

MPS-A09 (SILICON)

MPS-A09 (continued)



CASE 29(1)
(TO-92)

NPN silicon annular amplifier transistors designed for pre-amplifier applications in audio amplifiers.

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	50	Vdc
Collector-Base Voltage	V_{CB}	50	Vdc
Collector Current - Continuous Peak	I_C	50 100	mAdc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	310 2.81	mW mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-55 to +135	$^\circ\text{C}$

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Ambient	θ_{JA}	0.357	$^\circ\text{C}/\text{mW}$

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
----------------	--------	-----	-----	-----	------

OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage ($I_C = 1.0 \text{ mAdc}, I_B = 0$)	BV_{CEO}	50	-	-	Vdc
Collector-Base Breakdown Voltage ($I_C = 0.1 \text{ mAdc}, I_E = 0$)	BV_{CBO}	50	-	-	Vdc
Collector Cutoff Current ($V_{CB} = 25 \text{ Vdc}, I_E = 0$)	I_{CBO}	-	-	100	nAdc
Emitter Cutoff Current ($V_{BE} = 3.0 \text{ Vdc}, I_C = 0$)	I_{EBO}	-	-	100	nAdc

ON CHARACTERISTICS

DC Current Gain ($I_C = 0.1 \text{ mAdc}, V_{CE} = 5.0 \text{ Vdc}$)	h_{FE}	100	-	600	-
Collector-Emitter Saturation Voltage ($I_C = 10 \text{ mAdc}, I_B = 1.0 \text{ mAdc}$)	$V_{CE(sat)}$	-	-	0.9	Vdc
Base-Emitter On Voltage ($I_C = 1.0 \text{ mAdc}, V_{CE} = 5.0 \text{ Vdc}$)	$V_{BE(on)}$	-	-	1.0	Vdc

DYNAMIC CHARACTERISTICS

Current-Gain-Bandwidth Product ($I_C = 0.5 \text{ mAdc}, V_{CE} = 5.0 \text{ Vdc}, f = 20 \text{ MHz}$)	f_T	30	80	-	MHz
Output Capacitance ($V_{CB} = 5.0 \text{ Vdc}, I_E = 0, f = 100 \text{ kHz}$)	C_{ob}	-	-	5.0	pF
Noise Figure ($I_C = 0.1 \text{ mAdc}, V_{CE} = 5.0 \text{ Vdc}, R_S = 6.8 \text{ k ohms}, f = 1.0 \text{ kHz}$)	NF	-	1.4	-	dB

