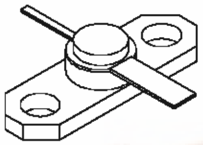
SGS-THOMSON
MICROELECTRONICS

MSC82100

RF & MICROWAVE TRANSISTORS
GENERAL PURPOSE LINEAR APPLICATIONS

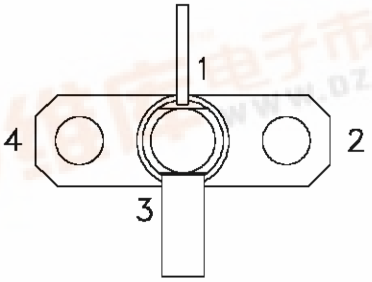
- EMITTER BALLASTED
- CLASS A LINEAR OPERATION
- COMMON EMITTER
- VSWR CAPABILITY ∞:1 @ RATED CONDITIONS
- ft 1.6 GHz TYPICAL
- NOISE FIGURE 15.5 dB @ 2 GHz
- P_{OUT} = 27 dBm MIN. @ 1.0 GHz



.250 2LFL (S011)
hermetically sealed

ORDER CODE	BRANDING
MSC82100	82100

PIN CONNECTION



1. Collector
2. Emitter
3. Base
4. Emitter

DESCRIPTION

The MSC82100 is a hermetically sealed NPN power transistor with a fishbone, emitter finger ballasted geometry utilizing a refractory/gold metallization system. The device is designed specifically for Class A linear applications to provide high gain and high output power at the 1.0 dB compression point.

ABSOLUTE MAXIMUM RATINGS (T_{case} = 25°C)

Symbol	Parameter	Value	Unit
P_{DISS}	Power Dissipation (see Safe Area)	—	W
I_C	Device Bias Current	200	mA
V_{CE}	Collector-Emitter Bias Voltage*	20	V
T_J	Junction Temperature	200	°C
T_{STG}	Storage Temperature	– 65 to +200	°C

THERMAL DATA

$R_{TH(j-c)}$	Junction-Case Thermal Resistance*	20	°C/W

*Applies only to rated RF amplifier operation

ELECTRICAL SPECIFICATIONS (T_{case} = 25°C)

STATIC

Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
BV_{CBO}	I_C = 1mA	I_E = 0mA	45	—	—	V
BV_{EBO}	I_E = 1mA	I_C = 0mA	3.5	—	—	V
BV_{CEO}	IC = 5mA	I_B = 0mA	20	—	—	V
I_{CEO}	V_{CE} = 18V		—	—	0.5	mA
h_{FE}	V_{CE} = 5V	I_C = 100mA	15	—	120	—

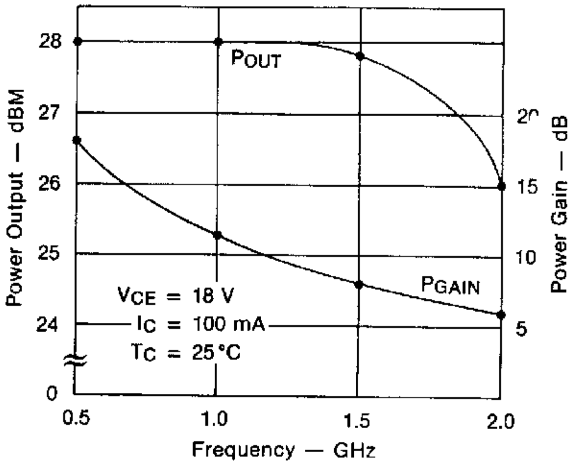
DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
G_P*	f = 1.0 GHz	P_{OUT} = 27 dBm		10.5	11.5	—	dB
ΔG_P*	f = 1.0 GHz	P_{OUT} = 27 dBm	ΔP_{OUT} = 10 dB	—	—	1	dB
C_{OB}	f = 1 MHz	V_{CB} = 28 V		—	—	3.2	pF

