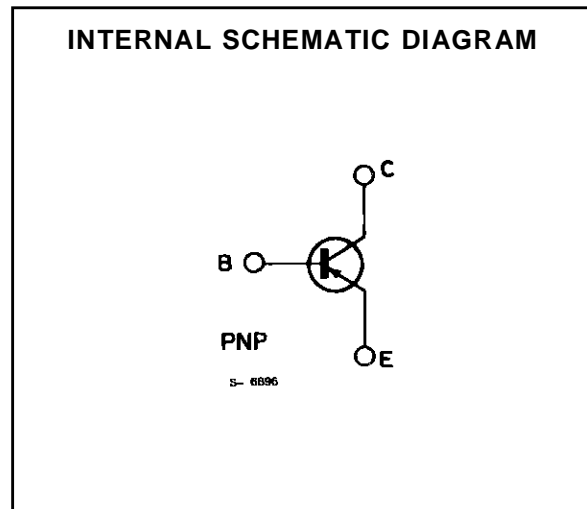
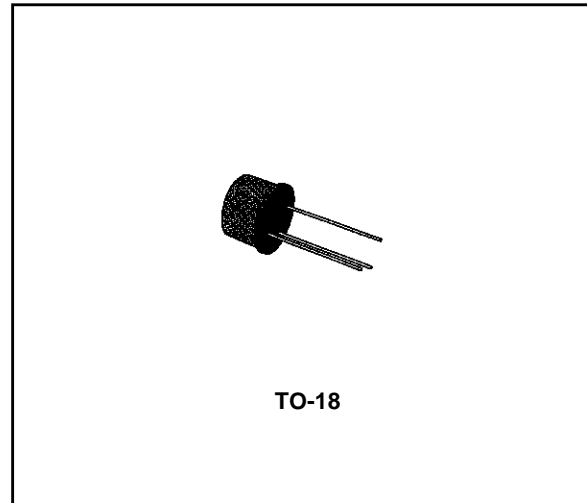


LOW-LEVEL, LOW-NOISE AMPLIFIER
DESCRIPTION

The BFX37 is a silicon planar epitaxial PNP transistor in Jedec TO-18 metal case, designed for use in high performance, low-noise amplifiers over a wide frequency range. It features high current gain over the range from 1 μ A to 100 mA and excellent NF at low frequency.


ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CES}	Collector-emitter Voltage ($V_{BE} = 0$)	- 90	V
V_{CEO}	Collector-emitter Voltage ($I_B = 0$)	- 80	V
V_{EBO}	Emitter-base Voltage ($I_C = 0$)	- 6	V
I_C	Collector Current	- 100	mA
P_{tot}	Total Power Dissipation at $T_{amb} \leq 25\text{ }^\circ\text{C}$ at $T_{case} \leq 25\text{ }^\circ\text{C}$	0.36	W
		1.2	W
T_{stg}, T_j	Storage and Junction Temperature	- 55 to 200	$^\circ\text{C}$

BFX37

THERMAL DATA

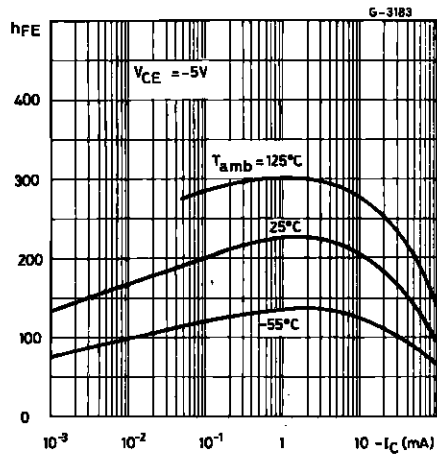
$R_{th\ j-case}$	Thermal Resistance Junction-case	Max	146	°C/W
$R_{th\ j-amb}$	Thermal Resistance Junction-ambient	Max	486	°C/W

