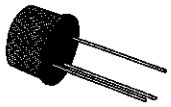
SGS-THOMSON MICROELECTRONICS

BFY76

LOW-LEVEL, LOW-NOISE AMPLIFIER

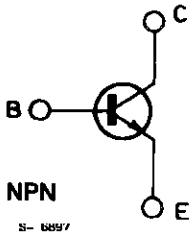
DESCRIPTION

The BFY76 is a silicon planar epitaxial NPN transistor in Jedec TO-18 metal case. It is designed for use in high performance, low-level, low-noise amplifier circuits from audio to high frequencies.



TO-18

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CES}	Collector-emitter Voltage (V_{BE} = 0)	60	V
V_{CEO}	Collector-emitter Voltage (I_B = 0)	60	V
V_{EBO}	Emitter-base Voltage (I_C = 0)	8	V
I_C	Collector Current	50	mA
P_{tot}	Total Power Dissipation at $T_{amb} \leq 25$ °C at $T_{case} \leq 25$ °C	0.36 1.2	W W
T_{stg}, T_j	Storage and Junction Temperature	– 55 to 200	°C

THERMAL DATA

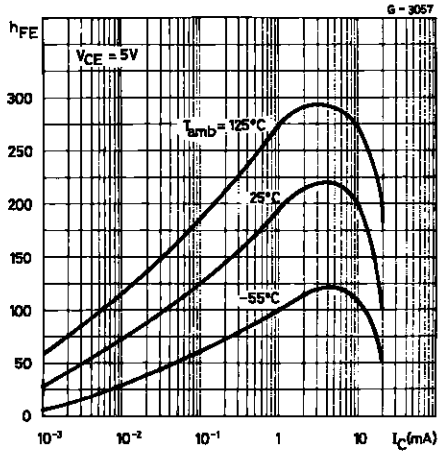
$R_{th\ j\text{-}case}$	Thermal Resistance Junction-case	Max	146	°C/W
$R_{th\ j\text{-}amb}$	Thermal Resistance Junction-ambient	Max	486	°C/W

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

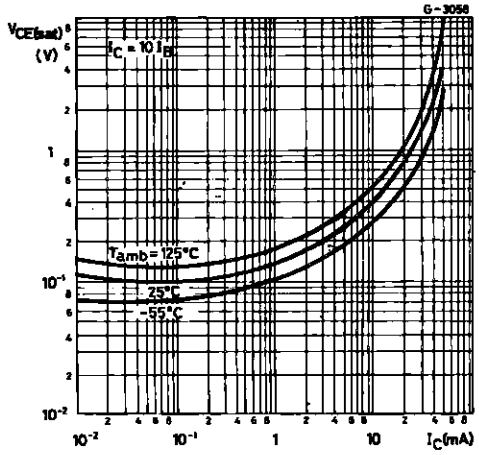
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CES}	Collector Cutoff Current (V_{BE} = 0)	V_{CE} = 50 V V_{CE} = 50 V T_{amb} = 150 °C			20 20	nA µA
I_{EBO}	Emitter Cutoff Current (I_C = 0)	V_{EB} = 5 V			20	nA
$V_{(BR)CES}$	Collector-emitter Breakdown Voltage (V_{BE} = 0)	I_C = 10 µA	60			V
$V_{(BR)CEO}$*	Collector-emitter Breakdown Voltage (I_B = 0)	I_C = 10 mA	60			V
$V_{(BR)EBO}$	Emitter-base Breakdown Voltage (I_C = 0)	I_E = 10 µA	8			V
$V_{CE(sat)}$*	Collector-emitter Saturation Voltage	I_C = 1 mA I_B = 0.1 mA		0.15	0.35	V
V_{BE}	Base-emitter Voltage	I_C = 100 µA V_{CE} = 5 V	0.5	0.58	0.7	V
h_{FE}*	DC Current Gain	I_C = 10 µA V_{CE} = 5 V I_C = 100 µA V_{CE} = 5 V I_C = 1 mA V_{CE} = 5 V I_C = 5 mA V_{CE} = 5 V	30 150	70 120 190 220	 300	
h_{fe}	Small Signal Current Gain	I_C = 1 mA V_{CE} = 5 V f = 1 kHz	80	220	350	
f_T	Transition Frequency	I_C = 1 mA V_{CE} = 5 V f = 20 MHz	70	100		MHz
C_{EBO}	Emitter-base Capacitance	I_C = 0 V_{EB} = 0.5 V f = 1 MHz		3.5	6	pF
C_{CBO}	Collector-base Capacitance	I_E = 0 V_{CB} = 5 V f = 1 MHz		3.5	6	pF
NF	Noise Figure	I_C = 10 µA V_{CE} = 5 V R_g = 10 kΩ f = 100 Hz f = 1 kHz f = 10 to 10 000 Hz		 4 1.5 1.9	 15 4 4	 dB dB dB
h_{ie}	Imput Impedance	I_C = 1 mA V_{CE} = 5 V f = 1 kHz		8		kΩ
h_{re}	Reverse Voltage Ratio	I_C = 1 mA V_{CE} = 5 V f = 1 kHz		3x10–4		
h_{oe}	Output Admittance	I_C = 1 mA V_{CE} = 5 V f = 1 kHz		11		µS

