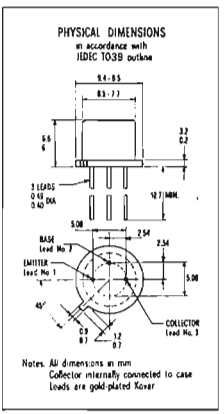
BFX74-BFX74A

GENERAL PURPOSE TYPES

PNP DIFFUSED SILICON PLANAR TRANSISTORS

GENERAL DESCRIPTION - The BFX74 is a PNP silicon PLANAR transistor suitable for high performance amplifiers, where high voltages and high current gain are requested. It features 50 Volts of LV_{CE} and an f_T of 90 MHz typ.
For improved performance use the BFX74A.



ABSOLUTE MAXIMUM RATINGS (Note 1)

Maximum Temperatures

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

Maximum Power Dissipations (Notes 2 and 3)		BFX74	BFX74A
P_D	Total Dissipation at 25°C Case Temperature	2 Watts	4 Watts
	at 100°C Case Temperature	1 Watt	
	at 25°C Ambient Temperature	0.6 Watt	0.8 Watt

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

V_{CBO}	Collector to Base Voltage	-50 Volts	-60 Volts
V_{CEO}	Collector to Emitter Voltage (Note 4)	-35 Volts	-60 Volts
V_{CER}	Collector to Emitter Voltage (R_{BE} = 10 Ω) (Note 4)	-50 Volts	
V_{EBO}	Emitter to Base Voltage	-5 Volts	-5 Volts

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

		BFX74			BFX74A				
SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
h_{FE}	DC Current Gain					50			I_C = 0.1 mA V_{CE} = -10 V
h_{FE}	DC Pulse Current Gain (Note 5)	25	55		25	60			I_C = 5 mA V_{CE} = -10 V
h_{FE}	DC Pulse Current Gain (Note 5)	30	45	90	30	50			I_C = 150 mA V_{CE} = -10 V
h_{FE}	DC Pulse Current Gain (Note 5)					40			I_C = 500 mA V_{CE} = -10 V
V_{BE} (sat)	Base Saturation Voltage (Note 5)		-0.95	-1.3		-0.8	-1	V	I_C = 150 mA I_B = 15 mA
V_{CE} (sat)	Collector Saturation Voltage (Note 5)		-1	-1.5		-0.2	-0.3	V	I_C = 150 mA I_B = 15 mA
V_{CE} (sat)	Collector Saturation Voltsge (Note 5)					-0.5		V	I_C = 500 mA I_B = 50 mA
I_{EBO}	Emitter Cutoff Current		0.1	1				μA	I_C = 0 V_{BE} = -2 V
I_{CBO}	Collector Cutoff Current		0.01	1				μA	I_E = 0 V_{CB} = -30 V
I_{CBO} (125°C)	Collector Cutoff Current		2	100				μA	I_E = 0 V_{CB} = -30 V
I_{EBO}	Emitter Cutoff Current						50	nA	I_C = 0 V_{BE} = -4 V
I_{CBO}	Collector Cutoff Current					0.2	50	nA	I_E = 0 V_{CB} = -50 V
I_{CBO}(125°C)	Collector Cutoff Current					0.2	50	μA	I_E = 0 V_{CB} = -50 V
BV_{CBO}	Collector to Base Breakdown Voltage	-50						V	I_E = 0 I_C = 100 μA
BV_{CBO}	Collector to Base Breakdown Voltage				-60			V	I_E = 0 I_C = 10 μA
BV_{EBO}	Emitter to Base Breakdown Voltage	-5						V	I_C = 0 I_E = 100 μA
BV_{EBO}	Emitter to Base Breakdown Voltage				-5			V	I_C = 0 I_E = 10 μA
LV_{CER}	Collector to Emitter Sustoining Voltage (Notes 4 and 5)	-50						V	R_{BE} ≤ 10 Ω I_C = 100 mA (pulsed)
LV_{CEO}	Collector to Emitter Sustaining Voltage (Notes 4 and 5)	-35			-60			V	I_B = 0 I_C = 10 mA (pulsed)

