

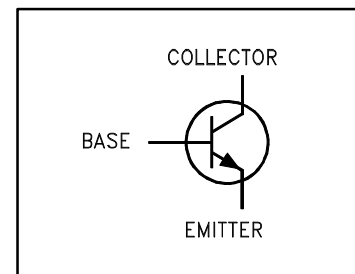
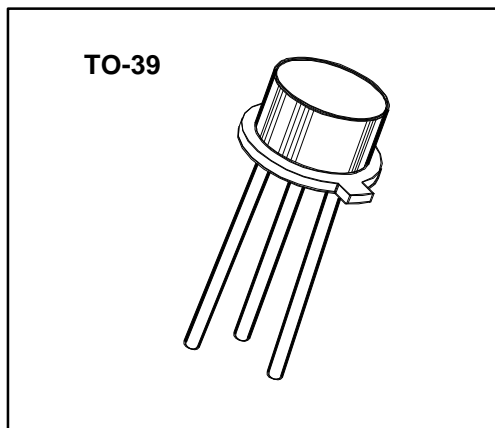
2N2218A

Features

- Meets MIL 19500 /251
- Collector - Base Voltage 75V
- Collector - Current 800 mA
- Medium Current, Bipolar Transistor
- Available in TO-5

**SWITCHING
 TRANSISTOR
 JAN, JANTX, JANTXV**

**SMALL SIGNAL
 BIPOLAR
 NPN SILICON**



Maximum Ratings

RATING	SYMBOL	VALUE	UNIT
Collector - Emitter Voltage	V_{CEO}	50	Vdc
Collector - Base Voltage	V_{CBO}	75	Vdc
Emitter - Base Voltage	V_{EBO}	6	Vdc
Collector Current - Continuous	I_C	800	mAdc
Total Device Dissipation @ $T_A = 25\text{ }^\circ\text{C}$	P_D	0.8	WATTS
Derate above $25\text{ }^\circ\text{C}$		4.6	mW/ $^\circ\text{C}$
Total Device Dissipation @ $T_C = 25\text{ }^\circ\text{C}$	P_D	3.0	WATTS
Derate above $25\text{ }^\circ\text{C}$		17.0	mW/ $^\circ\text{C}$
Operating Junction & Storage Temperature Range	T_J, T_{stg}	-55 to +200	$^\circ\text{C}$

Thermal Characteristics

CHARACTERISTIC	SYMBOL	MAX	UNIT
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	217	$^\circ\text{C/W}$
Thermal Resistance, Junction to Case	$R_{\theta JC}$	59	$^\circ\text{C/W}$

2N2218A

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

OFF CHARACTERISTIC	SYMBOL	MIN	MAX	UNIT
Collector - Emitter Breakdown Voltage (1) (I _C = 10 mA dc, I _B = 0)	V(BR) _{CEO}	50		Vdc
Collector - Base Breakdown Voltage (I _C = 10 μAdc, I _E = 0)	V(BR) _{CBO}	75		Vdc
Emitter - Base Breakdown Voltage (I _E = 10 μAdc, I _C = 0)	V(BR) _{EBO}	6		Vdc
Collector - Emitter Cutoff Current (V _{CE} = 50 Vdc)	I _{CES}		10	nAdc
Collector - Base Cutoff Current (V _{CB} = 60 Vdc, I _E = 0)	I _{CBO}		10	nAdc
(V _{CB} = 60 Vdc, I _E = 0, T _A = 150 °C)			10	μAdc
Emitter - Base Cutoff Current (V _{EB} = 4 Vdc)	I _{EBO}		10	nAdc
(V _{EB} = 6 Vdc)			10	μAdc

ON CHARACTERISTIC	SYMBOL	MIN	MAX	UNIT
DC Current Gain	h _{FE}			
(I _C = 0.1 mA dc, V _{CE} = 10 Vdc) (1)		30		
(I _C = 1 mA dc, V _{CE} = 10 Vdc) (1)		35	150	
(I _C = 10 mA dc, V _{CE} = 10 Vdc) (1)		40		
(I _C = 150 mA dc, V _{CE} = 10 Vdc) (1)		40	120	
(I _C = 500 mA dc, V _{CE} = 10 Vdc) (1)		20		
(I _C = 10 mA dc, V _{CE} = 10 Vdc, T _J = -55°C) (1)		35		
Collector - Emitter Saturation Voltage	V _{CE(sat)}			
(I _C = 150 mAdc, I _B = 15 mAdc) (1)			0.3	Vdc
(I _C = 500 mAdc, I _B = 50 mAdc) (1)			1.0	Vdc
Base - Emitter Saturation Voltage	V _{BE(sat)}			
(I _C = 150 mAdc, I _B = 15 mAdc) (1)		0.6	1.2	Vdc
(I _C = 500 mAdc, I _B = 50 mAdc) (1)			2.0	Vdc

