SGS-THOMSON MICROELECTRONICS

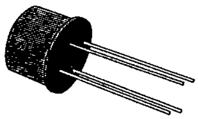
BFX73-2N918
2N3600

S G S-THOMSON

HIGH-FREQUENCY OSCILLATORS AND AMPLIFIERS

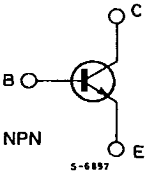
The BFX73, 2N918 and 2N3600 are silicon planar epitaxial NPN transistors in Jedec TO-72 metal case.

They are designed for low-noise VHF amplifiers, oscillators up to 1 GHz, non-neutralized IF amplifiers and non-saturating circuits with rise and fall times of less than 2.5 ns.



TO-72

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 ($I_B = 0$)	15	V
V_{EBO}	Emitter-base Voltage ($I_C = 0$)	3	V
I_C	Collector Current	50	mA
P_{tot}	Total Power Dissipation at $T_{amb} \le 25$ °C at $T_{amb} \le 25$ °C	200 300	mW mW
T_{stg}, T_j	Storage and Junction Temperature	– 65 to 200	°C

THERMAL DATA

$R_{th\ j\text{-}case}$	Thermal Resistance Junction-case	Max	584	°C/W
$R_{th\ j\text{-}amb}$	Thermal Resistance Junction-ambient	Max	875	°C/W

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

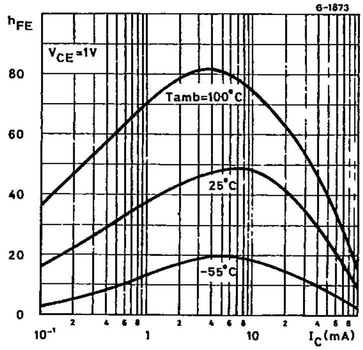
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cutoff Current (I_E = 0)	V_{CB} = 15 V V_{CB} = 15 V T_{amb} = 150 °C			10 1	nA µA
$V_{(BR)CBO}$	Collector-base Breakdown Voltage (I_E = 0)	I_C = 1 µA	30			V
$V_{CEO\ (sus)}$	Collector-emitter Sustaining Voltage (I_B = 0)	I_C = 3 mA	15			V
$V_{(BR)\ EBO}$	Emitter-base Breakdown Voltage (I_C = 0)	I_E = 10 µA	3			V
$V_{CE\ (sat)}$	Collector-emitter Saturation Voltage	I_C = 10 mA I_B = 1 mA			0.4	V
$V_{BE\ (sat)}$	Base-emitter Saturation Voltage	I_C = 10 mA I_B = 1 mA			1	V
h_{FE}	DC Current Gain	I_C = 3 mA V_{CE} = 1 V for **2N918/BFX73** for **2N3600**	 20 20	 50	 150	
f_T	Transition Frequency	for **2N918/BFX73** I_C = 4 mA V_{CE} = 10 V f = 100 MHz for **2N3600** I_C = 5 mA V_{CE} = 6 V f = 100 MHz	600 850	900	 1500	MHz MHz
C_{EBO}	Emitter-base Capacitance	I_C = 0 V_{EB} = 0.5 V f = 1 MHz for **2N918/BFX73** for **2N3600**		 1.4	2	pF pF
C_{CBO}	Collector-base Capacitance (for **2N918/BFX73** only)	I_E = 0 f = 1 MHz V_{CE} = 0 V V_{CE} = 10 V		1.8 1	3 1.7	pF pF
C_{re}	Reverse Capacitance (for **2N3600** only)	I_C = 0 V_{CB} = 10 V f = 1 MHz			1	pF
NF	Noise Figure	I_C = 1.5 mA V_{CE} = 6 V R_g = 50 Ω f = 200 MHz for **2N3600** I_C = 1 mA V_{CE} = 6 V R_g = 400 Ω f = 60 MHz for **2N918/BFX73** for **2N3600**			4.5 6 3	dB dB dB
G_{pe}	Power Gain	R_g = 50 Ω f = 200 MHz for **2N918/BFX73** I_C = 6 mA V_{CE} = 12 V for **2N3600** I_C = 5 mA V_{CE} = 6 V	15 17	21	 24	dB dB

* See test circuits.

