Watertown, MA
Microsemi
Progress Powered by Technology

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2N2484

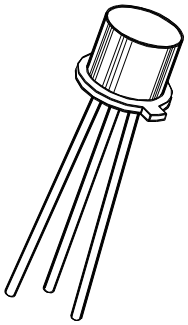
SWITCHING TRANSISTOR JAN, JANTX, JANTXV

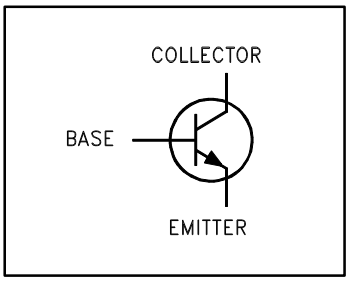
SMALL SIGNAL BIPOLAR *NPN* SILICON

Features

- Meets MIL 19500 /376
- Collector - Base Voltage 60 V
- Collector - Current 50 mA
- High Speed, Low Power Bipolar Transistor

TO-18





Maximum Ratings

RATING	SYMBOL	VALUE	UNIT
Collector - Emitter Voltage	V_{CEO}	60	Vdc
Collector - Base Voltage	V_{CBO}	60	Vdc
Emitter - Base Voltage	V_{EBO}	6	Vdc
Collector Current - Continuous	I_C	50	mAdc
Total Device Dissipation @ T_A = 25 ℃	P_D	360	mW
Derate above 25 ℃		2.06	mW/℃
Total Device Dissipation @ T_C = 25 ℃	P_D	1.2	WATTS
Derate above 25 ℃		6.85	mW/℃
Operating Junction&Storage Temperature Range	T_J, T_{stg}	-65 to +200	℃

Thermal Characteristics

CHARACTERISTIC	SYMBOL	MAX	UNIT
Thermal Resistance, Junction to Ambient	RqJA	485	℃/W

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Electrical Characteristics (T_A = 25°C unless otherwise noted)

OFF CHARACTERISTIC	SYMBOL	MIN	MAX	UNIT
Collector - Emitter Breakdown Voltage (1)	$V(BR)_{CEO}$			
(I_C = 10 mAdc, I_B = 0)		60		Vdc
Collector - Base Breakdown Voltage	$V(BR)_{CBO}$			
(I_C = 10 mAdc, I_E = 0)		60		Vdc
Emitter - Base Breakdown Voltage	$V(BR)_{EBO}$			
(I_E = 10 mAdc, I_C = 0)		6		Vdc
Collector - Base Cutoff Current	I_{CBO}			
(V_{CB}= 45 Vdc I_E = 0)			5	nAdc
(V_{CB}= 45 Vdc I_E = 0 , T_A = 150°C)			10	mAdc
Collector - Emitter Cutoff Current	I_{CEO}			
(V_{CE} = 5 Vdc, I_B = 0)			2	nAdc
Collector - Emitter Cutoff Current	I_{CES}			
(V_{CE} = 45 Vdc, V_{BE} = 0)			5	nAdc
Emitter - Base Cutoff Current	I_{EBO}			
(V_{EB} = 5 Vdc)			2	nAdc

ON CHARACTERISTIC	SYMBOL	MIN	MAX	UNIT
DC Current Gain	h_{FE}			
(I_C = 1 mAdc V_{CE} = 5 Vdc)		45		
(I_C = 10 mAdc, V_{CE} = 5 Vdc)		200	500	
(I_C = 100mAdc, V_{CE} = 5 Vdc)		225	675	
(I_C= 500mAdc, V_{CE} = 5 Vdc)		250	800	
(I_C = 1 mAdc, V_{CE} = 5 Vdc)		250	800	
(I_C = 10 mAdc, V_{CE} = 5 Vdc)		225	800	
(I_C = 10 mAdc, V_{CE} = 5 Vdc, T_J = -55°C)		35		
Collector- Emitter Saturation Voltage	$V_{CE(sat)}$			
(I_C = 1 mAdc, I_B = 100 mAdc)			0.3	Vdc
Base - Emitter Non-Saturated Voltage	$V_{BE(on)}$			
(I_C = 100 mAdc, V_{CE} = 5 Vdc)		0.5	0.7	Vdc

1. Pulse Test: Pulse Width ≤ 300 µs, Duty Cycle ≤.2%

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Electrical Characteristics (T_A = 25°C unless otherwise noted)