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

2N2218A

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

SMALL - SIGNAL CHARACTERISTICS	SYMBOL	MIN	MAX	UNIT
Output Capacitance	C_{obo}			
(V _{CB} = 10 Vdc, I _E = 0, 100kHz ≤ f ≤ 1 MHz)			8.0	pF
Input Capacitance	C_{ibo}			
(V _{EB} = 0.5 Vdc, I _C = 0, 100kHz ≤ f ≤ 1 MHz)			25	pF

SWITCHING CHARACTERISTICS	SYMBOL	MIN	MAX	UNIT
Turn - On Time	t_{on}			
(V _{CC} = 30 Vdc, I _C = 150 mAdc, I _{B1} = 15 mAdc) (See FIGURE 1)			35	ns
Turn - Off Time	t_{off}			
(V _{CC} = 30 Vdc, I _C = 150 mAdc, I _{B1} = - I _{B2} = 15 mAdc) (See FIGURE 2)			300	ns

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

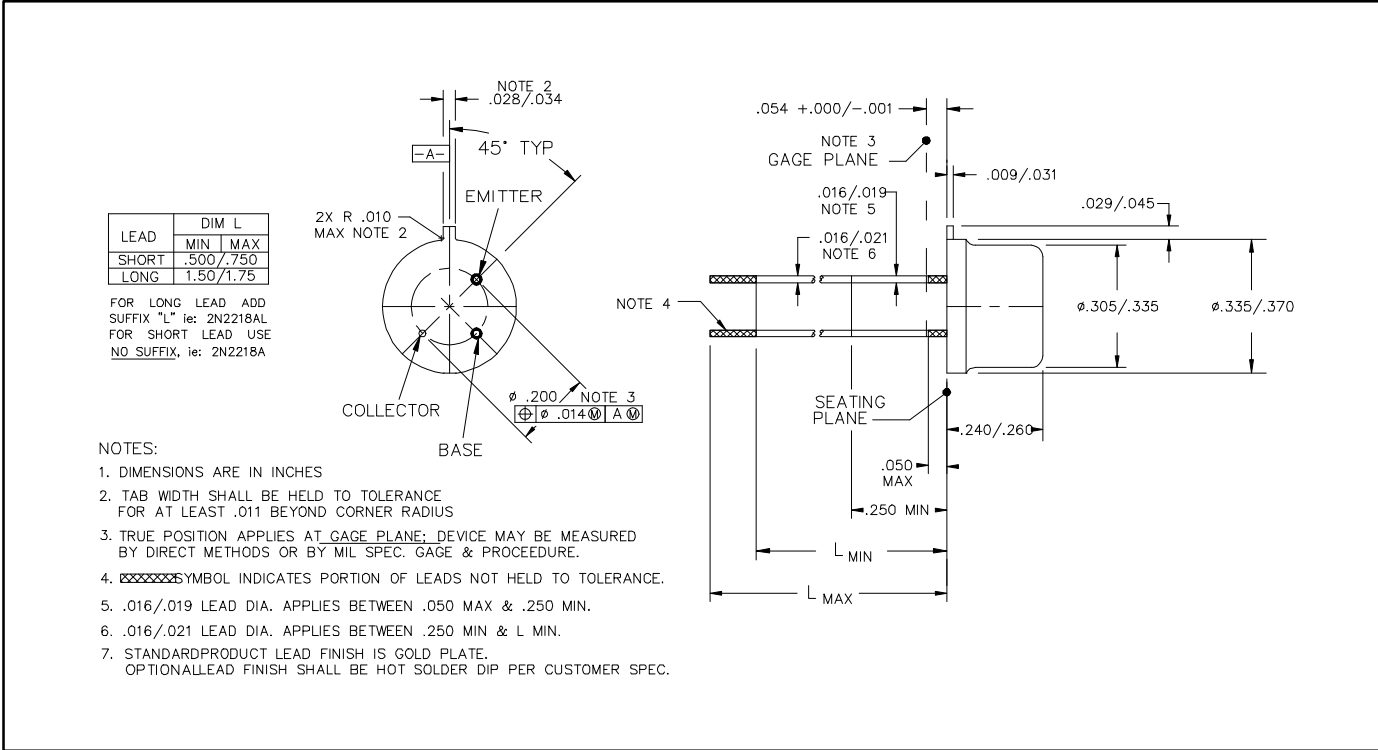
LOW FREQUENCY	SYMBOL	MIN	MAX	UNIT
Common - Emitter Forward Current Transfer Ratio	h_{fe}			
(I _C = 1 mA, V _{CE} = 10 V, f = 1kHz)		35		
HIGH FREQUENCY				
Common - Emitter Forward Current Transfer Ratio	 h_{fe} 			
(I _C = 20 mA, V _{CE} = 20 V, f = 100 MHz)		2.5	12	