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

SYMBOL	CHARACTERISTIC	BFX74 MIN.	BFX74 TYP.	BFX74 MAX.	BFX74A MIN.	BFX74A TYP.	BFX74A MAX.	UNIT	TEST CONDITIONS	
h_{fe}	Small Signal Current Gain (f = 1 KHz)	30	60						I_C = 5 mA	V_{CE} = - 10 V
h_{ib}	Input Resistance (f = 1 KHz)		6.2	10				Ω	I_C = 5 mA	V_{CB} = - 10 V
h_{ob}	Output Conductance (f = 1 KHz)		0.6	5				μmho	I_C = 5 mA	V_{CB} = - 10 V
h_{rb}	Voltage Feedback Ratio (f = 1 KHz)		2	8				$\times 10^{-4}$	I_C = 5 mA	V_{CB} = - 10V
h_{fe}	High Frequency Current Gain (f=20 MHz)	3	4.5						I_C = 50 mA	V_{CE} = - 10 V
h_{fe}	High Frequency Current Gain (f=100 MHz)				1	1.5			I_C = 50 mA	V_{CE} = - 10 V
C_{TE}	Emitter Transition Capacitance		57	80		75	110	pF	I_C = 0	V_{EB} = -0.5 V
C_{obo}	Comman Base, Open Circuit, Output Capacitance		31	45		15	20	pF	I_E = 0	V_{CB} = - 10 V

NOTES :

(1) These rotings are limiting values abave which the serviceability of any individual semiconductar device may be impoired.

(2) These ore steady state limits. The factory should be consulted on applications invalving pulsed or low duty cycle operatians.

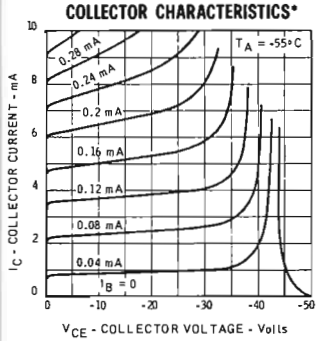
(3) (BFX 74 only) These rating give a maximum junction temperature of 175°C and junction - to - case thermal resistance af 75°C/watt (derating factar of 13.3 mW/°C); junction - to - ambient thermal resistance of 250°C/watt (derating factar of 4 mW/°C).
(BFX 74A only) These ratings give a maximum junction temperature of 200°C and junctian - to - case thermal resistance of 43.7°C/watt (derating factar of 22.8 mW/°C); junction - to - ambient thermal resistance of 219°C/watt (derating factor of 4.56 mW/°C).

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

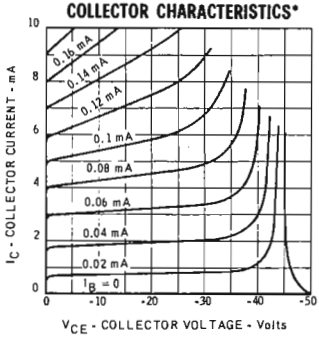
(5) Pulse Conditions : length = 300 μsec ; duty cycle = 1%.