SMALL - SIGNAL CHARACTERISTICS	SYMBOL	MIN	MAX	UNIT
Output Capacitance	C_{obo}			
(V_{CB} = 5 Vdc, I_E = 0, 100kHz £ f £ 1 MHz)			5	pF
Input Capacitance	C_{ibo}			
(V_{EB} = 0.5 Vdc, I_C = 0, 100kHz £ f £ 1 MHz)			6	pF

Small - Signal AC Characteristics (T_A = 25°C)

LOW FREQUENCY	SYMBOL	MIN	MAX	UNIT
Common - Emitter Forward Current Transfer Ratio	h_{fe}			
(I_C = 1 mA, V_{CE} = 5 V, f = 1 kHz)		250	900	
Common - Emitter Short Circuit Input Impedance	h_{ie}			
(I_C = 1 mA, V_{CE} = 5 V, f = 1 kHz)		3.5	24	kW
Common - Emitter Open Circuit Output Admittance	h_{oe}			
(I_C = 1 mA, V_{CE} = 5 V, f = 1 kHz)			40	mmhos
Common-Emitter Open Circuit Reverse Voltage Transfer Ratio	h_{re}			
(I_C = 1 mA, V_{CE} = 5 V, f = 1 kHz)			8.0×10^{-4}	
HIGH FREQUENCY AND NOISE				
Magnitude of Common Emitter				
Short Circuit Forward Current Transfer Ratio	ú h_{fe} ú			
(I_C = 50 mA, V_{CE} = 5 V, f = 5 MHz)		3.0		
(I_C = 500 mA, V_{CE} = 5 V, f = 30 MHz)		2.0	7.0	
Noise Figure	F_1			
(I_C = 10mAdc, V_{CE} 5 Vdc, R_G = 10kW, f = 100Hz)			7.5	dB
Noise Figure	F_2			
(I_C = 10mAdc, V_{CE} 5 Vdc, R_G = 10kW, f = 1 kHz)			3.0	dB
Noise Figure	F_3			
(I_C = 10mAdc, V_{CE} 5 Vdc, R_G = 10kW, f = 10 kHz)			2.0	dB
Wide Band Noise Figure	F_4			
(I_C = 10mAdc , V_{CE} 5 Vdc ,				
R_G = 10 kHz , f = 10 Hz to 15.7 kHz)			3.0	dB

Spice Model (based upon typical device characteristics) *1

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Q2N2484  NPN  ( IS  = 66.4p   XTI =  2.0m   EG =  1.11   VAF = 73.1   BF = 660.0   ISE = 48.8n
              + NE  = 46.13   IKF =  8.98m  NK =  0.123  XTB =  1.5   BR =   1.0   ISC = 66.4p
              + NC  =  2.51   IKR =  1.23   RC =  0.738  CJC =  4.74p  VJC=  0.933  MJC = 0.35
              + FC  =   0.5   CJE =  6.0p   VJE =  0.6    MJE =  0.34   TR  = 25.96n  TF  = 1.918n
              + ITF =   1.0   XTF =  0      VTF = 10.0 )
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*1. Microsemi Corp. claims no responsibility for misapplication of Spice Model information. Spice modeling should be used as a precursor guide to in-circuit performance. Actual performance is the responsibility of the user / designer.