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

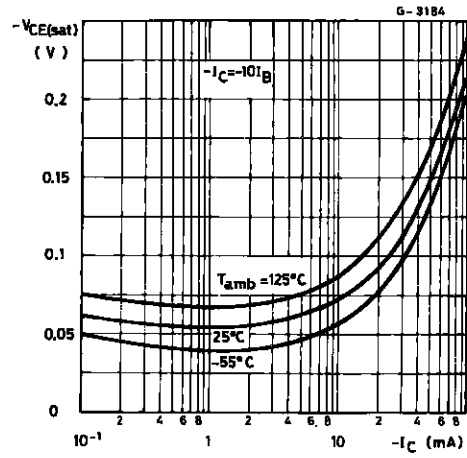
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CES}	Collector Cutoff Current ($V_{BE} = 0$)	$V_{CE} = -70\text{ V}$		-0.1	-10	nA
		$V_{CE} = -70\text{ V}$ $T_{amb} = 150\text{ °C}$		-0.1	-10	μA
I_{EBO}	Emitter Cutoff Current ($I_C = 0$)	$V_{EB} = -4\text{ V}$		-0.1	-10	nA
$V_{(BR)CES}$	Collector-emitter Breakdown Voltage ($V_{BE} = 0$)	$I_C = -10\text{ μA}$	-90			V
$V_{(BR)CEO}^*$	Collector-emitter Breakdown Voltage ($I_B = 0$)	$I_C = -5\text{ mA}$	-80			V
$V_{(BR)EBO}$	Emitter-base Breakdown Voltage ($I_C = 0$)	$I_E = -10\text{ μA}$	-6			V
$V_{CE(sat)}^*$	Collector-emitter Saturation Voltage	$I_C = -10\text{ mA}$ $I_B = -0.5\text{ mA}$		-0.1	-0.25	V
		$I_C = -50\text{ mA}$ $I_B = -5\text{ mA}$		-0.15	-0.4	V
V_{BE}	Base-emitter Voltage	$I_C = -1\text{ mA}$ $V_{CE} = -5\text{ V}$		-0.65		V
$V_{BE(sat)}^*$	Base-emitter Saturation Voltage	$I_C = -10\text{ mA}$ $I_B = -0.5\text{ mA}$		-0.73	-0.9	V
		$I_C = -50\text{ mA}$ $I_B = -5\text{ mA}$		-0.82	-0.95	V
h_{FE}^*	DC Current Gain	$I_C = -1\text{ μA}$ $V_{CE} = -5\text{ V}$		130		
		$I_C = -10\text{ μA}$ $V_{CE} = -5\text{ V}$	70	170	230	
		$I_C = -100\text{ μA}$ $V_{CE} = -5\text{ V}$	125	200		
		$I_C = -1\text{ mA}$ $V_{CE} = -5\text{ V}$	125	220	280	
		$I_C = -10\text{ mA}$ $V_{CE} = -5\text{ V}$	125	200		
h_{fe}	Small Signal Current Gain	$I_C = -1\text{ mA}$ $V_{CE} = -5\text{ V}$ $f = 1\text{ kHz}$		250		
f_T	Transition Frequency	$I_C = -0.5\text{ mA}$ $V_{CE} = -5\text{ V}$ $f = 20\text{ MHz}$	40	70		MHz
C_{EBO}	Emitter-base Capacitance	$I_C = 0$ $V_{EB} = -0.5\text{ V}$ $f = 1\text{ MHz}$		12	15	pF
C_{CBO}	Collector-base Capacitance	$I_E = 0$ $V_{CB} = -5\text{ V}$ $f = 1\text{ MHz}$		4.5	6	pF
NF	Noise Figure	$I_C = -20\text{ μA}$ $V_{CE} = 5\text{ V}$ $R_g = 10\text{ k}\Omega$ $f = 1\text{ kHz}$		0.8	2.5	dB
		$f = 10\text{ to }10000\text{ Hz}$		1	3.5	dB
h_{ie}	Input Impedance	$I_C = -1\text{ mA}$ $V_{CE} = -5\text{ V}$ $f = 1\text{ kHz}$		6.5		kΩ
h_{re}	Reverse Voltage Ratio	$I_C = -1\text{ mA}$ $V_{CE} = -5\text{ V}$ $f = 1\text{ kHz}$		2.5×10^{-4}		
h_{oe}	Output Admittance	$I_C = -1\text{ mA}$ $V_{CE} = -5\text{ V}$ $f = 1\text{ kHz}$		15		μS

* Pulsed : pulse duration = 300 μs, duty cycle = 1 %.