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

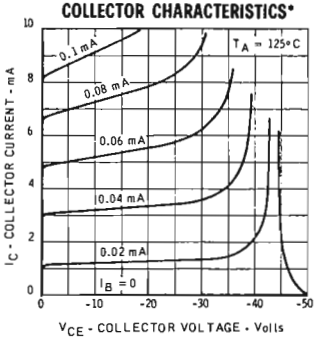
COLLECTOR CHARACTERISTICS*



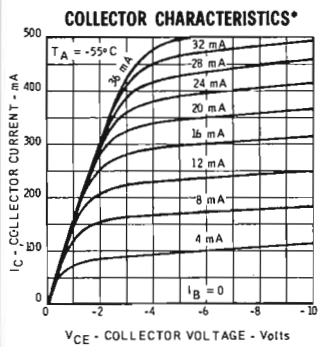
COLLECTOR CHARACTERISTICS*



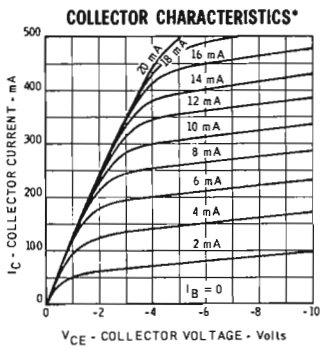
COLLECTOR CHARACTERISTICS*



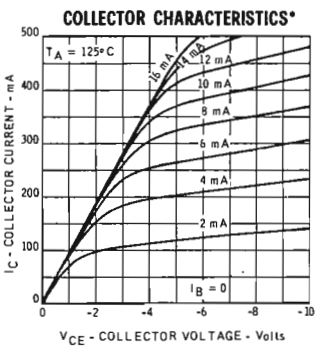
COLLECTOR CHARACTERISTICS*



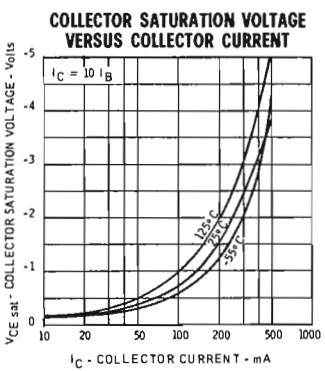
COLLECTOR CHARACTERISTICS*



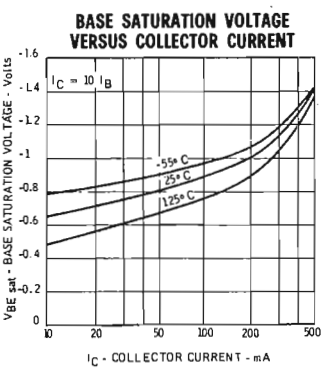
COLLECTOR CHARACTERISTICS*



COLLECTOR SATURATION VOLTAGE VERSUS COLLECTOR CURRENT



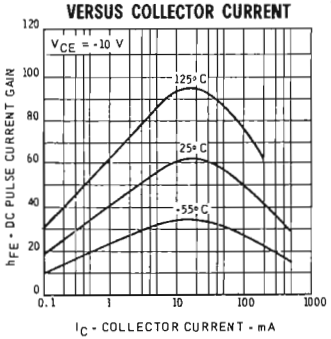
BASE SATURATION VOLTAGE VERSUS COLLECTOR CURRENT



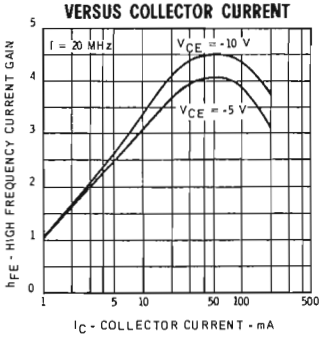
* Single family characteristics on Transistor Curve Tracer.

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

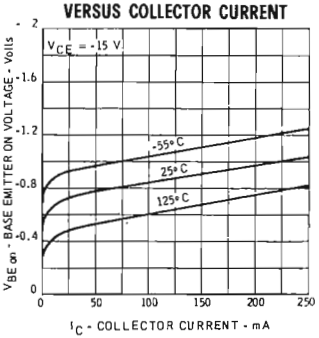
DC PULSE CURRENT GAIN VERSUS COLLECTOR CURRENT



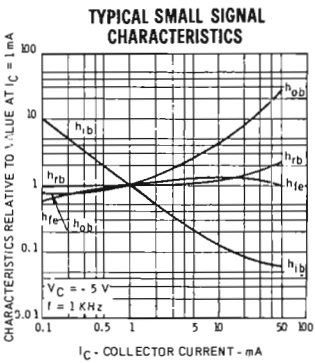
HIGH FREQUENCY CURRENT GAIN VERSUS COLLECTOR CURRENT



BASE-EMITTER ON VOLTAGE VERSUS COLLECTOR CURRENT



TYPICAL SMALL SIGNAL CHARACTERISTICS



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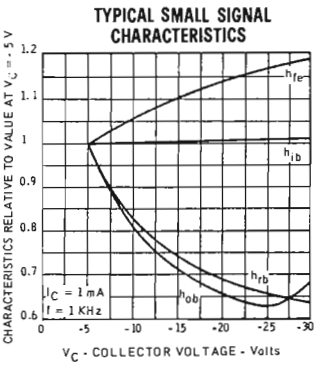

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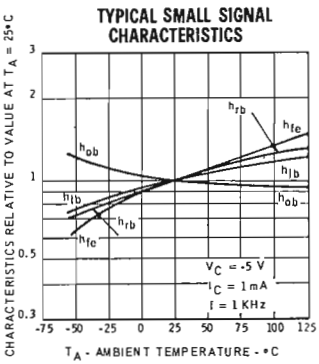
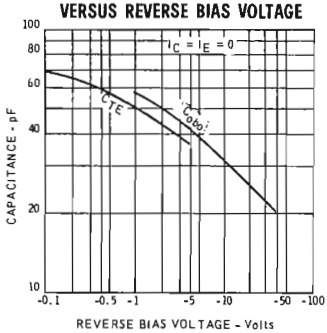
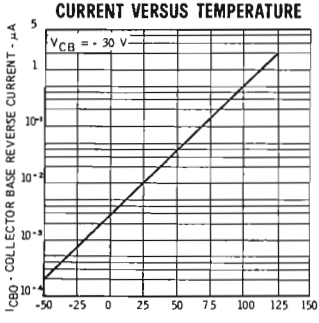


