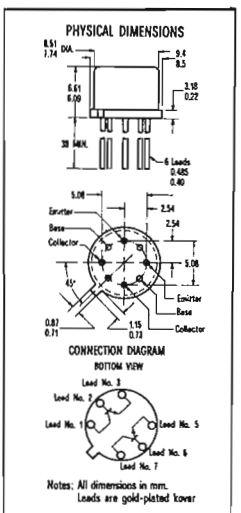
BFY 83

DUAL, HIGH-VOLTAGE TYPE

NPN DIFFUSED SILICON PLANAR TRANSISTORS

GENERAL DESCRIPTION - The BFY83 is a six terminal device containing two isolated high voltage NPN double diffused silicon PLANAR transistors. The SGS-ATES planar process guarantees the stability of the initial match with time. The good thermal tracking over a wide current and temperature range, offers the circuit designer matched transistors with specified performance for differential amplifiers and low level DC amplifiers.



Notes: All dimensions in mm.
Leads are gold-plated kovar

ABSOLUTE MAXIMUM RATINGS (Note 1)

Maximum Temperature

Storage Temperature	-65°C to + 200°C
Operating Junction Temperature	200°C Maximum
Lead Temperature (Soldering, No Time Limit)	300°C Maximum

Maximum Power Dissipations

	One Side	Both Sides
Total Dissipation at 25°C Case Temperature (Note 2)	1.2 Watt	1.8 Watt
at 100°C Case Temperature (Note 2)	0.68 Watt	1.2 Watt
at 25°C Ambient Temperature (Note 2)	0.5 Watt	0.6 Watt

Maximum Voltages

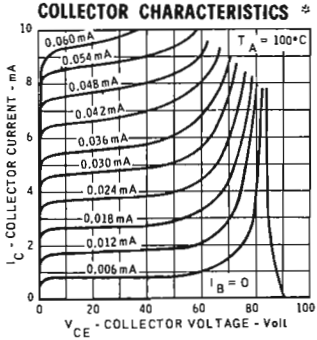
BV_{CBO}	Collector to Base Voltage	100 Volts
LV_{CEO}	Collector to Emitter Voltage	60 Volts
BV_{EBO}	Emitter to Base Voltage	7.0 Volts

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

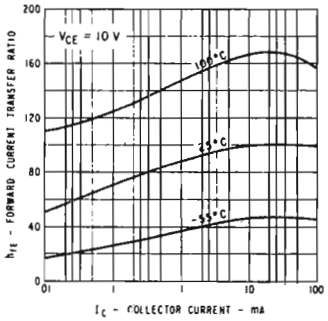
SYMBOL	CHARACTERISTIC	MIN.	MAX.	UNITS	TEST CONDITIONS	
h_{FE}	DC Current Gain	25			I_C = 0.1 mA	V_{CE} = 10 V
h_{FE}	DC Pulse Current Gain (Note 3)	50			I_C = 10 mA	V_{CE} = 10 V
h_{FE}/h_{FE2}	DC Current Gain Ratio	0.8	1.0		I_C = 0.1 mA	V_{CE} = 10 V
V_{BE} (sat)	Base Saturation Voltage		0.8	V	I_C = 10 mA	I_B = 1.0 mA
V_{BE} (sat)	Base Saturation Voltage (Note 3)		0.9	V	I_C = 50 mA	I_B = 5.0 mA
V_{CE} (sat)	Collector Saturation Voltage		0.4	V	I_C = 10 mA	I_B = 1.0 mA
V_{CE} (sat)	Collector Saturation Voltage (Note 3)		1.2	V	I_C = 50 mA	I_B = 5.0 mA
V_{BE1}-V_{BE2}	Base Emitter Voltage Differential		15	mV	I_C = 0.1 mA	V_{CE} = 10 V
$\Delta(V_{BE1}-V_{BE2})$	Base Emitter Voltage Differential Change		25	µV/°C	I_C = 0.1 mA	V_{CE} = 10 V
I_{CBO}	Collector Cutoff Current		25	nA	I_E = 0	V_{CB} = 75 V
I_{CBO} (150°C)	Collector Cutoff Current		15	µA	I_E = 0	V_{CB} = 75 V
I_{EBO}	Emitter Cutoff Current		25	nA	I_C = 0	V_{EB} = 5.0 V
BV_{CBO}	Collector to Base Breakdown Voltage	100		V	I_C = 100 µA	I_E = 0
BV_{EBO}	Emitter to Base Breakdown Voltage	7.0		V	I_C = 0	I_E = 100 µA
LV_{CEO}	Collector to Emitter Sustaining Voltage (Note 3)	60		V	I_C = 30 mA	I_B = 0
h_{fe}	High Frequency Current Gain (f = 20 Mc/s)	2.5			I_C = 50 mA	V_{CE} = 10 V
C_{ob}	Output Capacitance		15	pF	I_E = 0	V_{CB} = 10 V
C_{TE}	Input Capacitance		85	pF	I_C = 0	V_{EB} = 0.5 V
NF	Noise Figure (Note 4)		8.0	db	I_C = 0.3 mA	V_{CB} = 10 V