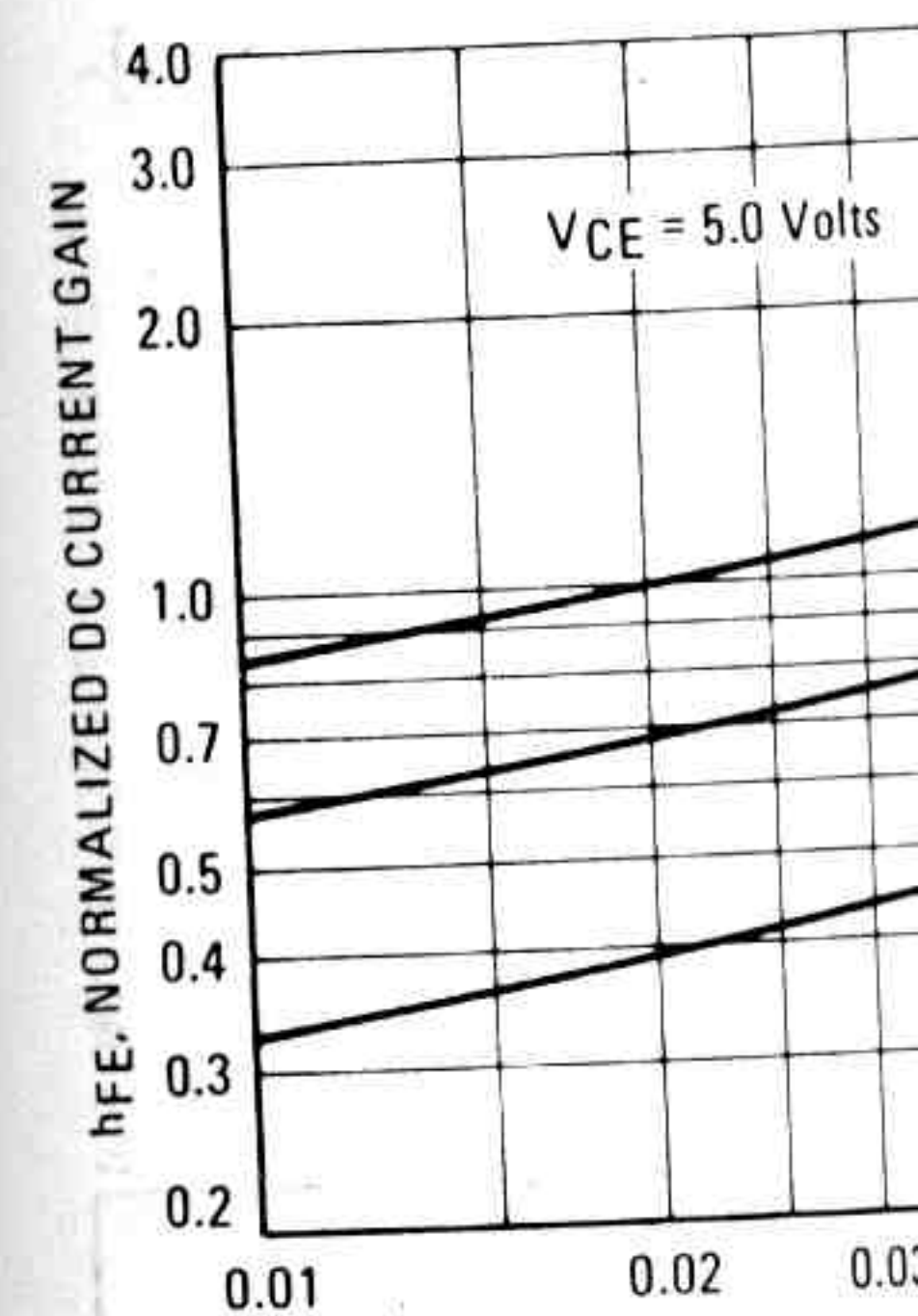
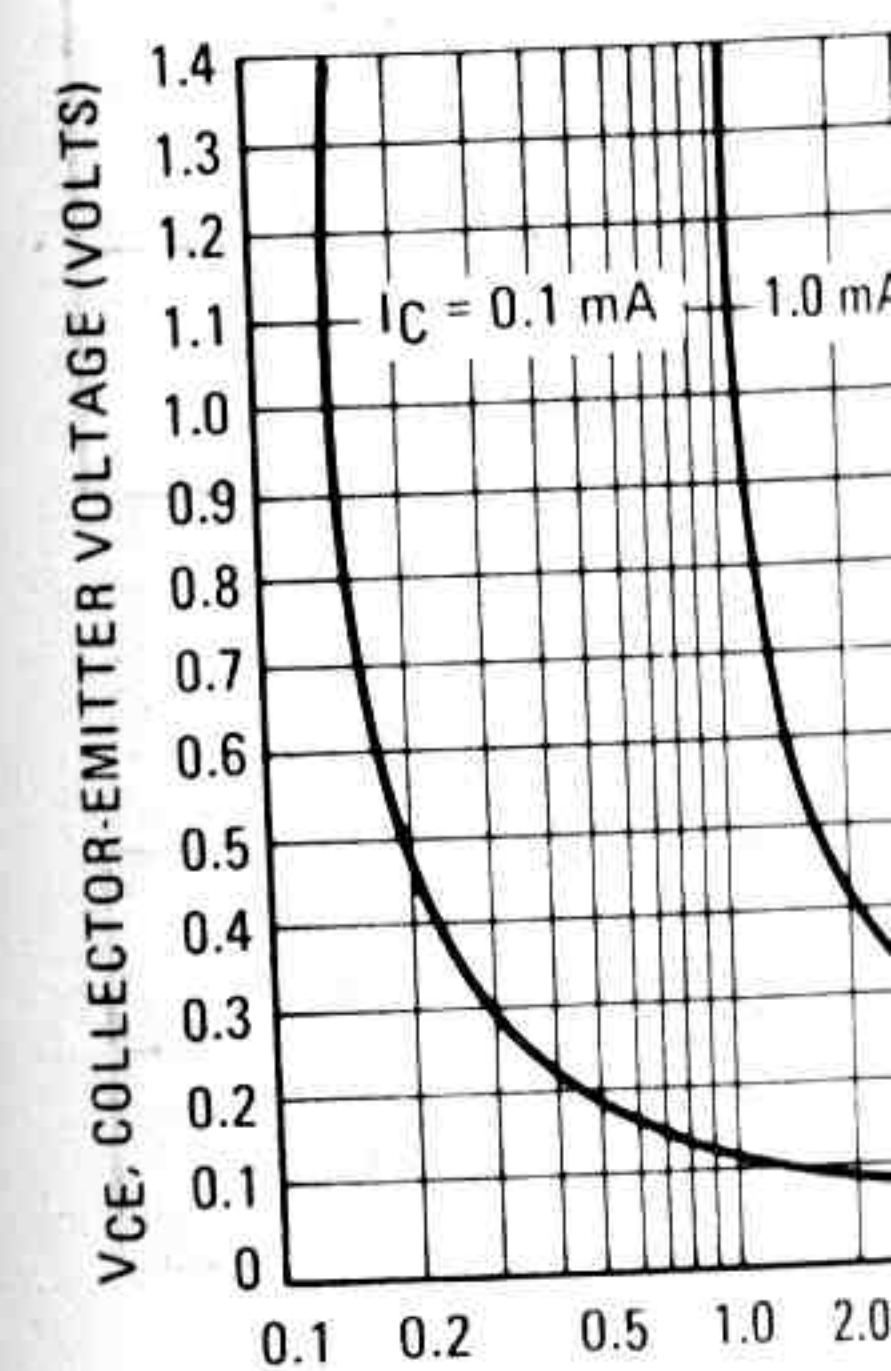