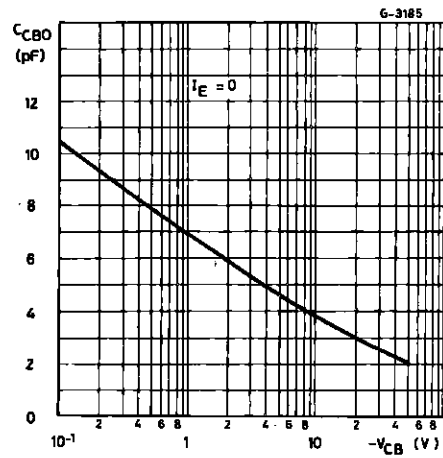
DC Current Gain.



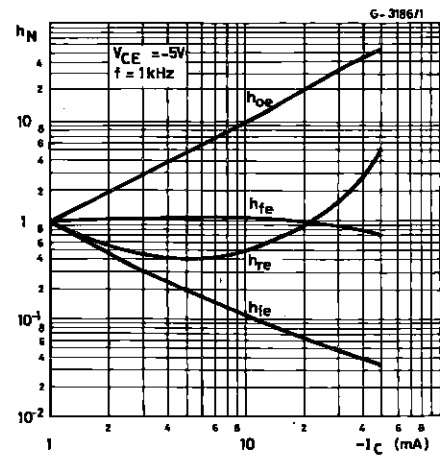
Collector-emitter Saturation Voltage.



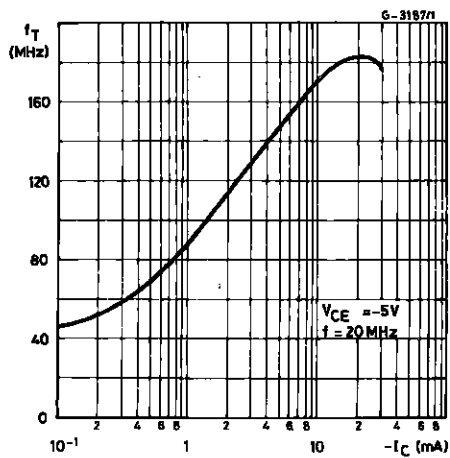
Collector-base Capacitance.



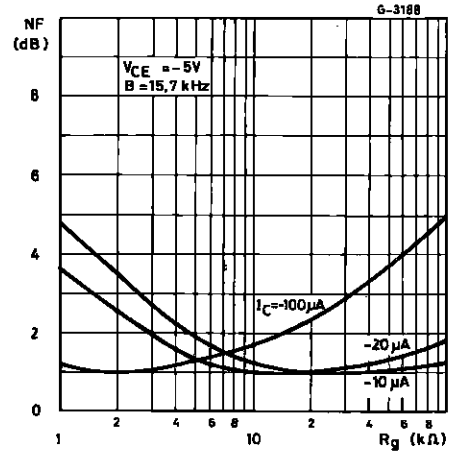
Normalized h Parameters.



Transition Frequency.

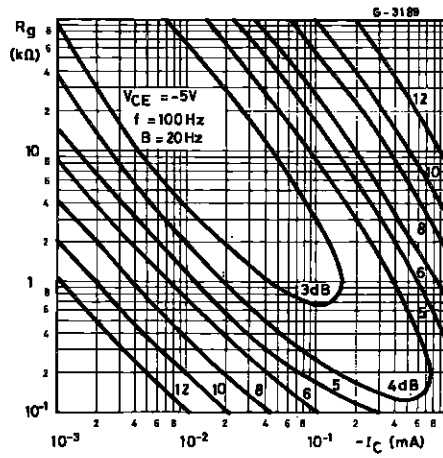


Noise Figure vs. Source Resistance.