Spice Model (based upon typical device characteristics) *1

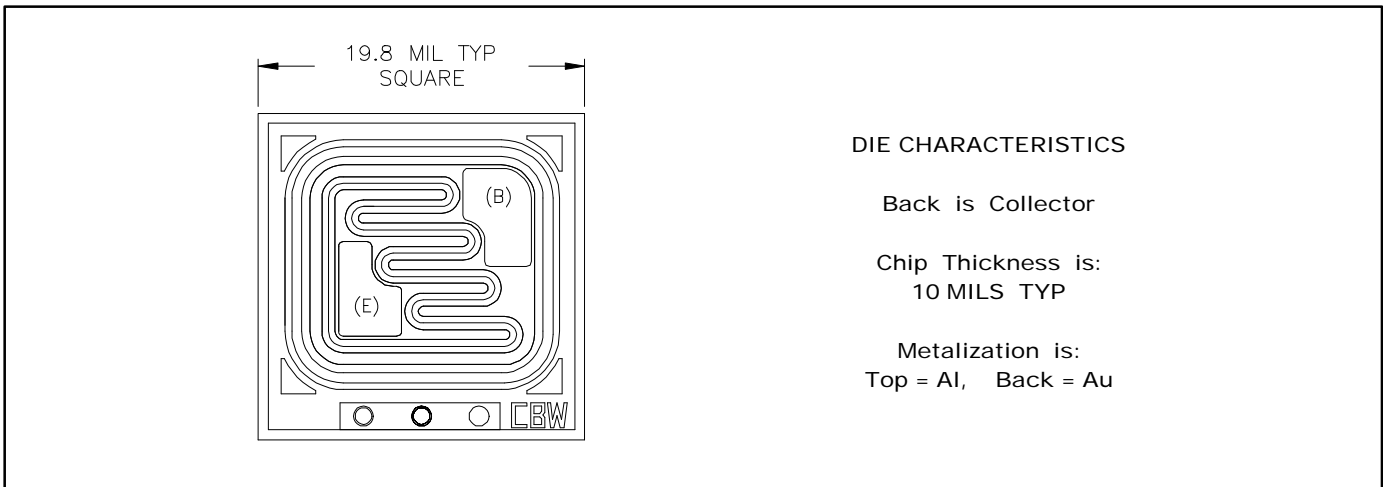
Q2N2218A NPN (IS = 21.2f XTI = 3.0 EG = 1.11 VAF = 103.8 BF = 90.7 ISE = 3.34p
 + NE = 2.05 IKF = 1.255 NK = 0.9394 XTb = 1.5 BR = 1.031 ISC = 3.299p
 + NC = 1.605 IKR = 0.8992 RC = 0.0 CJC = 19.4p MJC = 0.3333 VJC = 0.75
 + FC = 0.5 CJE = 29.6p MJE = 0.3333 VJE = 0.75 TR = 275.0 n TF = 564.5p
 + ITF = 1.0 XTF = 0.0 VTF = 10.0)

*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.

