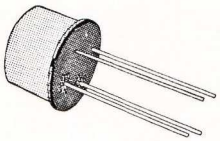
SGS-THOMSON
MICROELECTRONICS

2N918

HIGH-FREQUENCY OSCILLATORS AND AMPLIFIERS

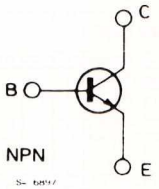
DESCRIPTION

The 2N918 is a silicon planar epitaxial NPN transistors in Jedec TO-72 metal case. It is 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 $T_{amb} \leq 25$ °C at $T_{case} \leq 25$ °C	200 300	mW mW
T_{stg}, T_j	Storage and Junction Temperature	– 65 to 200	°C

THERMAL DATA

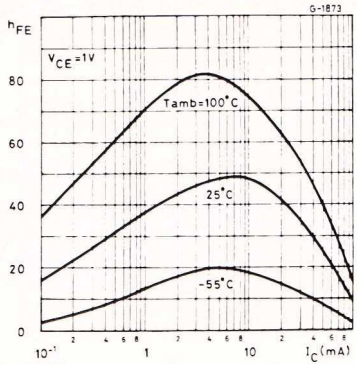
$R_{th\ j\text{-}case}$	Thermal Resistance Junction-case	Max	584	°C/W
$R_{th\ j\text{-}amb}$	Thermal Resistance Junction-ambient	Max	875	°C/W

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

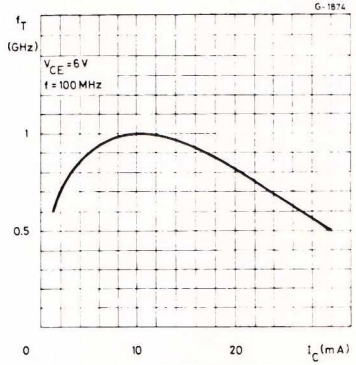
Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cutoff Current (I_E = 0)	V_{CB} = 15 V V_{CB} = 15 V	 T_{amb} = 150 °C			10 1	nA μA
$V_{(BR)CBO}$	Collector–base Breakdown Voltage (I_E = 0)	I_C = 1 μA		30			V
$V_{CEO(sus)}$	Collector–emitter Sustaining Voltage (I_B = 0)	I_C = 3 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	20	50		–
f_T	Transition Frequency	I_C = 4 mA f = 100 MHz	V_{CE} = 10 V	600	900		MHz
C_{EBO}	Emitter–base Capacitance	I_C = 0 f = 1 MHz	V_{EB} = 0.5 V			2	pF
C_{CBO}	Collector–base Capacitance	I_E = 0	f = 1 MHz V_{CE} = 0 V_{CE} = 10 V		1.8 1	3 1.7	pF pF
NF	Noise Figure	I_C = 1 mA R_g = 400 Ω	V_{CE} = 6 V f = 60 MHz			6	dB
G_{pe}	Power Gain	R_g = 50 Ω I_C = 6 mA	f = 200 MHz V_{CE} = 12 V	15	21		dB
P_o*	Output Power	I_C = 12 mA f = 500 MHz	V_{CB} = 10 V	30	40		mW
η	Collector Efficiency	I_C = 12 mA f = 500 MHz	V_{CB} = 10 V	25			%

* See test circuit.

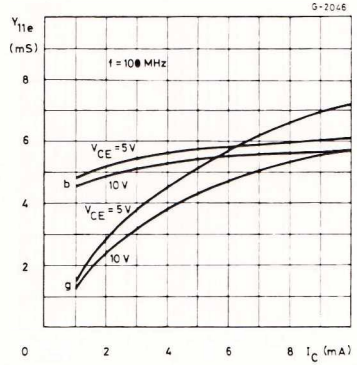
DC Current Gain.



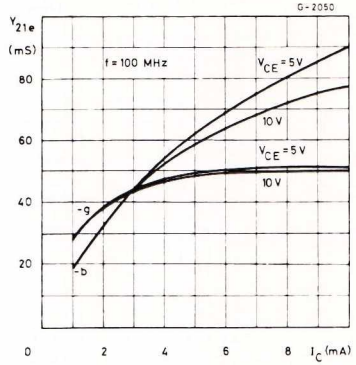
Transition Frequency.



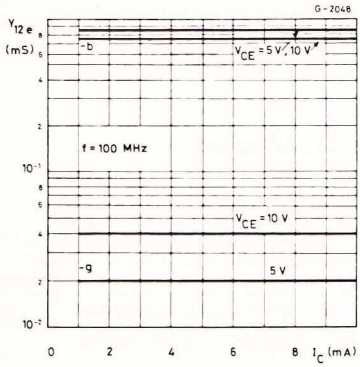
Input Admittance vs. Collector Current.



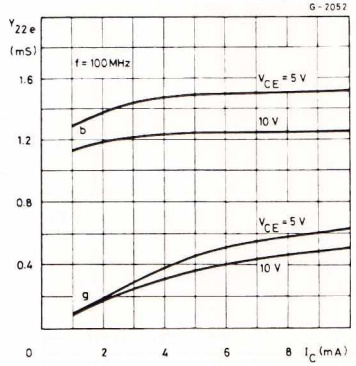
Forward Transadmittance vs. Collector Current.



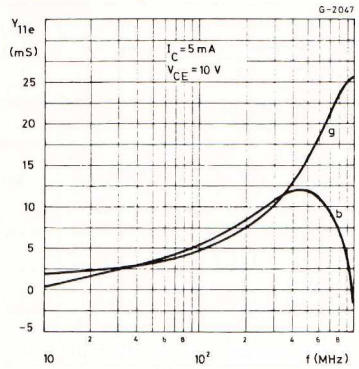
Reverse Transadmittance vs. Collector Current.



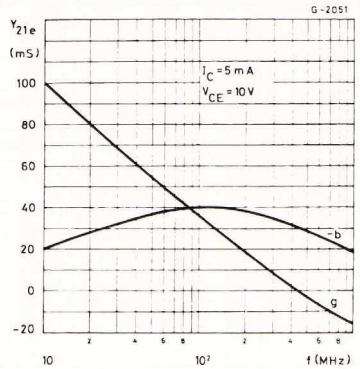
Output Admittance vs. Collector Current.



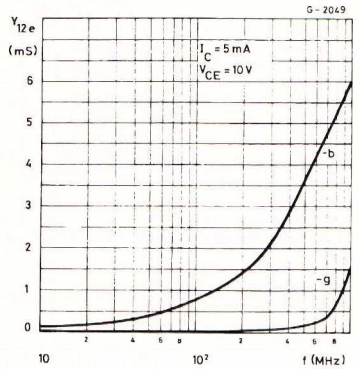
Input Admittance vs. Frequency.



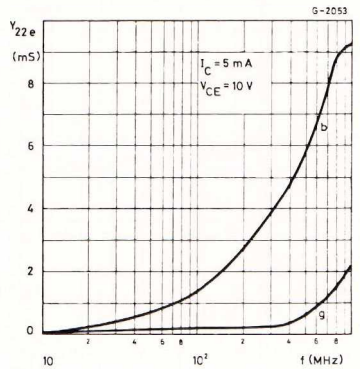
Forward Transadmittance vs. Frequency.



Reverse Transadmittance vs. Frequency.



Output Admittance vs. Frequency.



500 MHz Oscillator Test Circuit.