

BFX 90
BFX 91

SILICON PLANAR PNP

HIGH-VOLTAGE AMPLIFIERS

The BFX 90 and BFX 91 are silicon planar epitaxial PNP transistors in Jedec TO-18 (BFX 90) and Jedec TO-39 (BFX 91) metal cases.

Both devices feature high voltage, high gain, low noise and excellent current gain linearity from 10 μ A to 50 mA.

ABSOLUTE MAXIMUM RATINGS

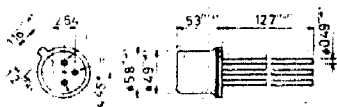
V_{CBO}	Collector-base voltage ($I_E = 0$)	-180	V
V_{CEO}	Collector-emitter voltage ($I_B = 0$)	-180	V
V_{EBO}	Emitter-base voltage ($I_C = 0$)	-6	V
I_C	Collector current	-100	mA
P_{tot}	Total power dissipation at $T_{amb} \leq 25^\circ\text{C}$	for BFX 90	0.4 W
		for BFX 91	0.7 W
	at $T_{case} \leq 25^\circ\text{C}$	for BFX 90	1.4 W
		for BFX 91	2.5 W
T_{stg}, T_j	Storage and junction temperature	-55 to 200	$^\circ\text{C}$

MECHANICAL DATA

Dimensions in mm

Collector connected to case

Collector connected to case



(sim. to TO-18)



(sim. to TO-39)

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THERMAL DATA

			BFX 90	BFX 91
$R_{th\ j-case}$	Thermal resistance junction-case	max	125 °C/W	70 °C/W
$R_{th\ j-amb}$	Thermal resistance junction-ambient	max	438 °C/W	250 °C/W

ELECTRICAL CHARACTERISTICS ($T_{amb} = 25^{\circ}C$ unless otherwise specified)

Parameter	Test conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector cutoff current ($I_E = 0$)				
	$V_{CB} = -100V$	-0.2	-10		nA
	$V_{CB} = -100V$ $T_{amb} = 125^{\circ}C$	-0.03	-10		μA
I_{EBO}	Emitter cutoff current ($I_C = 0$)				
	$V_{EB} = -4V$	-0.2	-10		nA
$V_{(BR)CBO}$	Collector-base breakdown voltage ($I_E = 0$)				
	$I_C = -10 \mu A$	-180			V
$V_{CEO(sus)}$	Collector-emitter sustaining voltage ($I_B = 0$)				
	$I_C = -2 mA$	-180			V
$V_{(BR)EBO}$	Emitter-base breakdown voltage ($I_C = 0$)				
	$I_E = -10 \mu A$	-6			V
$V_{CE(sat)}^*$	Collector-emitter saturation voltage				
	$I_C = -10 mA$ $I_B = -1 mA$	-0.1	-0.25		V
$V_{BE(sat)}^*$	Base-emitter saturation voltage				
	$I_C = -10 mA$ $I_B = -1 mA$	-0.74	-0.9		V
h_{FE}	DC current gain				
	$I_C = -10 \mu A$ $V_{CE} = -10V$	60	110		-
	$I_C = -1 mA$ $V_{CE} = -10V$	80	170		-
	$I_C = -10 mA$ $V_{CE} = -10V$	80	200	300	-
	$I_C = -10 \mu A$ $V_{CE} = -10V$				-
	$T_{amb} = -55^{\circ}C$	15	60		-
	$I_C = -100 \mu A$ $V_{CE} = -10V$	30	90		-
	$T_{amb} = -55^{\circ}C$				-
h_{fe}	Small signal current gain				
	$I_C = -1 mA$ $V_{CE} = -10V$ $f = 1 kHz$	100		400	-
f_T	Transition frequency				
	$I_C = -1 mA$ $V_{CE} = -10V$ $f = 20 MHz$	40	60	160	MHz

ELECTRICAL CHARACTERISTICS (continued)

Parameter	Test conditions	Min.	Typ.	Max.	Unit
C_{EBO}	Emitter-base capacitance				
	$I_C = 0$ $V_{EB} = -0.5V$ $f = 1 MHz$		20	25	pF
C_{CBO}	Collector-base capacitance				
	$I_E = 0$ $V_{CB} = -5V$ $f = 1 MHz$		5	7	pF
NF	Noise figure				
	$I_C = -10 \mu A$ $V_{CE} = -5V$ $R_g \equiv 10 k\Omega$ $f = 10 kHz$ $B = 2 kHz$		1	3	dB
	$f = 1 kHz$ $B = 200 Hz$		1	3	dB
	$f = 100 Hz$ $B = 20 Hz$		2	10	dB
h_{ie}	Input impedance				
	$I_C = -1 mA$ $V_{CE} = -10V$ $f = 1 kHz$	2.5		12	$k\Omega$
h_{oe}	Output admittance				
	$I_C = -1 mA$ $V_{CE} = -10V$ $f = 1 kHz$	5		25	μS