2N2218A



TO-39 CASE OUTLINE



DIE OUTLINE

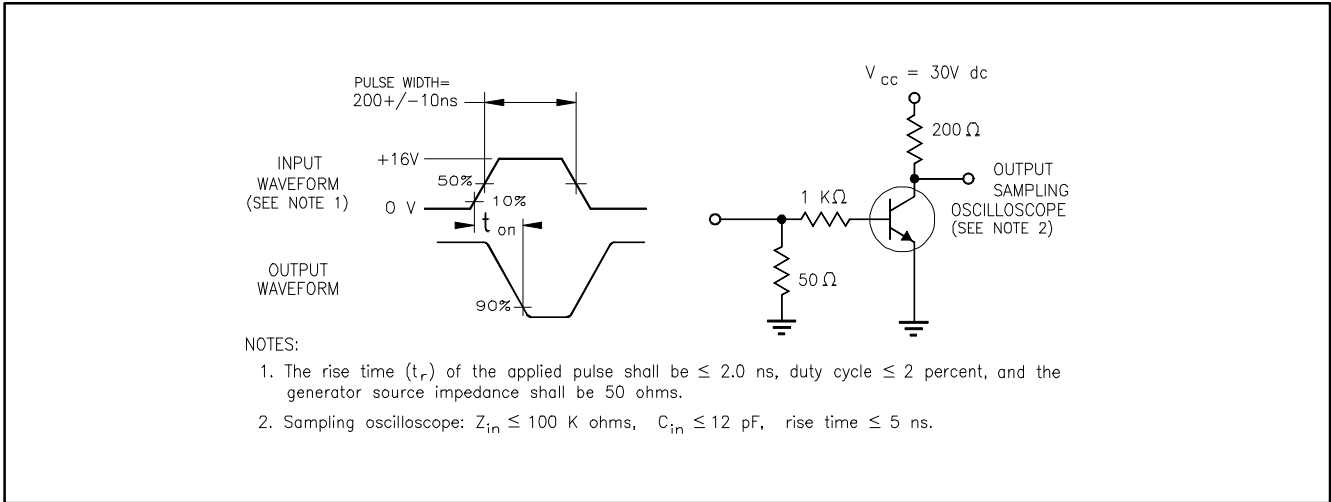


FIGURE 1 Saturated Turn-on Time Test Circuit

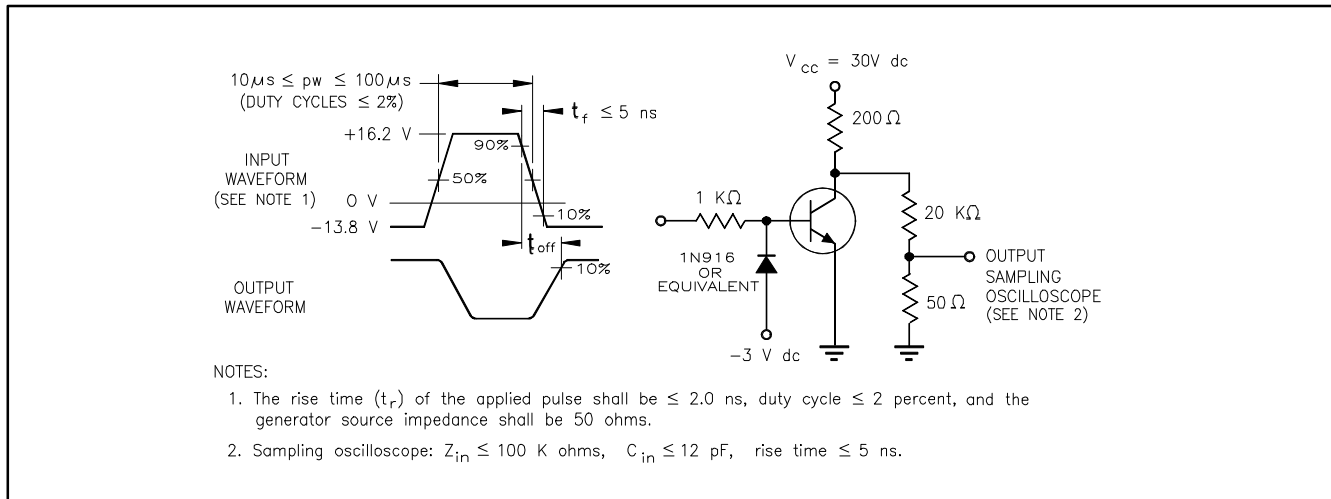