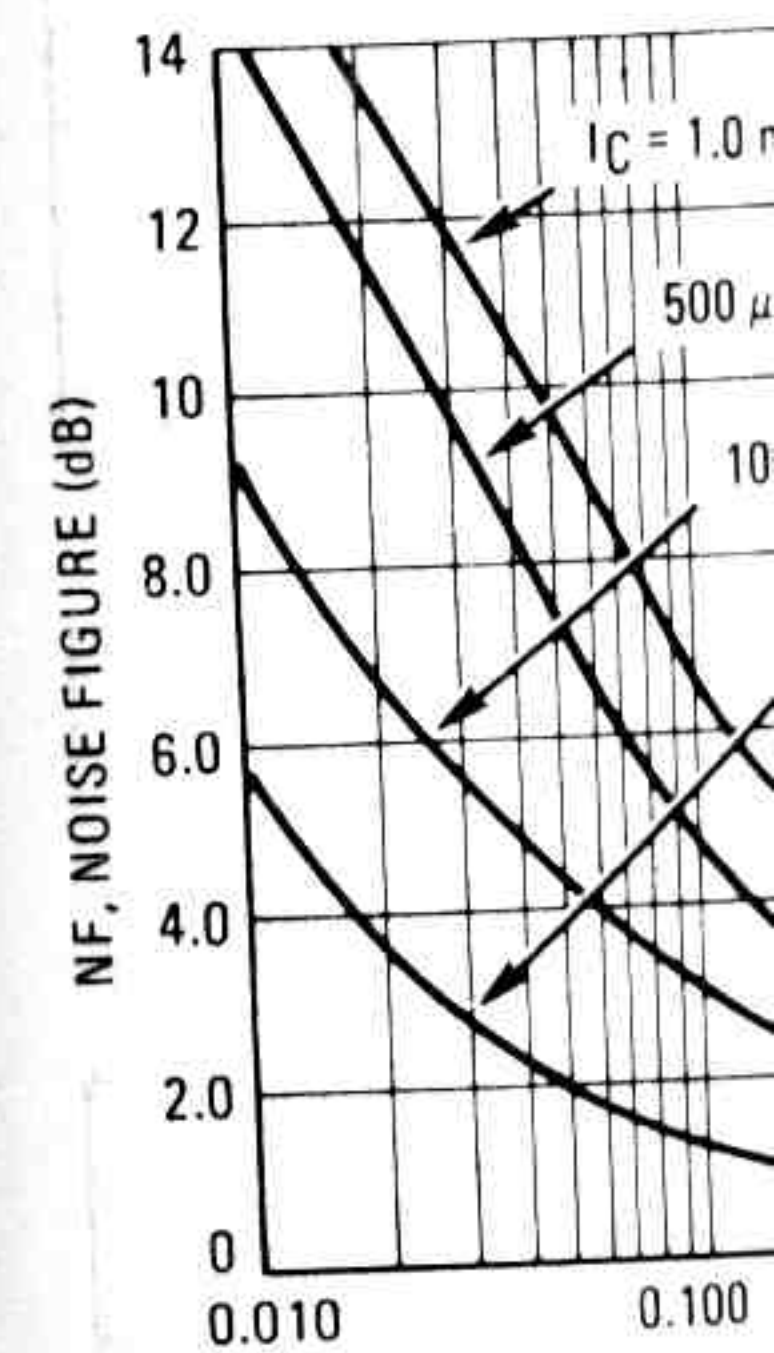