TYPICAL ELECTRICAL CHARACTERISTICS

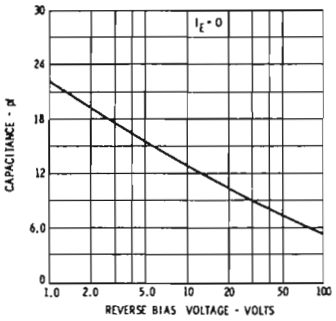
COLLECTOR CHARACTERISTICS *



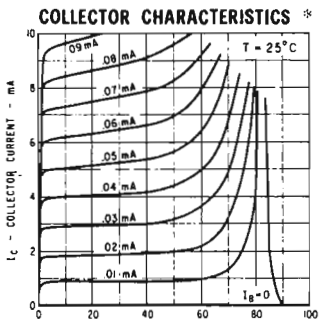
DC PULSE CURRENT GAIN VERSUS COLLECTOR CURRENT



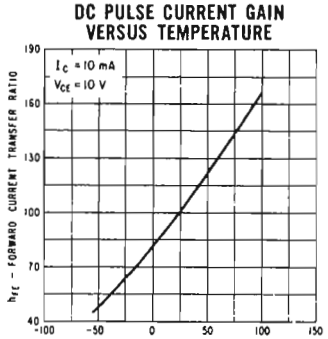
OUTPUT CAPACITANCE VERSUS REVERSE BIAS VOLTAGE



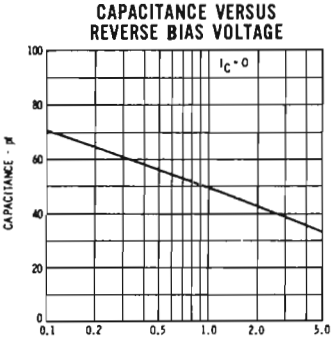
COLLECTOR CHARACTERISTICS *



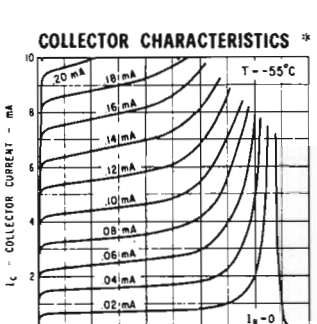
DC PULSE CURRENT GAIN VERSUS TEMPERATURE



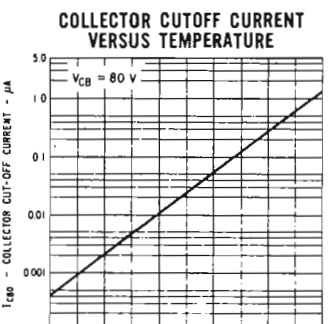
EMITTER TRANSITION CAPACITANCE VERSUS REVERSE BIAS VOLTAGE



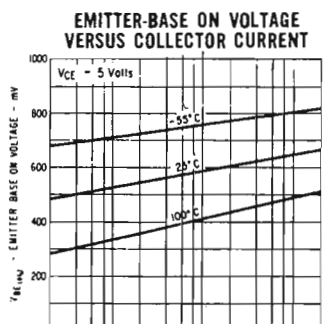
COLLECTOR CHARACTERISTICS *



COLLECTOR CUTOFF CURRENT VERSUS TEMPERATURE

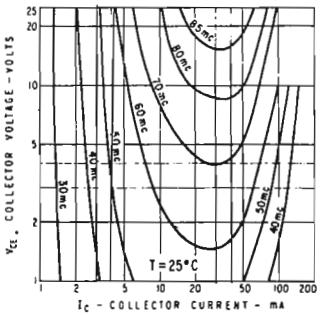


EMITTER-BASE ON VOLTAGE VERSUS COLLECTOR CURRENT

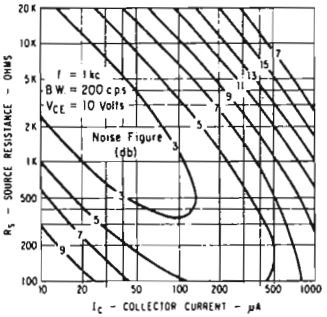


* Single family characteristics on Transistor Curve Tracer

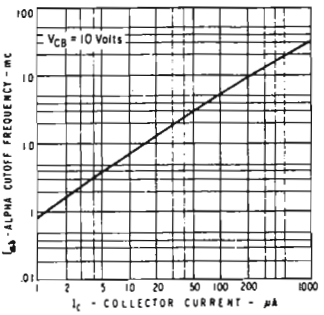
CONTOURS OF CONSTANT GAIN BANDWIDTH PRODUCT (f_T)



CONTOURS OF NARROW BAND NOISE FIGURE



ALPHA CUTOFF FREQUENCY VERSUS COLLECTOR CURRENT



NOTES:

(1) These ratings are limiting values above which the serviceability of any individual semiconductor device may be impaired.

(2) These ratings give a maximum junction temperature of 200°C and junction-to-case thermal resistance of 146°C/Watt for one side and 97°C/Watt for both sides.

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

(4) f = 1 Kc/s; R_S = 1 KΩ; Power Bandwidth of 200 cps.