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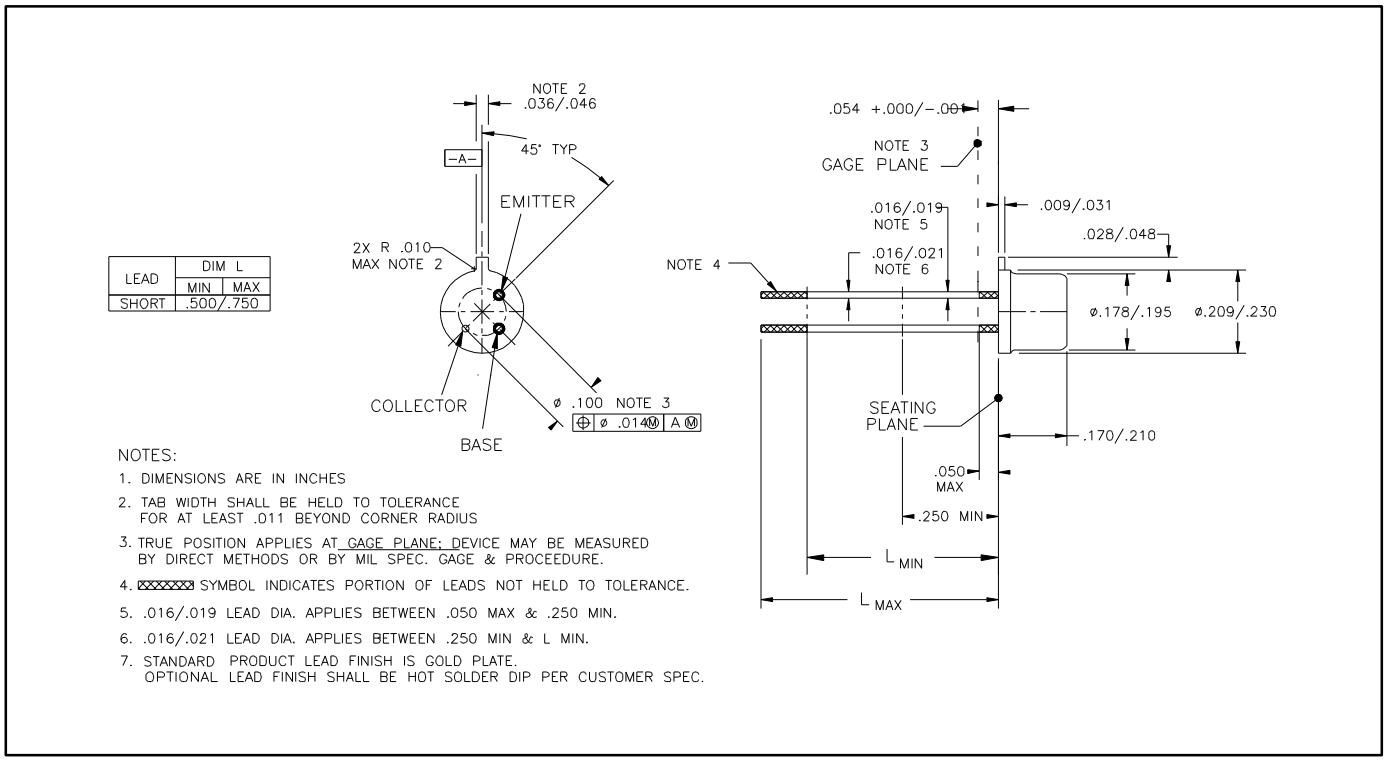
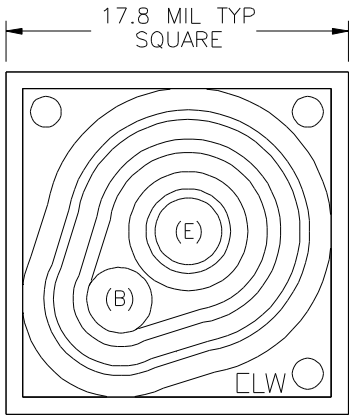


LEAD	DIM L	
	MIN	MAX
SHORT	.500/.750	

NOTES:

1. DIMENSIONS ARE IN INCHES
2. TAB WIDTH SHALL BE HELD TO TOLERANCE FOR AT LEAST .011 BEYOND CORNER RADIUS
3. TRUE POSITION APPLIES AT GAGE PLANE; DEVICE MAY BE MEASURED BY DIRECT METHODS OR BY MIL SPEC. GAGE & PROCEEDURE.
4. ⊠ SYMBOL INDICATES PORTION OF LEADS NOT HELD TO TOLERANCE.
5. .016/.019 LEAD DIA. APPLIES BETWEEN .050 MAX & .250 MIN.
6. .016/.021 LEAD DIA. APPLIES BETWEEN .250 MIN & L MIN.
7. STANDARD PRODUCT LEAD FINISH IS GOLD PLATE. OPTIONAL LEAD FINISH SHALL BE HOT SOLDER DIP PER CUSTOMER SPEC.