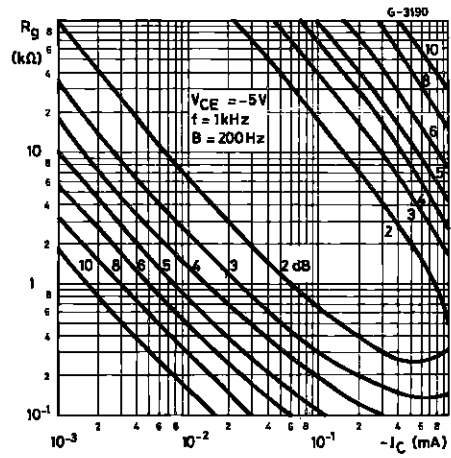


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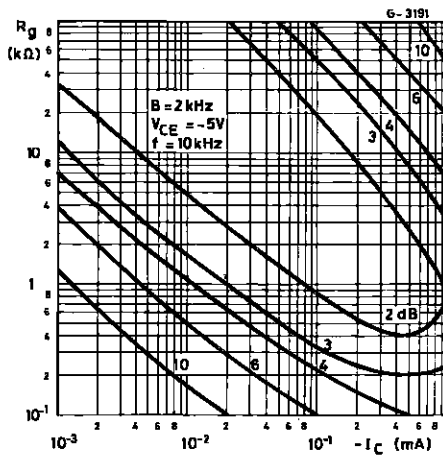
Contours of Constant Noise Figure ($f = 100 \text{ Hz}$).



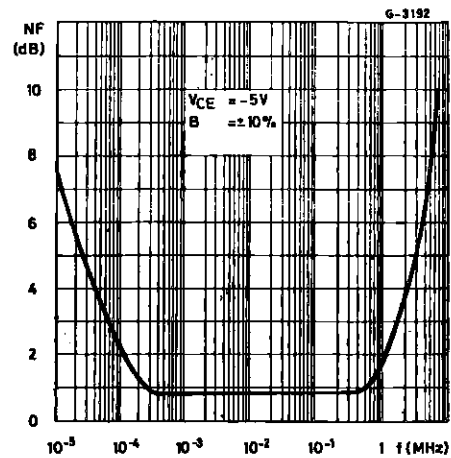
Contours of Constant Noise Figure ($f = 1 \text{ kHz}$).



Contours of Constant Noise Figure ($f = 10 \text{ kHz}$).

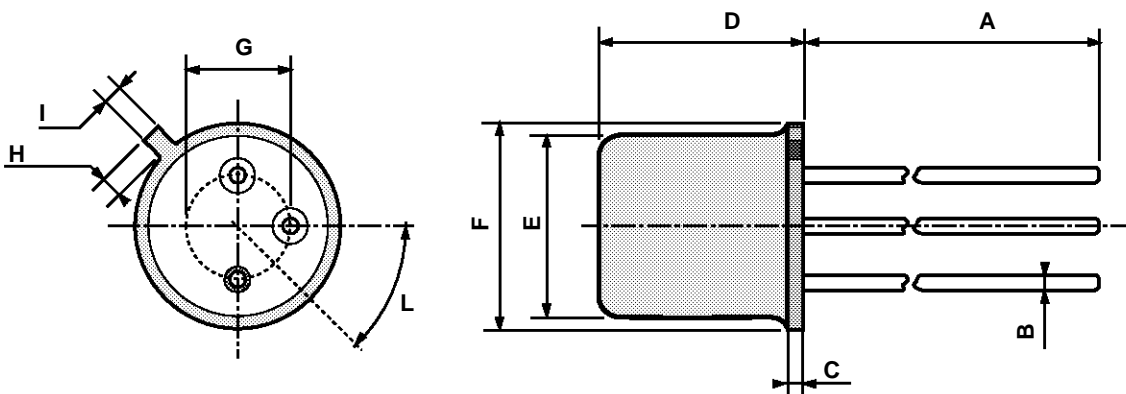


Noise Figure vs. Frequency.



TO-18 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A		12.7			0.500	
B			0.49			0.019
D			5.3			0.208
E			4.9			0.193
F			5.8			0.228
G	2.54			0.100		
H			1.2			0.047
I			1.16			0.045
L	45°			45°		



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