FIGURE 2 - COLLE



FIGURE



er transistors designed for
dio amplifiers.

Value	Unit
0	Vdc
0	Vdc
0	mAdc
0	mW
81	mW/°C
+135	°C

Max	Unit
357	°C/mW

Typ	Max	Unit
-	-	Vdc
-	-	Vdc
-	100	nAdc
-	100	nAdc

-	-	Vdc
---	---	-----

-	-	Vdc
---	---	-----

-	100	nAdc
---	-----	------

-	100	nAdc
---	-----	------

-	600	-
---	-----	---

-	0.9	Vdc
---	-----	-----

-	1.0	Vdc
---	-----	-----

80	-	MHz
----	---	-----

-	5.0	pF
---	-----	----

1.4	-	dB
-----	---	----

FIGURE 1 - DC CURRENT GAIN

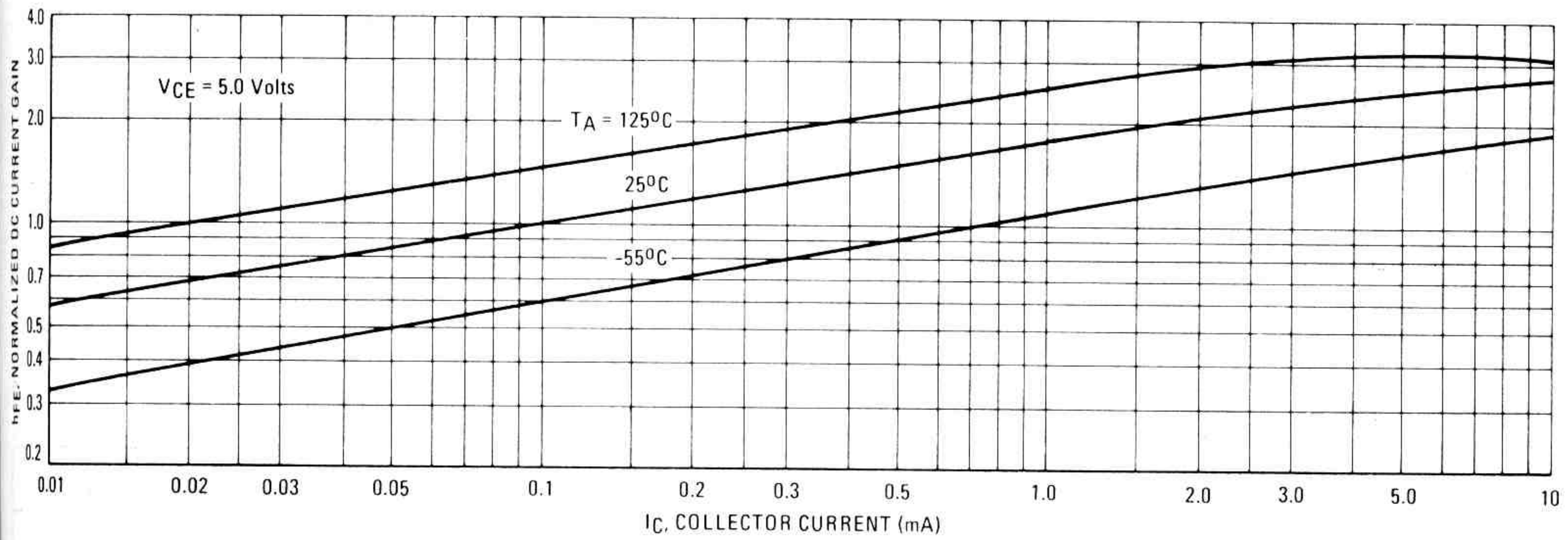


FIGURE 2 - COLLECTOR SATURATION REGION

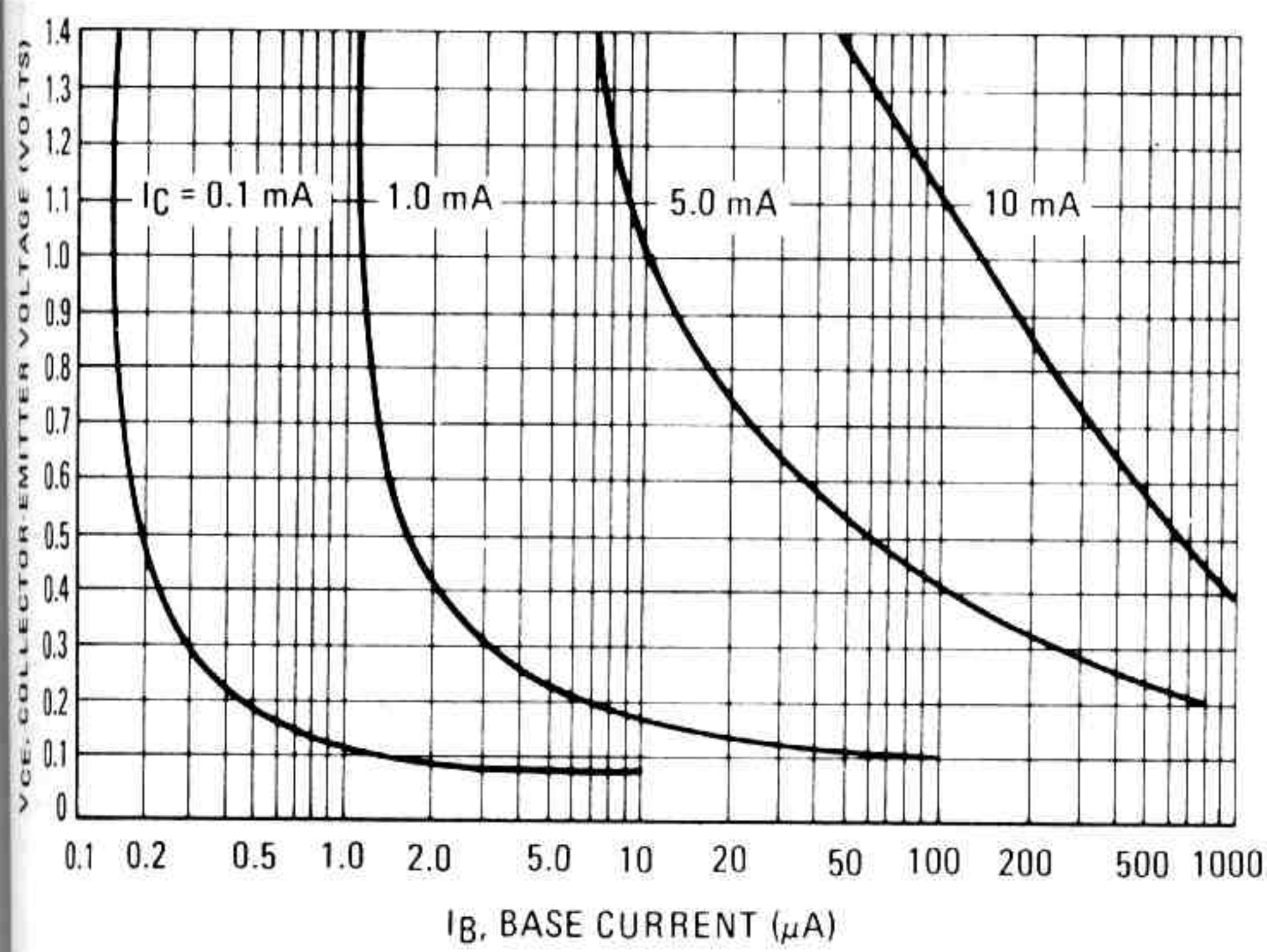
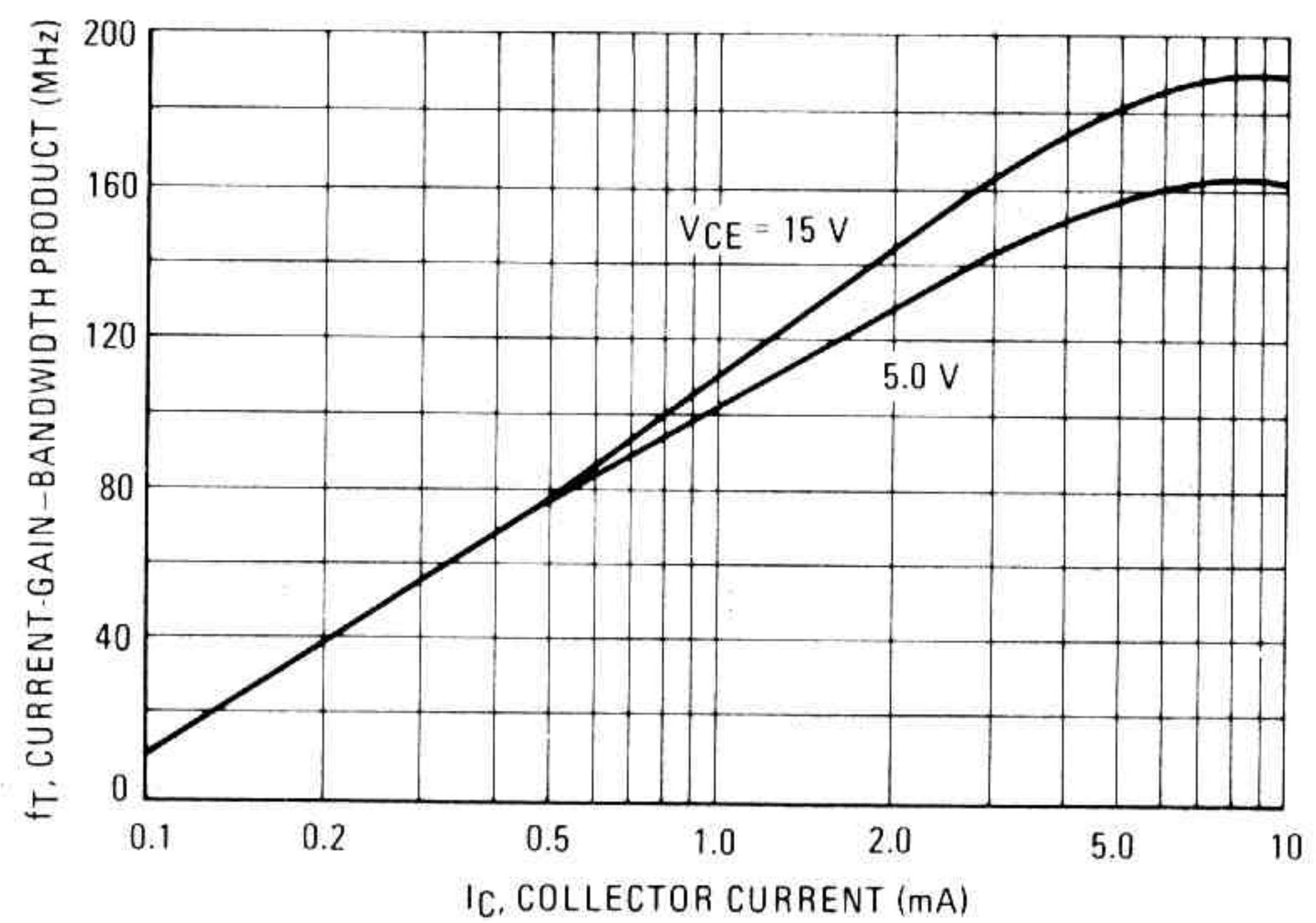