TO 18 CASE OUTLINE



DIE CHARACTERISTICS

Back is Collector

Chip Thickness is:
10 MILS TYP

Metalization is:
Top = Al, Back = Au

DIE OUTLINE

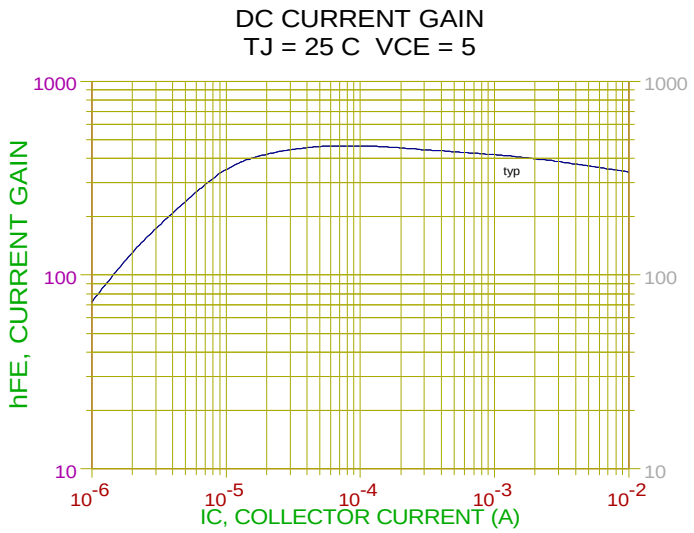


FIGURE 1

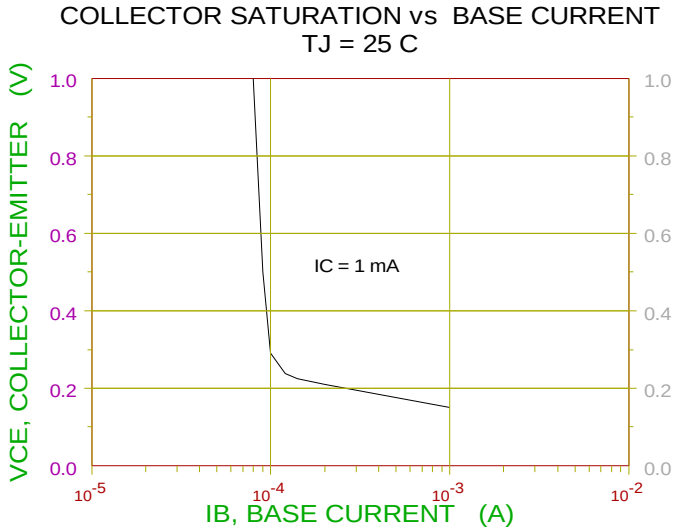


FIGURE 2

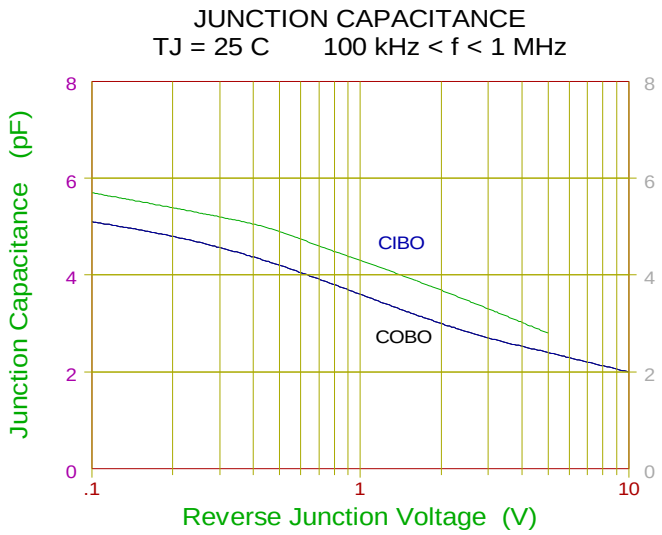