FIGURE 2 Saturated Turn-off Time Test Circuit

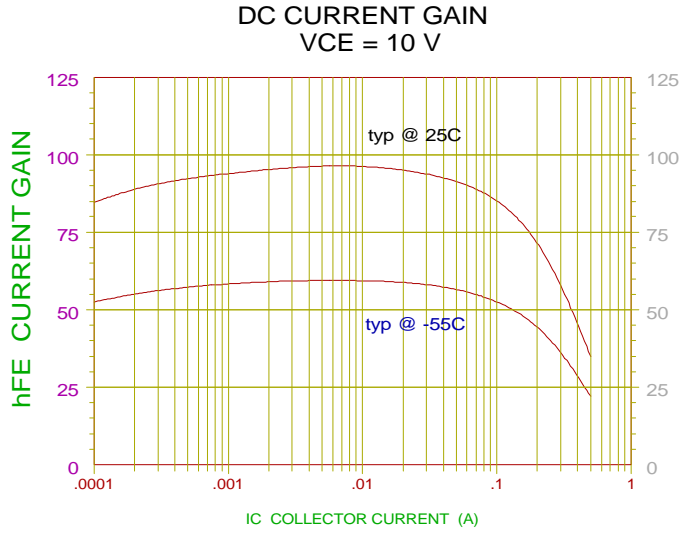


FIGURE 3

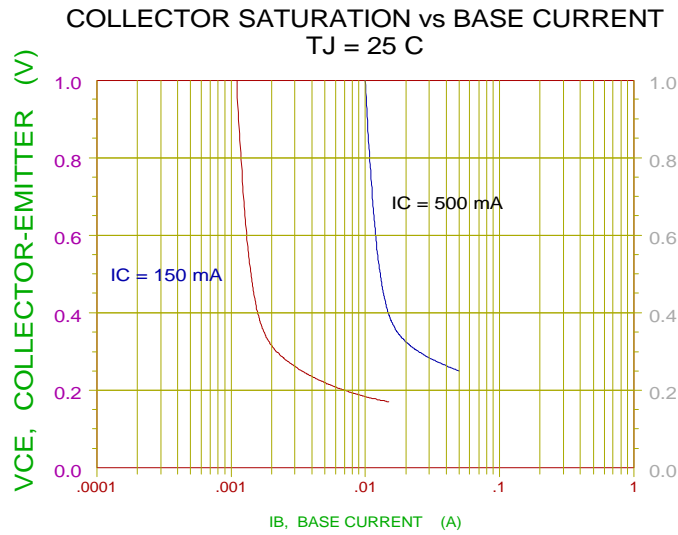


FIGURE 4

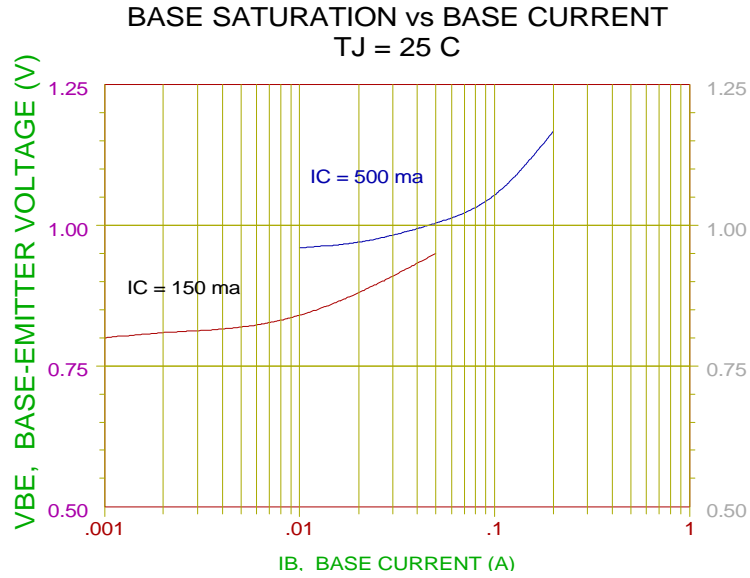


FIGURE 5

