BF 167

SILICON PLANAR NPN

TV AGC IF AMPLIFIER

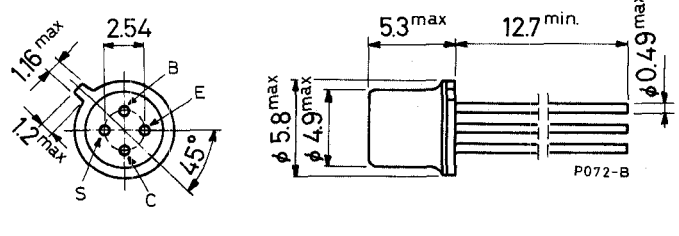
The BF 167 is a silicon planar NPN transistor in a TO-72 metal case. It is particularly designed for use in forward AGC IF amplifiers of TV receivers. It is characterized by very low feedback capacitance due to a screening diffusion under the base pad.

ABSOLUTE MAXIMUM RATINGS

V_{CES}	Collector-emitter voltage ($V_{BE} = 0$)	40 V
V_{CEO}	Collector-emitter voltage ($I_B = 0$)	30 V
V_{EBO}	Emitter-base voltage ($I_C = 0$)	4 V
I_C	Collector current	25 mA
P_{tot}	Total power dissipation at $T_{amb} \leq 25$ °C	150 mW
T_{stg}	Storage temperature	-55 to 175 °C
T_j	Junction temperature	175 °C

MECHANICAL DATA

Dimensions in mm



(sim. to **TO-72**)

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THERMAL DATA

$R_{th\ j\text{-}amb}$	Thermal resistance junction-ambient	max	1000	°C/W

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

Parameter		Test conditions	Min.	Typ.	Max.	Unit
I_{CES}	Collector cutoff current (V_{BE} = 0)	V_{CE} = 10 V V_{CE} = 10 V T_{amb} = 100°C			50 5	nA μA
$V_{(BR)\ CES}$	Collector-emitter breakdown voltage (V_{BE} = 0)	I_C = 10 μA	40			V
$V_{(BR)\ CEO}$	Collector-emitter breakdown voltage (I_B = 0)	I_C = 5 mA	30			V
$V_{(BR)\ EBO}$	Emitter-base breakdown voltage (I_C = 0)	I_E = 10 μA	4			V
V_{BE}*	Base-emitter voltage	I_C = 4 mA V_{CE} = 10 V		0.74		V
h_{FE}*	DC current gain	I_C = 1 mA V_{CE} = 10 V I_C = 4 mA V_{CE} = 10 V I_C = 10 mA V_{CE} = 10 V	 30	35 45 20		— — —
f_T	Transition frequency	I_C = 4 mA V_{CE} = 10 V		600		MHz
$-C_{re}$	Reverse capacitance	I_C = 0 V_{CE} = 10 V f = 1 MHz		0.15		pF
NF	Noise figure	I_C = 4 mA V_{CE} = 10 V R_g = 100 Ω f = 36 MHz		3		dB
G_{pe}**	Power gain	I_E = 4 mA V_{CE} = 10 V f = 36 MHz	24	28		dB

* Pulsed: pulse duration = 300 μs, duty factor = 1%

** See test circuit

ELECTRICAL CHARACTERISTICS (continued)

Parameter		Test conditions	Min.	Typ.	Max.	Unit
ΔG_{pe}	Power gain control	V_{EE} = -25 V R_{EE} = 3.9 kΩ f = 36 MHz		60		dB
g_{ie}	Input conductance	I_C = 4 mA V_{CE} = 10 V f = 36 MHz		3.8		mS
b_{ie}	Input susceptance	I_C = 4 mA V_{CE} = 10 V f = 36 MHz		5		mS
g_{fe}	Forward transconductance	I_C = 4 mA V_{CE} = 10 V f = 36 MHz		95		mS
b_{fe}	Forward transusceptance	I_C = 4 mA V_{CE} = 10 V f = 36 MHz		34		mS
g_{oe}	Output conductance	I_C = 4 mA V_{CE} = 10 V f = 36 MHz		62		μS
b_{oe}	Output susceptance	I_C = 4 mA V_{CE} = 10 V f = 36 MHz		270		μS

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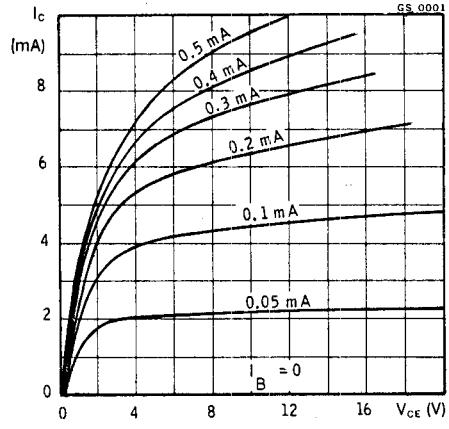
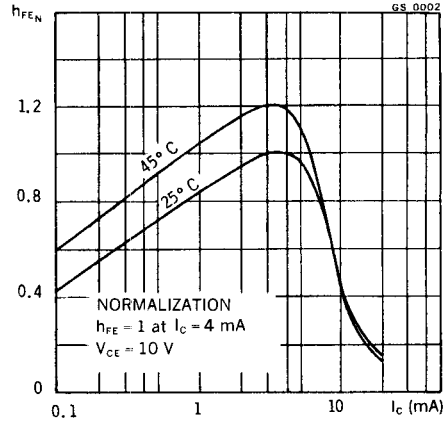
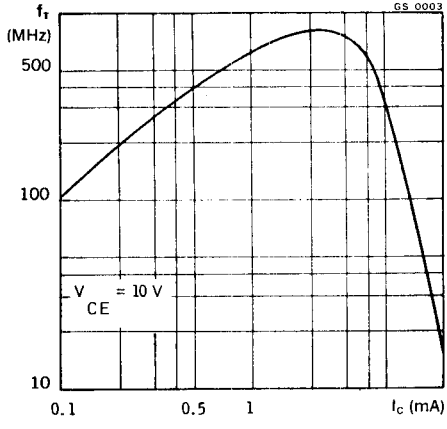
Typical output characteristics



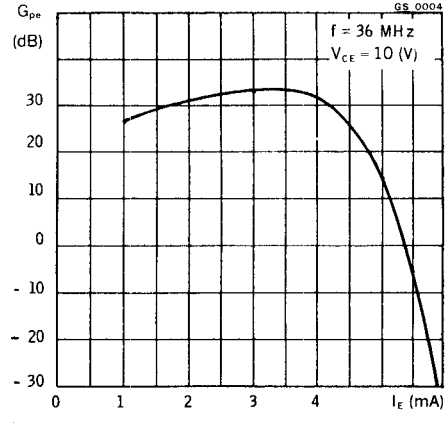
DC normalized current gain



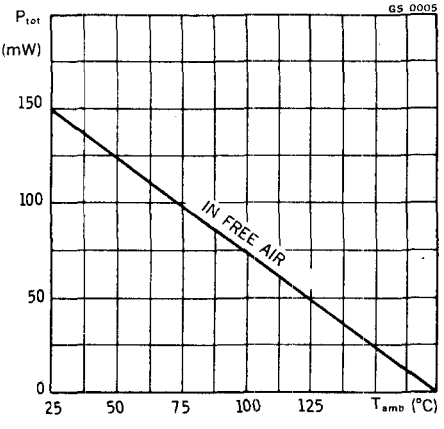
Transition frequency



Power gain



Power rating chart



TEST CIRCUIT

Power gain (f = 36 MHz)