FIGURE 3

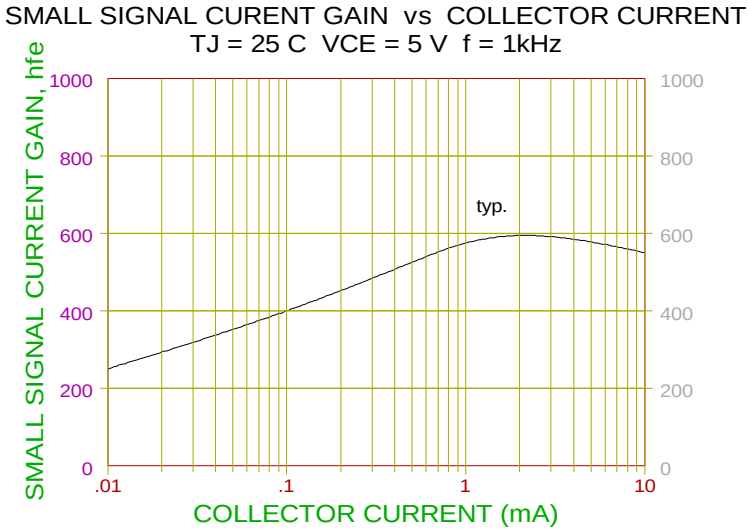


FIGURE 4

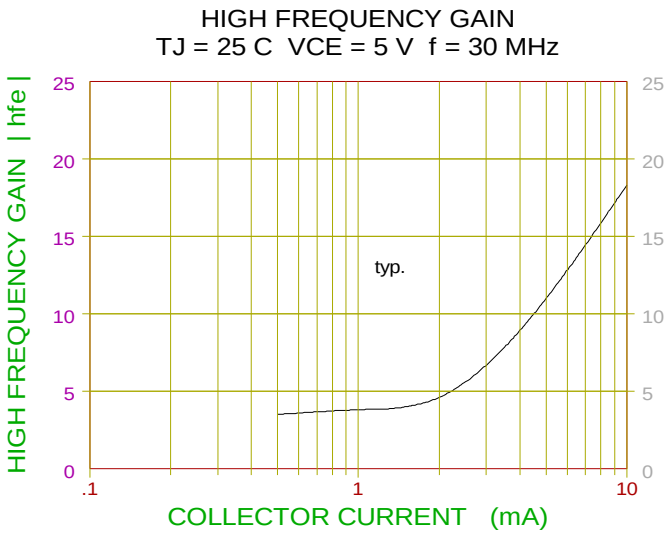


FIGURE 5

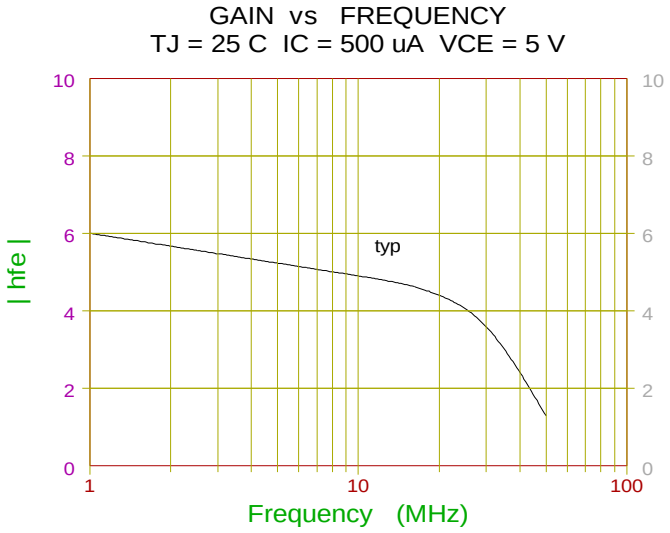


FIGURE 6

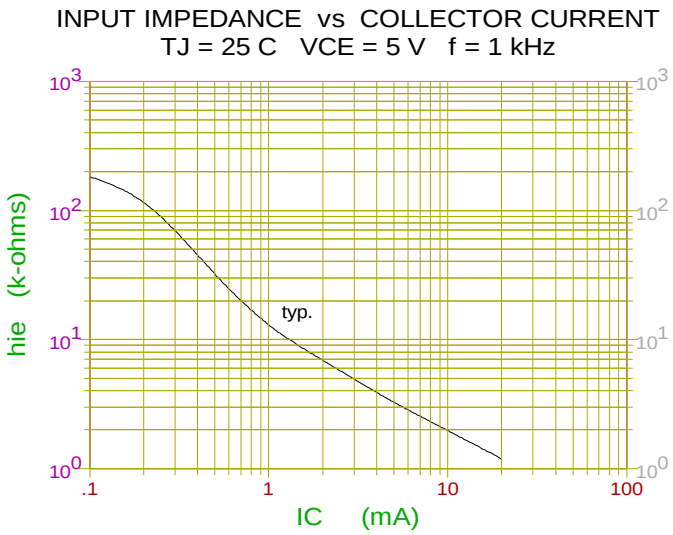


FIGURE 7

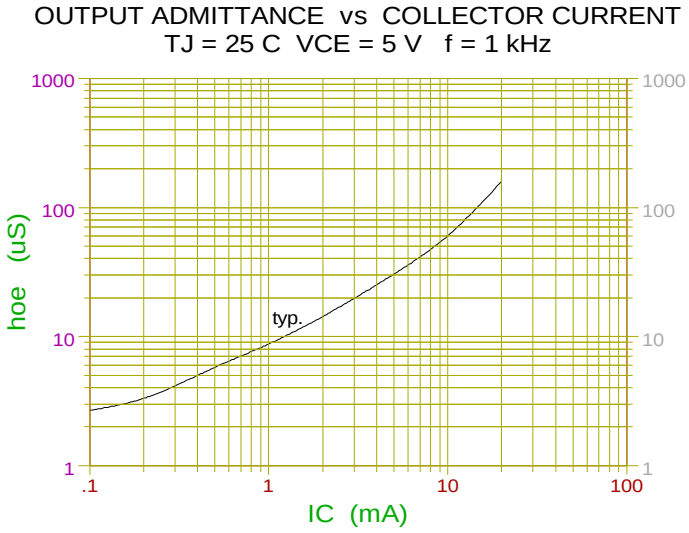


FIGURE 8

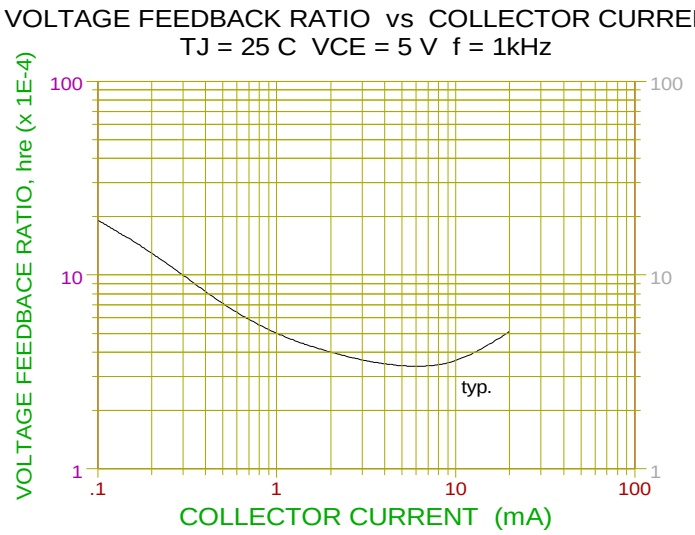


