

BFX85

CASE 79, STYLE 1
TO-39 (TO-205AD)

AMPLIFIER TRANSISTOR

NPN SILICON

4

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V _{CEO}	60	Vdc
Collector-Base Voltage	V _{CBO}	100	Vdc
Emitter-Base Voltage	V _{EBO}	6.0	Vdc
Collector Current - Continuous	I _C	1.0	Amp
Total Device Dissipation @ T _A = 25°C Derate above 25°C	PD	0.8 4.57	Watt mW/°C
Operating and Storage Junction Temperature Range	T _J , T _{stg}	-65 to +200	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	R _{θJC}	35	°C/W
Thermal Resistance, Junction to Ambient	R _{θJA}	220	°C/W

Refer to 2N3019 for graphs.

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

Characteristic	Symbol	Min	Max	Unit
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OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage (I _C = 10 mAdc, V _{BE} = 0)	V _{(BR)CEO}	60		Vdc
Collector-Base Breakdown Voltage (I _C = 100 μAdc, I _B = 0)	V _{(BR)CBO}	100		Vdc
Collector Cutoff Current (V _{CB} = 80 Vdc, I _E = 0) (V _{CB} = 80 Vdc, I _E = 0, T _J = 100°C) (V _{CB} = 100 Vdc, I _E = 0) (V _{CB} = 100 Vdc, I _E = 0, T _J = 100°C)	I _{CBO}		50 2.5 500 2.5	nAdc μAdc nAdc μAdc
Emitter Cutoff Current (V _{EB} = 5 Vdc, I _C = 0) (V _{EB} = 5 Vdc, I _C = 0, T _J = 100°C) (V _{EB} = 6 Vdc, I _C = 0)	I _{EBO}		50 2.5 500	nAdc μAdc nAdc

ON CHARACTERISTICS

DC Current Gain (I _C = 10 mAdc, V _{CE} = 10 Vdc) (I _C = 150 mAdc, V _{CE} = 10 Vdc) (I _C = 500 mAdc, V _{CE} = 10 Vdc) (I _C = 1.0 Adc, V _{CE} = 10 Vdc)	h _{FE}	50 70 30 15		
Collector-Emitter Saturation Voltage (I _C = 10 mAdc, I _B = 1.0 mAdc) (I _C = 150 mAdc, I _B = 15 mAdc) (I _C = 500 mAdc, I _B = 50 mAdc) (I _C = 1.0 Adc, I _B = 100 mAdc)	V _{CE(sat)}		0.15 0.35 1.00 1.60	Vdc
Base-Emitter Saturation Voltage (I _C = 10 mAdc, I _B = 1.0 mAdc) (I _C = 150 mAdc, I _B = 15 mAdc) (I _C = 500 mAdc, I _B = 50 mAdc) (I _C = 1.0 Adc, I _B = 100 mAdc)	V _{BE(sat)}		1.2 1.3 1.5 2.0	Vdc

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

Characteristic	Symbol	Min	Max	Unit
SMALL SIGNAL CHARACTERISTICS				
Current Gain Bandwidth Product ($I_C = 50 \text{ mA dc}$, $V_{CE} = 10 \text{ V dc}$, $f = 35 \text{ MHz}$)	f_T	50		MHz
Collector Capacitance ($V_{CB} = 10 \text{ V dc}$, $I_E = 0$, $f = 1 \text{ MHz}$)	C_{obo}		12	pF
Small Signal Current Gain ($I_C = 1 \text{ mA dc}$, $V_{CE} = 5.0 \text{ V dc}$, $f = 1.0 \text{ kHz}$) ($I_C = 10 \text{ mA dc}$, $V_{CE} = 5.0 \text{ V dc}$, $f = 1.0 \text{ kHz}$)	h_{fe}	20 25		
Input Impedance ($I_C = 10 \text{ mA dc}$, $V_{CE} = 5 \text{ V dc}$, $f = 1 \text{ kHz}$)	h_{ie}		750	Ω
Voltage Feedback Ratio ($I_C = 10 \text{ mA dc}$, $V_{CE} = 5 \text{ V dc}$, $f = 1 \text{ kHz}$)	h_{re}		5.0	$\times 10^{-4}$
Output Admittance ($I_C = 10 \text{ mA dc}$, $V_{CE} = 5 \text{ V dc}$, $f = 1 \text{ kHz}$)	h_{oe}		80	μmhos