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

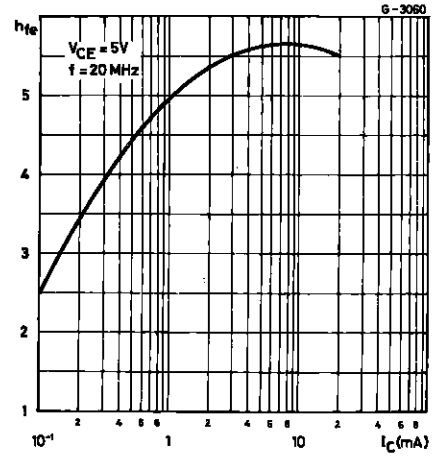
DC Current Gain.



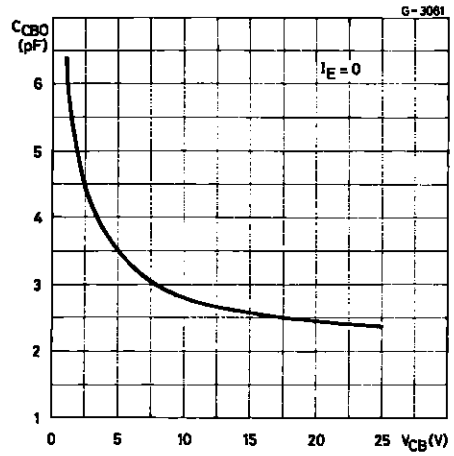
Collector-emitter Saturation Voltage.



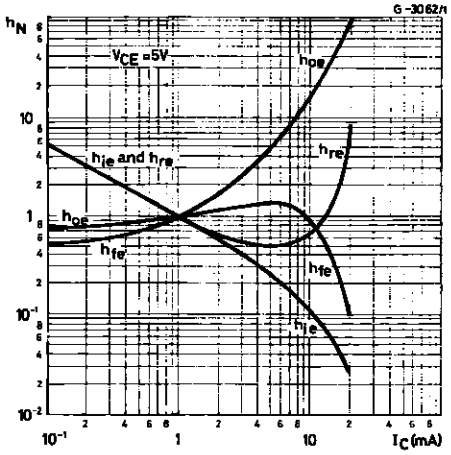
High Frequency Current Gain.



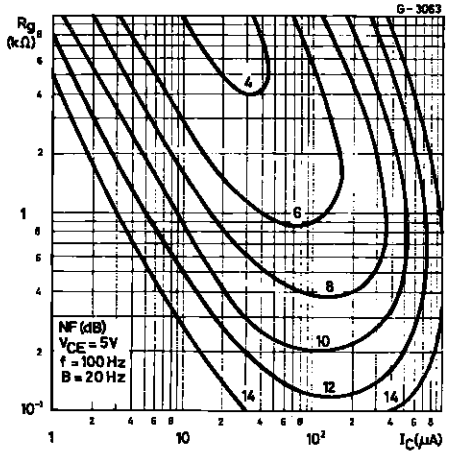
Collector-base capacitance.



