) (Continued)

Characteristic	Symbol	Min	Max	Unit
ON CHARACTERISTICS				
DC Current Gain ($I_C = 25 \text{ mA}$, $V_{CE} = 20 \text{ Vdc}$)	h_{FE}	50 50	— —	—
Collector–Emitter Saturation Voltage ($I_C = 20 \text{ mA}$, $I_B = 2.0 \text{ mA}$)	$V_{CE(sat)}$	—	0.5	Vdc
Base–Emitter Saturation Voltage ($I_C = 20 \text{ mA}$, $I_B = 2.0 \text{ mA}$)	$V_{BE(sat)}$	—	2.0	Vdc
SMALL–SIGNAL CHARACTERISTICS				
Current Gain — Bandwidth Product ($I_C = 10 \text{ mA}$, $V_{CE} = 10 \text{ Vdc}$, $f = 20 \text{ MHz}$)	f_T	60	—	MHz
Common Emitter Feedback Capacitance ($V_{CB} = 30 \text{ Vdc}$, $I_E = 0$, $f = 1.0 \text{ MHz}$)	C_{re}	—	1.6	pF

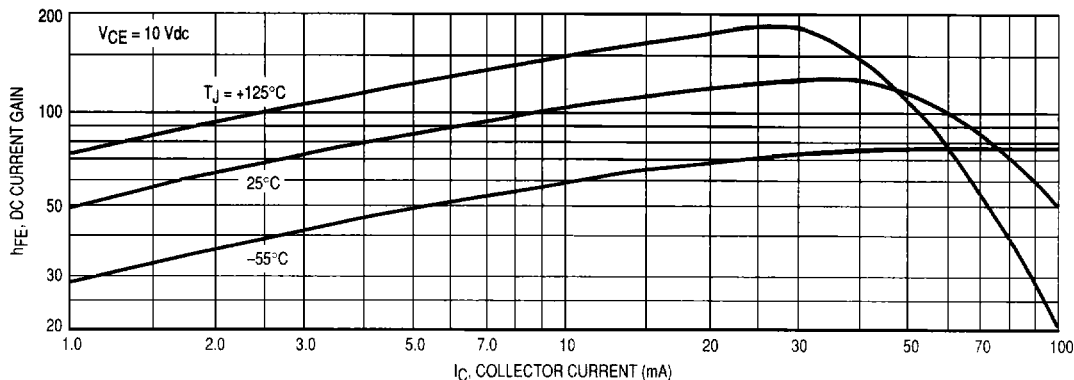


Figure 1. DC Current Gain

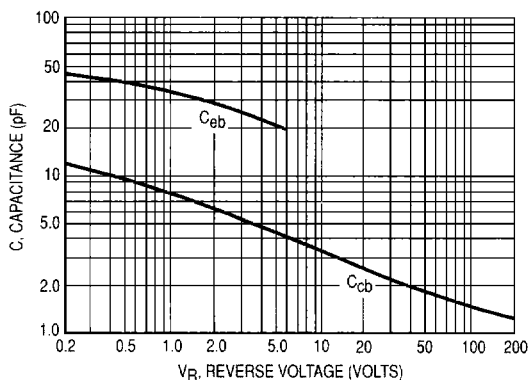


Figure 2. Capacitances

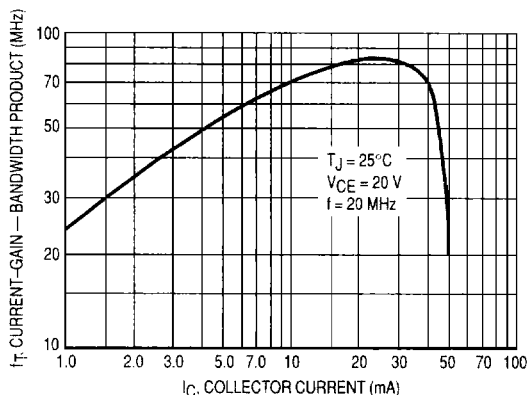


Figure 3. Current-Gain — Bandwidth Product

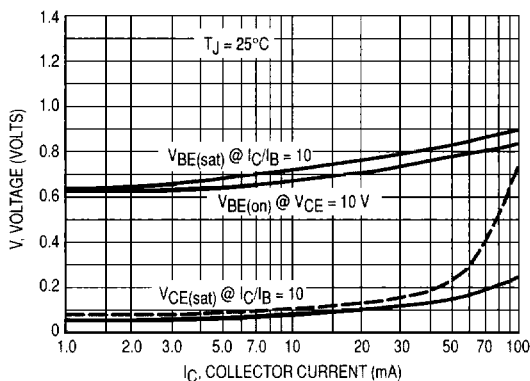


Figure 4. "On" Voltages

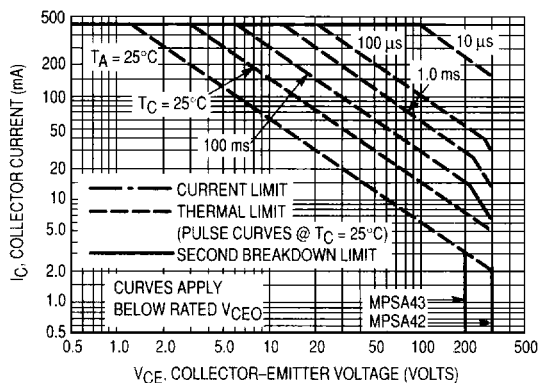


Figure 5. Maximum Forward Bias Safe Operating Area