INPUT AND OUTPUT CAPACITANCE VERSUS REVERSE BIAS VOLTAGE

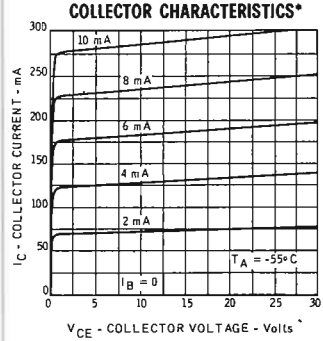


COLLECTOR-BASE REVERSE CURRENT VERSUS TEMPERATURE

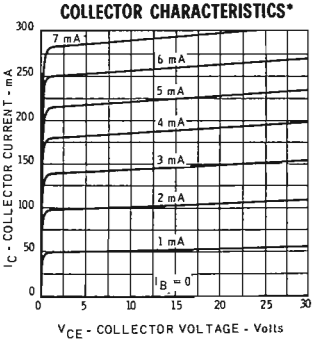


TYPICAL ELECTRICAL CHARACTERISTICS (25°C free air temperature unless otherwise noted)

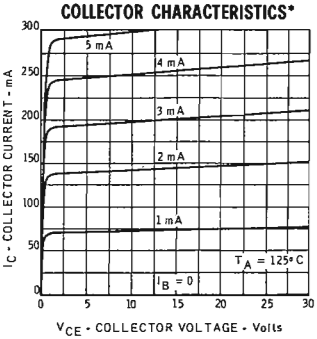
COLLECTOR CHARACTERISTICS*



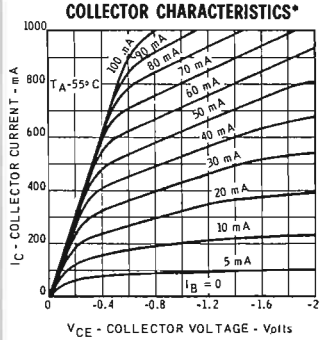
COLLECTOR CHARACTERISTICS*



COLLECTOR CHARACTERISTICS*



COLLECTOR CHARACTERISTICS*



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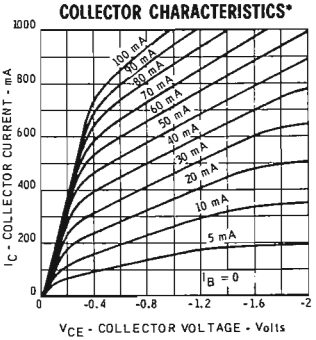

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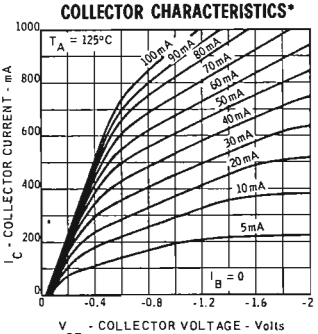
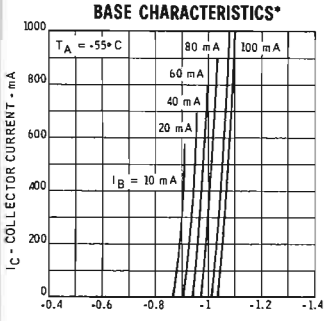


BASE CHARACTERISTICS*



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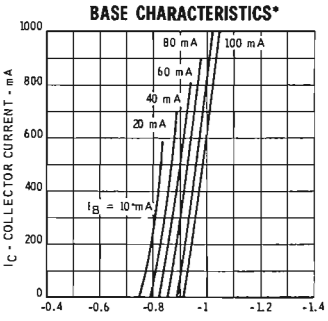
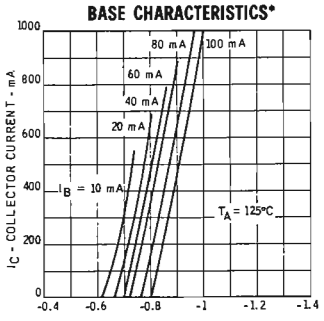


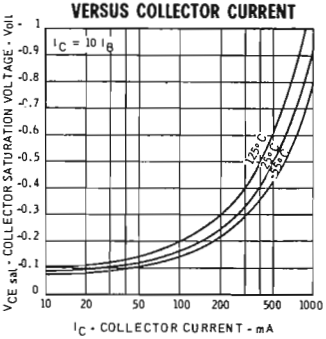
BASE CHARACTERISTICS*



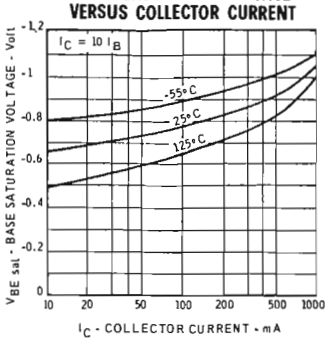
*Single family characteristics on Transistor Curve Tracer.

