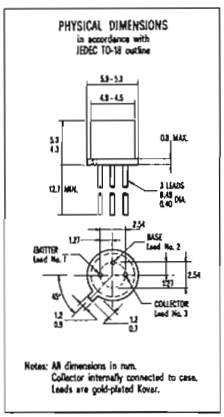
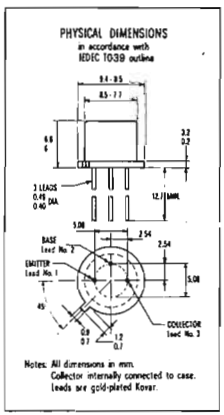
BFX94-BFX95-BFX96-BFX97

HIGH GAIN GENERAL PURPOSE AMPLIFIERS

NPN DIFFUSED SILICON PLANAR EPITAXIAL TRANSISTORS

GENERAL DESCRIPTION - These devices are NPN silicon PLANAR epitaxial transistors designed for high performance amplifier, high speed switching circuitry at collector currents up to 500 mA. They feature useful current gain over a wide range of collector current, low leakage currents, and low saturation voltages.





ABSOLUTE MAXIMUM RATINGS (Note 1)

Maximum Temperatures

T_{STG}	Storage Temperature	-55°C to +200°C
T_J	Operating Junction Temperature	+175°C
T_L	Lead Temperature (Soldering, 10 sec. time limit)	+260°C

Maximum Voltages and Current (T_A = 25°C unless otherwise noted)

V_{CBO}	Collector to Base Voltage	60 Volts
V_{CEO}	Collector to Emitter Voltage (Note 4)	30 Volts
V_{EBO}	Emitter to Base Voltage	5 Volts
I_C	Collector Current	800 mA

Maximum Power Dissipations (Notes 2 and 3)

		BFX 94-95	BFX 96-97
P_D	Total Dissipation at 25°C Case Temperature	1.8 Watt	3 Watts
	at 25°C Ambient Temperature	0.5 Watt	0.8 Watt

ELECTRICAL CHARACTERISTICS (25°C free air temperature unless otherwise noted)

		BFX 94-96			BFX 95-97				
SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
h_{FE}	DC Current Gain	20			35				I_C = 0.1 mA V_{CE} = 10 V
h_{FE}	DC Pulse Current Gain (Note 5)	25			50				I_C = 1 mA V_{CE} = 10 V
h_{FE}	DC Pulse Current Gain (Note 5)	35			75				I_C = 10 mA V_{CE} = 10 V
h_{FE}	DC Pulse Current Gain (Note 5)	20			50				I_C = 150 mA V_{CE} = 1 V
h_{FE}	DC Pulse Current Gain (Note 5)	40		120	100		300		I_C = 150 mA V_{CE} = 10 V
h_{FE}	DC Pulse Current Gain (Note 5)	20			30				I_C = 500 mA V_{CE} = 10 V
V_{BE} (sat)	Base Saturation Voltage			1.3			1.3	V	I_C = 150 mA I_B = 15 mA
V_{BE} (sat)	Base Saturation Voltage			2.6			2.6	V	I_C = 500 mA I_B = 50 mA
V_{CE} (sat)	Collector Saturation Voltage			0.4			0.4	V	I_C = 150 mA I_B = 15 mA
V_{CE} (sat)	Collector Saturation Voltage			1.6			1.6	V	I_C = 500 mA I_B = 50 mA
I_{EBO}	Emitter Cutoff Current			10			10	nA	I_C = 0 V_{EB} = 3 V
I_{CBO}	Collector Cutoff Current			10			10	nA	I_E = 0 V_{CB} = 50 V
I_{CBO} (125°C)	Collector Cutoff Current			10			10	µA	I_E = 0 V_{CB} = 50 V
BV_{CBO}	Collector to Base Breakdown Voltage	60			60			V	I_E = 0 I_C = 10 µA
BV_{EBO}	Emitter to Base Breakdown Voltage	5			5			V	I_C = 0 I_E = 10 µA
LV_{CEO}	Collector to Emitter Sustaining Voltage (Notes 4 and 5)	30			30			V	I_B = 0 I_C = 10 mA (pulsed)

ELECTRICAL CHARACTERISTICS (25°C free air temperature unless otherwise noted)

		BFX 94-96			BFX 95-97				
SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
h_{fe}	High Frequency Current Gain (f = 100 MHz)	2.5			2.5				I_C = 20 mA V_{CE} = 20 V
C_{obo}	Common Base, Open Circuit, Output Capacitance			8			8	pF	I_E = 0 V_{CB} = 10 V
R_e (h_{ie})	Real Part of Common Emitter High Frequency Input Impedance (f = 300 MHz)			60			60	Ω	I_C = 20 mA V_{CE} = 20 V

NOTES;

(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) (BFX 94 and BFX 95 only) . These ratings give a maximum junction temperature of 175°C and junction-to-case thermal resistance of 83.5°C/watt (derating factor of 12 mW/°C); junction-to-ambient thermal resistance of 300°C/watt (derating factor of 3.33 mW/°C). (BFX 96 and BFX 97 only). These ratings give a maximum junction temperature of 175°C and junction-to-case thermal resistance of 50°C/watt (derating factor of 20 mW/°C); junction-to-ambient thermal resistance of 188°C/watt (derating factor of 5.33 mW/°C).

(4) These ratings refers to a high-current point where collector-to-emitter voltage is lowest. For more information send for SGS-AR 5

(5) Pulse Conditions: length = 300 µsec; duty cycle = 1%.