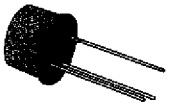
SGS-THOMSON MICROELECTRONICS

BFX48

HIGH-FREQUENCY AMPLIFIER

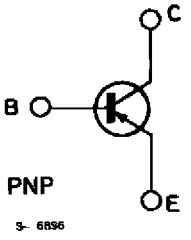
DESCRIPTION

The BFX48 is a silicon planar epitaxial PNP transistor in Jedec TO-18 metal case. It is suitable for a wide range of applications including low noise, low current high gain RF and wide band pulse amplifiers.



TO-18

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-base Voltage (I_E = 0)	– 30	V
V_{CEO}	Collector-emitter Voltage (I_B = 0)	– 30	V
V_{EBO}	Emitter-base Voltage (I_C = 0)	– 5	V
I_C	Collector Current	– 100	mA
P_{tot}	Total Power Dissipation at $T_{amb} \leq 25$ °C at $T_{case} \leq 25$ °C	0.36 1	W W
T_{stg}, T_j	Storage and Junction Temperature	– 65 to 200	°C

THERMAL DATA

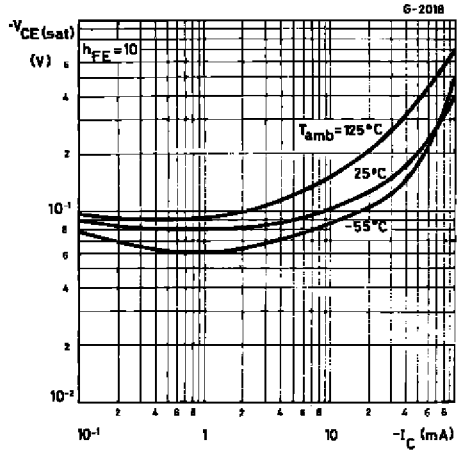
$R_{th\ j\text{-}case}$	Thermal Resistance Junction-case	Max	175	°C/W
$R_{th\ j\text{-}amb}$	Thermal Resistance Junction-ambient	Max	486	°C/W

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

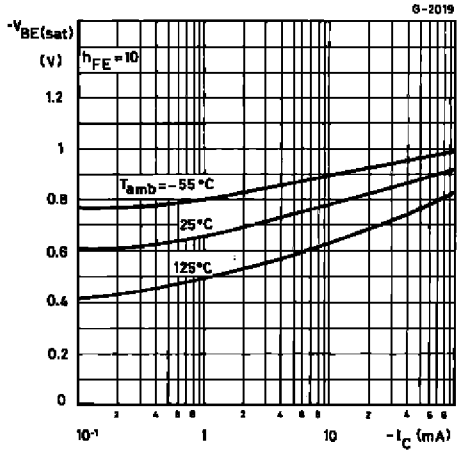
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CES}	Collector Cutoff Current (V_{BE} = 0)	V_{CE} = – 20 V V_{CE} = – 20 V T_{amb} = 125 °C			– 15 – 15	nA µA
$V_{(BR)CBO}$	Collector-base Breakdown Voltage (I_E = 0)	I_C = – 10 µA	– 30			V
$V_{(BR)CEO}$*	Collector-emitter Breakdown Voltage (I_B = 0)	I_C = – 10 mA	– 30			V
$V_{(BR)EBO}$	Emitter-base Breakdown Voltage (I_C = 0)	I_E = – 10 µA	– 5			V
$V_{CE(sat)}$*	Collector-emitter Saturation Voltage	I_C = – 1 mA I_B = – 0.1 mA I_C = – 10 mA I_B = – 1 mA I_C = – 50 mA I_B = – 5 mA		 – 0.1	– 0.13 – 0.14 – 0.3	V V V
$V_{BE(sat)}$*	Base-emitter Saturation Voltage	I_C = – 1 mA I_B = – 0.1 mA I_C = – 10 mA I_B = – 1 mA I_C = – 50 mA I_B = – 5 mA		 – 0.77	– 0.75 – 0.9 – 1.1	V V V
h_{FE}*	DC Current Gain	I_C = – 10 µA V_{CE} = – 1 V I_C = – 100 µA V_{CE} = – 1 V I_C = – 10 mA V_{CE} = – 1 V I_C = – 50 mA V_{CE} = – 1 V I_C = – 10 mA V_{CE} = – 1 V T_{amb} = – 55 °C	40 70 90 20 30	80 130 160 40		
f_T	Transition Frequency	I_C = – 10 mA V_{CE} = – 20 V f = 100 MHz	400	550		MHz
C_{EBO}	Emitter-base Capacitance	I_C = 0 V_{EB} = – 0.5 V f = 1 MHz		4	5.5	pF
C_{CBO}	Collector-base Capacitance	I_E = 0 V_{CB} = – 10 V f = 1 MHz		2.2	3.5	pF
NF	Noise Figure	I_C = – 1 mA V_{CE} = – 5 V f = 100 MHz R_9 = 100 Ω		3.5	6	dB
t_{on}	Turn-on Time	I_C = – 50 mA I_{B1} = – 5 mA		20	50	ns
t_{off}	Turn-off Time	I_C = – 50 mA I_{B1} = – I_{B2} = – 5 mA		95	160	ns
$r_{bb'}C_{b'c}$	Feedback Time Constant	I_C = – 10 mA V_{CE} = – 20 V f = 80 MHz			40	ps

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

Collector-emitter Saturation Voltage.

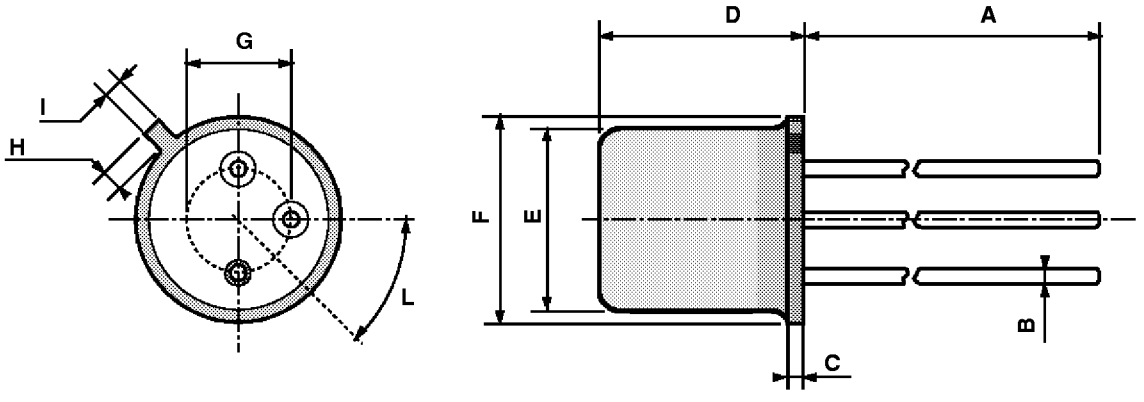


Base-emitter Saturation Voltage.



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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