FIGURE 3 - CURRENT GAIN-BANDWIDTH PRODUCT



NOISE FIGURE

(VCE = 5.0 Vdc, TA = 25°C)

FIGURE 4 - FREQUENCY EFFECTS

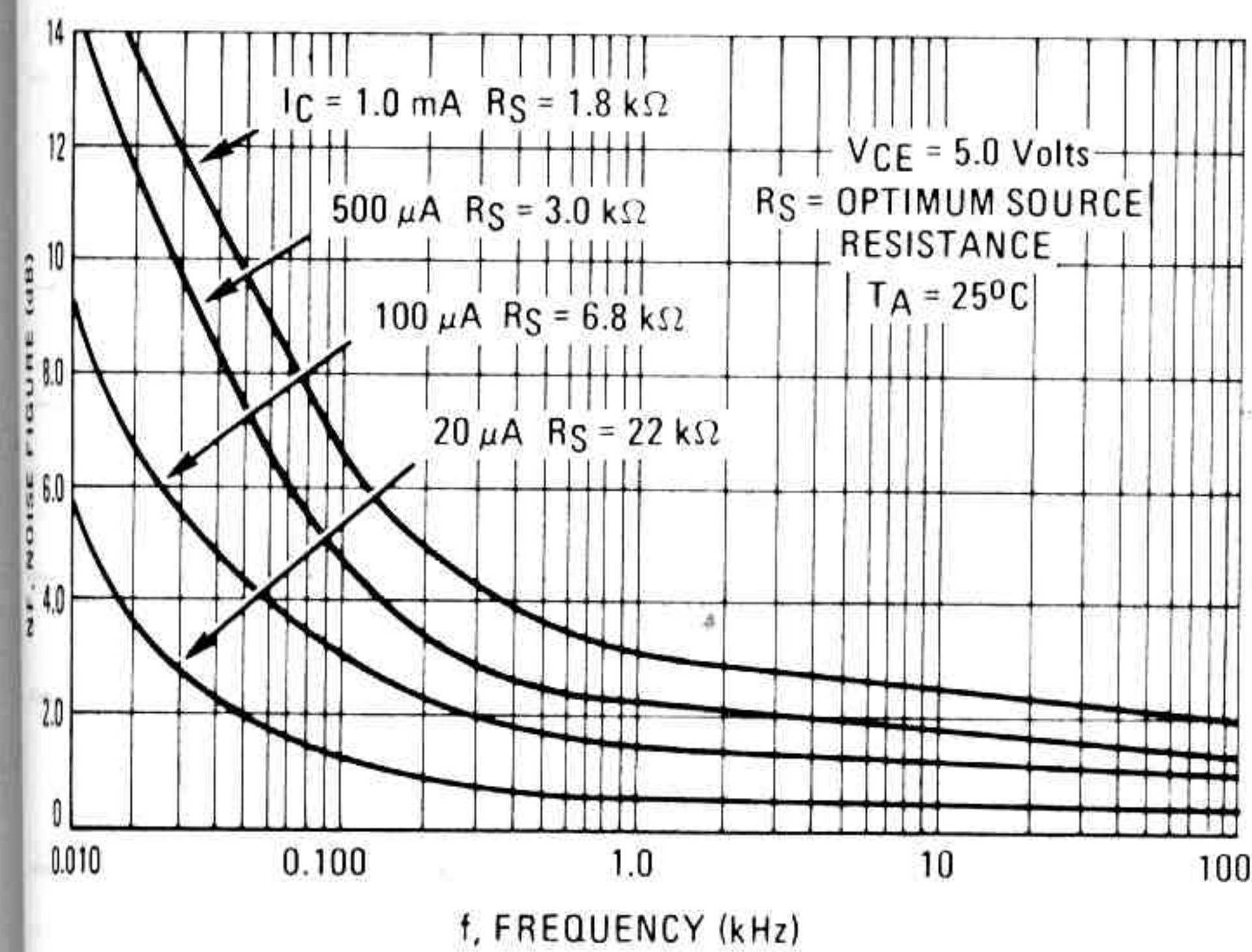


FIGURE 5 - SOURCE RESISTANCE EFFECT

