60 MHz IF output amplifier

The BFW 70 is an NPN diffused silicon Planar epitaxial transistor specially designed for 60 MHz, fixed gain, IF amplifiers. Also suitable as oscillator or amplifier in the VHF and UHF ranges up to 1 GHz.

ELECTRICAL CHARACTERISTICS
(T_A = 25°C unless otherwise noted)

Symbol	Characteristic and test conditions	Min.	Typ.	Max.	Unit
h_{FE}	DC Current Gain (5) I_C = 10 mA V_{CE} = 10V	30	75		
$V_{BE\ on}$	Base Emitter On Voltage I_C = 5 mA V_{CE} = 10V		0.72	0.9	V
BV_{CBO}	Collector to Base Breakdown Voltage I_C = 10 μA I_E = 0	30			V
BV_{EBO}	Emitter to Base Breakdown Voltage I_E = 10 μA I_C = 0	4			V
LV_{CEO}	Collector to Emitter Sustaining Voltage (4 and 5) I_C = 1 mA I_B = 0	30			V
h_{fe}	High Freq. Current Gain I_C = 10 mA V_{CE} = 10V f = 100 MHz	7.5	9		
C_{re}	Reverse Transfer Capacitance I_C = 1 mA V_{CE} = 10V f = 1 MHz		0.22	0.3	pF
NF	Noise Figure (6) I_C = 2 mA V_{CE} = 10V		2.6		dB
NF	Noise Figure (7) I_C = 2 mA V_{CE} = 10V		3.5		dB
NF	Noise Figure (8) I_C = 2 mA V_{CE} = 10V		4.5		dB
GT	Trasducer Gain (Unneutralized) I_C = 7 mA V_{CE} = 10V f = 200 MHz		22		dB
	I_C = 7 mA V_{CE} = 10V f = 100 MHz		32		dB
	I_C = 7 mA V_{CE} = 10V f = 60 MHz Stability factor = 4		35		dB
G_{11e}	Input Conductance I_C = 7 mA V_{CE} = 10V f = 60 MHz		3.3		mmho
B_{11e}	Input Susceptance I_C = 7 mA V_{CE} = 10V f = 60 MHz		6.5		mmho
G_{21e}	Transfer Conductance I_C = 7 mA V_{CE} = 10V f = 60 MHz		145		mmho
B_{21e}	Transfer Susceptance I_C = 7 mA V_{CE} = 10V f = 60 MHz		75		mmho
R_{22e}	Output Impedance I_C = 7 mA V_{CE} = 10V f = 60 MHz		6		KΩ
C_{22e}	Output Capacitance I_C = 7 mA V_{CE} = 10V f = 60 MHz		1.7		pF
G_{11e}	Input Capacitance I_C = 7 mA V_{CE} = 10V f = 100 MHz		5.2		mmho
B_{11e}	Input Susceptance I_C = 7 mA V_{CE} = 10V f = 100 MHz		8		mmho
G_{21e}	Transfer Conductance I_C = 7 mA V_{CE} = 10V f = 100 MHz		110		mmho
B_{21e}	Transfer Susceptance I_C = 7 mA V_{CE} = 10V f = 100 MHz		85		mmho
R_{22e}	Output Impedance I_C = 7 mA V_{CE} = 10V f = 100 MHz		4		KΩ
C_{22e}	Output Capacitance I_C = 7 mA V_{CE} = 10V f = 100 MHz		1.6		pF
G_{11e}	Input Conductance I_C = 7 mA V_{CE} = 10V f = 200 MHz		11		mmho
B_{11e}	Input Susceptance I_C = 7 mA V_{CE} = 10V f = 200 MHz		10		mmho
G_{21e}	Transfer Conductance I_C = 7 mA V_{CE} = 10V f = 200 MHz		50		mmho
B_{21e}	Transfer Susceptance I_C = 7 mA V_{CE} = 10V f = 200 MHz		90		mmho
R_{22e}	Output Impedance I_C = 7 mA V_{CE} = 10V f = 200 MHz		3		KΩ
C_{22e}	Output Capacitance I_C = 7 mA V_{CE} = 10V f = 200 MHz		1.5		pF

ABSOLUTE MAXIMUM RATINGS (1)
(T_A = 25°C unless otherwise noted)

Voltages

Collector to Base Voltage	V_{CBO}	30 V
Collector to Emitter Voltage (4)	V_{CEO}	30 V
Emitter to Base Voltage	V_{EBO}	4 V

Temperatures

Storage Temperature	T_{STG}	-55 °C to 175 °C
Operating Junction Temperature	T_J	175 °C
Lead Temperature (Soldering 10 sec. time limit)	T_L	260 °C

Power (2 - 3)

Dissipation at 25 °C Ambient Temperature	P_D	0.24 W

NOTE
1) These ratings are limiting values above which the serviceability of any individual semiconductor device may be impaired.
2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.
3) These ratings give a maximum junction temperature of 175 °C and junction - to - ambient thermal resistance of 620°C/W (derating factor of 4.15 mW/°C).
4) These ratings refer to a high - current point where collector - to - emitter voltage is lowest. For more information send for SGS - AR 5.
5) Measured under pulse conditions pulse length = 300 usec, duty cycle = 1%
6) f = 60 MHz, R_S = 200 kΩ
7) f = 100 MHz, R_S = 150 Ω
8) f = 200 MHz, R_S = 100 Ω