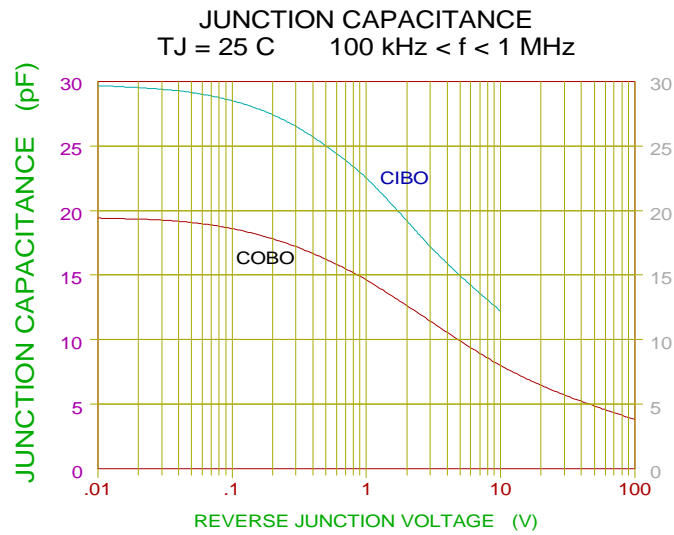


FIGURE 6

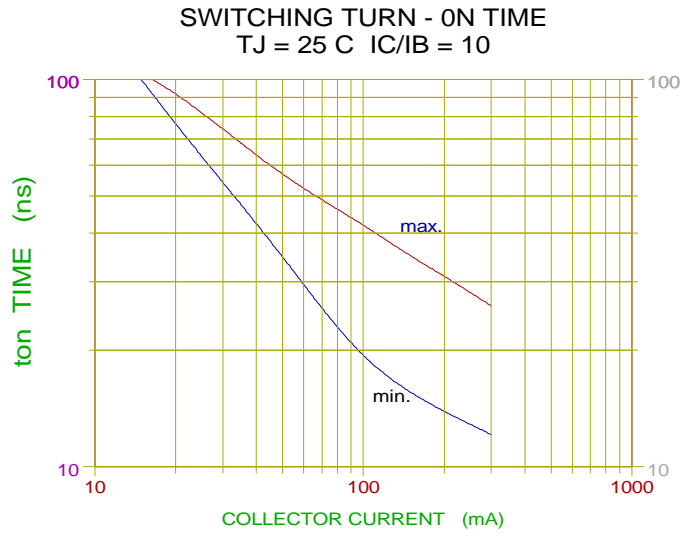


FIGURE 7

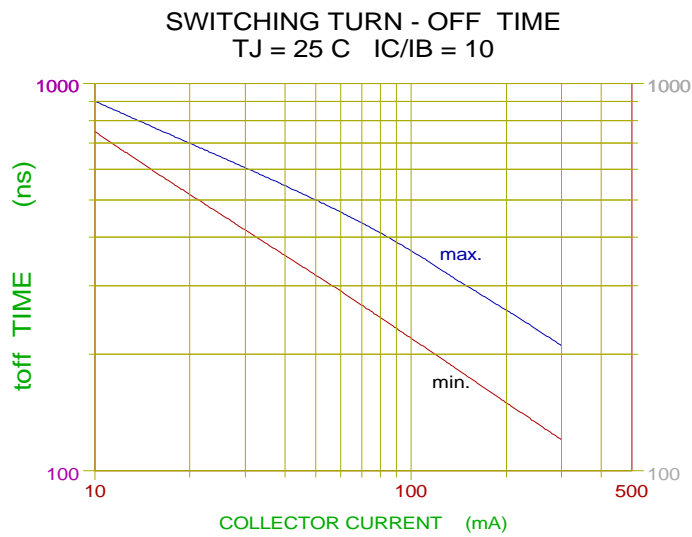


FIGURE 8

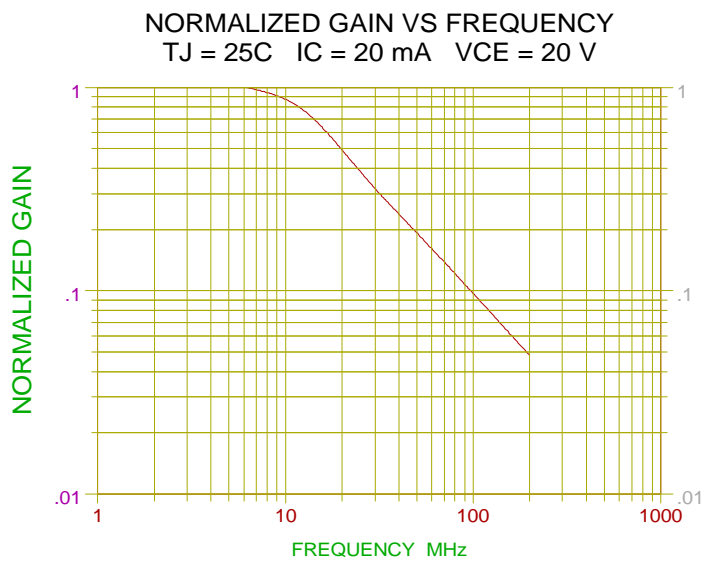


FIGURE 9