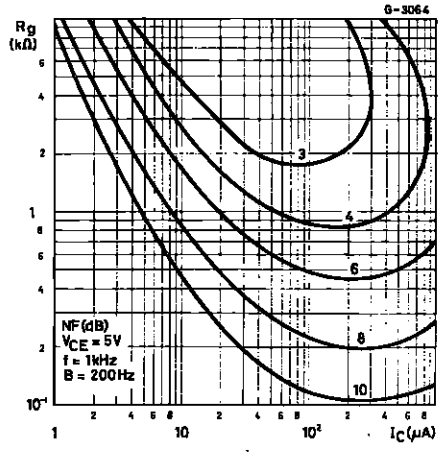
Normalized h Parameters.



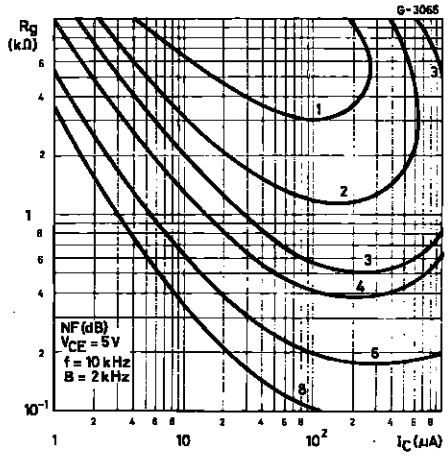
Contours of Constant Noise Figure (f = 100 kHz).



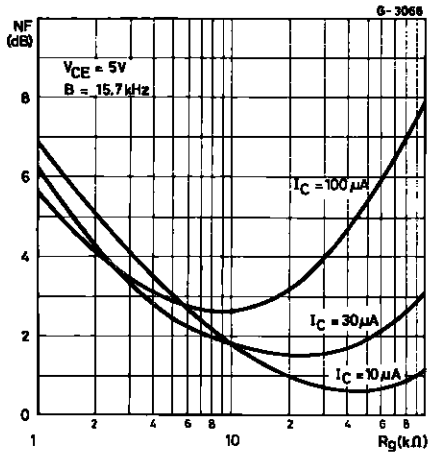
Contours of Constant Noise Figure (f = 1 kHz).



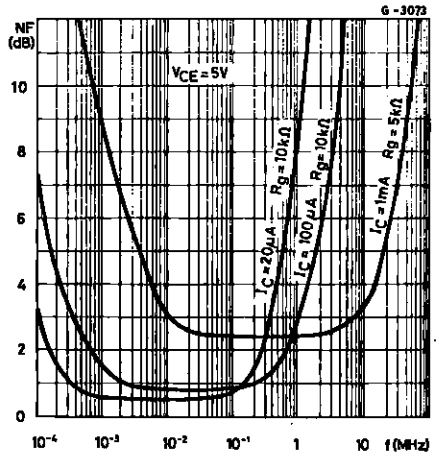
Countours of Constant Noise Figure (f = 10 kHz).



Noise Figure vs. Source Resistance.

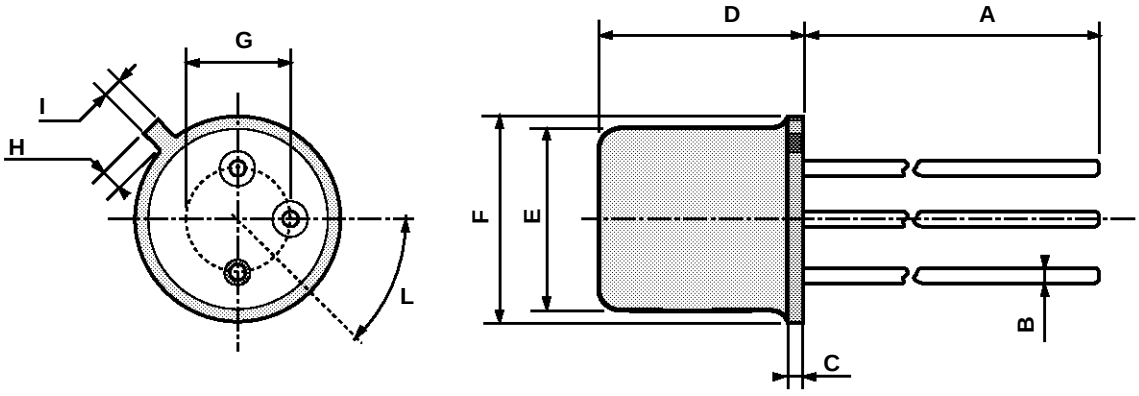


Noise Figure vs. Frequency.



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^o			45^o		



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