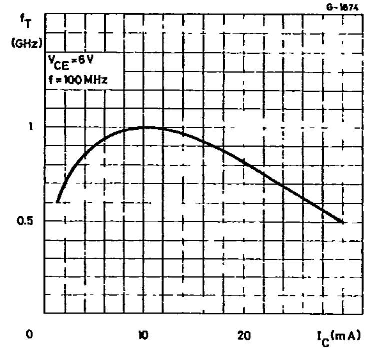
ELECTRICAL CHARACTERISTICS (continued)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
P_o*	Output Power	I_C = 12 mA V_{CB} = 10 V f = 500MHz for **2N918/BFX73** for **2N3600**	 30 20	 40		 mW mW
π	Collector Efficiency (for **2N918/BFX73** only)	I_C = 12 mA V_{CB} = 10 V f = 500 MHz	25			%
$r_{b'b}, C_{b'c}$	Feedback Time Constant (for **2N3600** only)	I_C = 5 mA V_{CB} = 6 V f = 31.9 MHz	4		15	ps

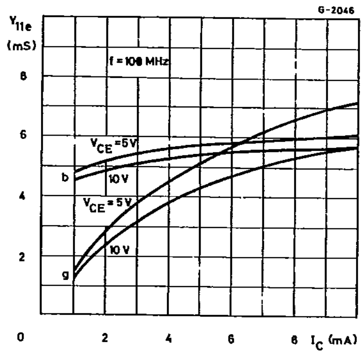
DC Current Gain.



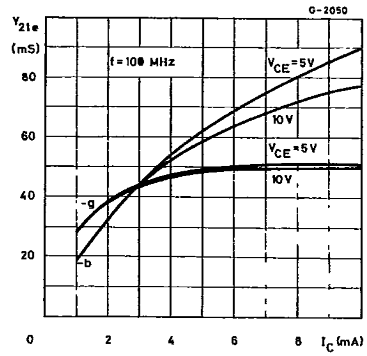
Transition Frequency.



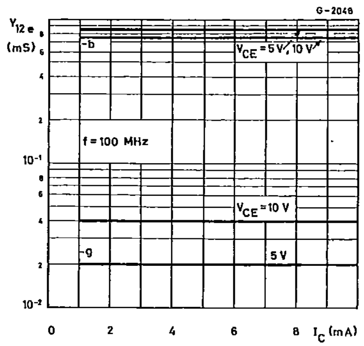
Input Admittance vs. Collector Current.



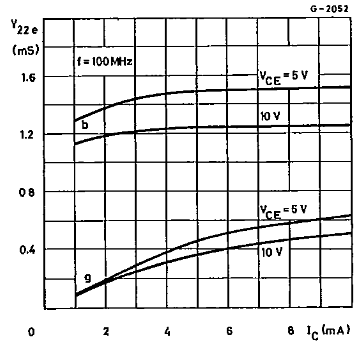
Forward Transadmittance vs. Collector Current.



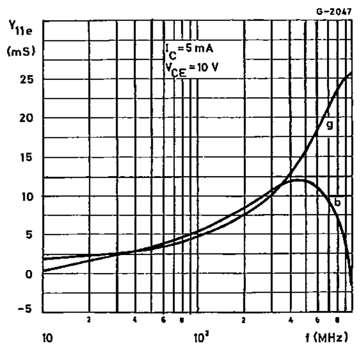
Reverse Transadmittance vs. Collector Current.



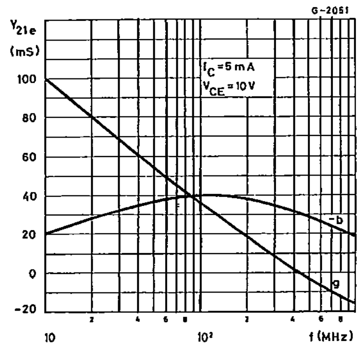
Output Admittance vs. Collector Current.



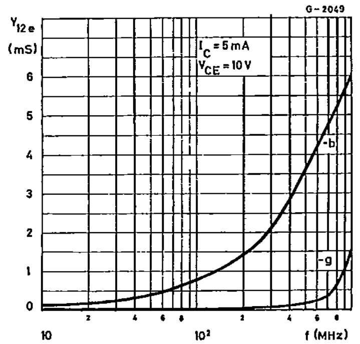
Input Admittance vs. Frequency.



Forward Transadmittance vs. Frequency.



Reverse Transadmittance vs. Frequency.



Output Admittance vs. Frequency.

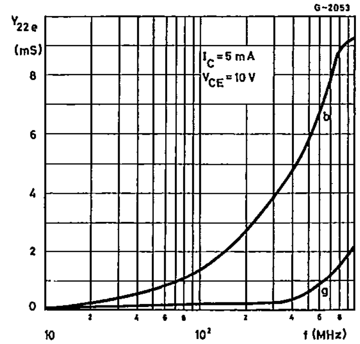


Figure 1 : 500 MHz Oscillator Test Circuit.