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

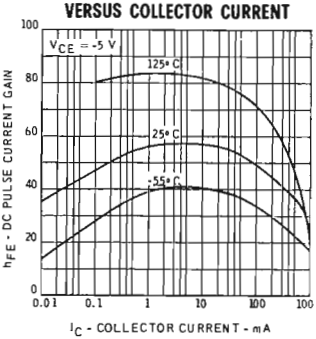
COLLECTOR SATURATION VOLTAGE VERSUS COLLECTOR CURRENT



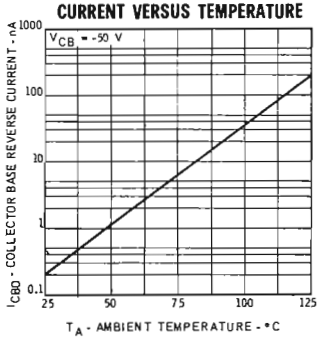
BASE SATURATION VOLTAGE VERSUS COLLECTOR CURRENT



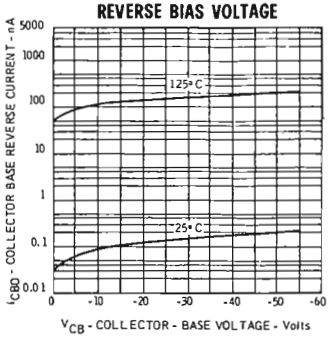
DC PULSE CURRENT GAIN VERSUS COLLECTOR CURRENT



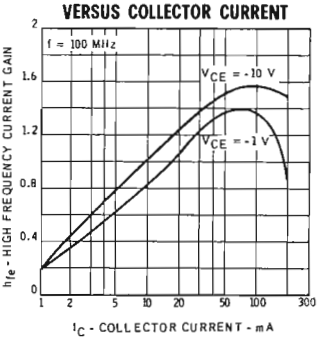
COLLECTOR-BASE REVERSE CURRENT VERSUS TEMPERATURE



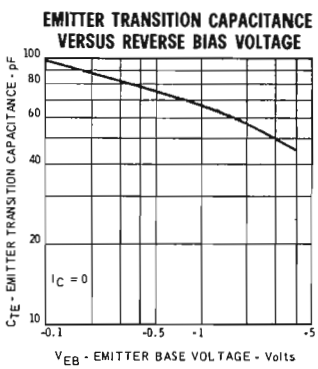
COLLECTOR-BASE REVERSE CURRENT VERSUS REVERSE BIAS VOLTAGE



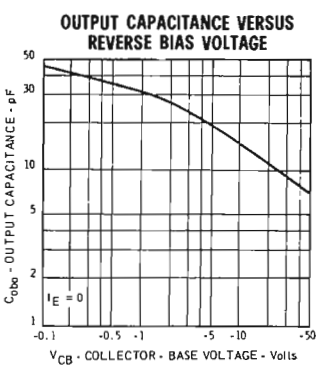
HIGH FREQUENCY CURRENT GAIN VERSUS COLLECTOR CURRENT



EMITTER TRANSITION CAPACITANCE VERSUS REVERSE BIAS VOLTAGE

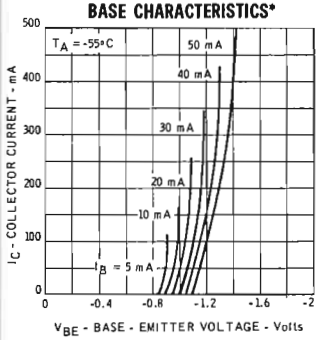


OUTPUT CAPACITANCE VERSUS REVERSE BIAS VOLTAGE



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

BASE CHARACTERISTICS*



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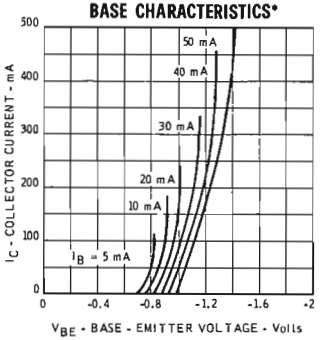

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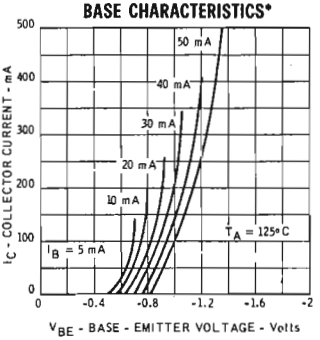

*Single family characteristics on Transistor Curve Tracer.