FIGURE 9

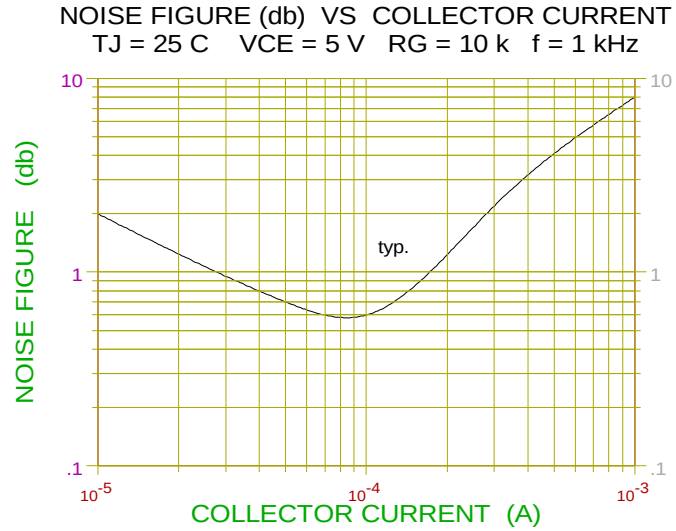


FIGURE 10

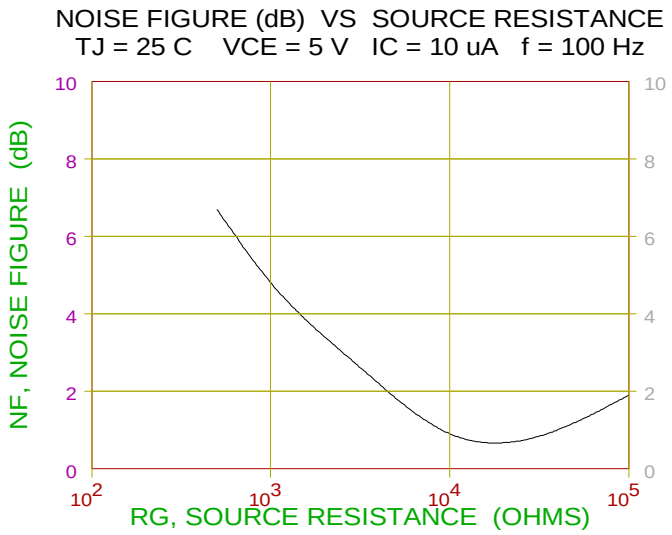

NOISE FIGURE (dB) VS SOURCE RESISTANCE
TJ = 25 C VCE = 5 V IC = 10 uA f = 100 Hz
NF, NOISE FIGURE (dB)
RG, SOURCE RESISTANCE (OHMS)
0
2
4
6
8
10
10^2
10^3
10^4
10^5

FIGURE 11