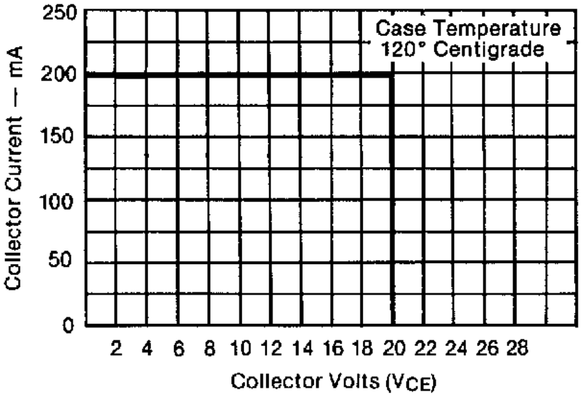
* Note: V_{CE} = 18V
I_C = 100mA

TYPICAL PERFORMANCE

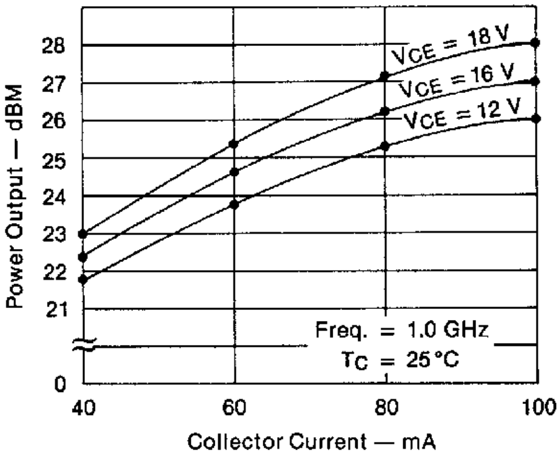
TYPICAL POWER OUTPUT & GAIN @ 1dB COMPRESSION POINT vs FREQUENCY



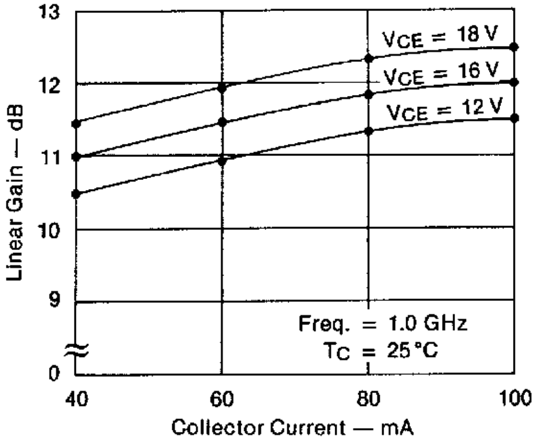
MAXIMUM OPERATING AREA FOR FORWARD BIAS OPERATION



TYPICAL POWER OUTPUT & GAIN @ 1dB COMPRESSION POINT vs COLLECTOR CURRENT

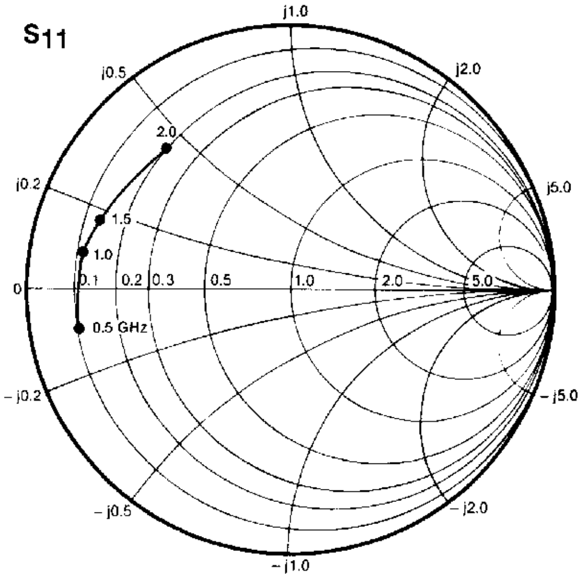


TYPICAL LINEAR GAIN vs COLLECTOR CURRENT

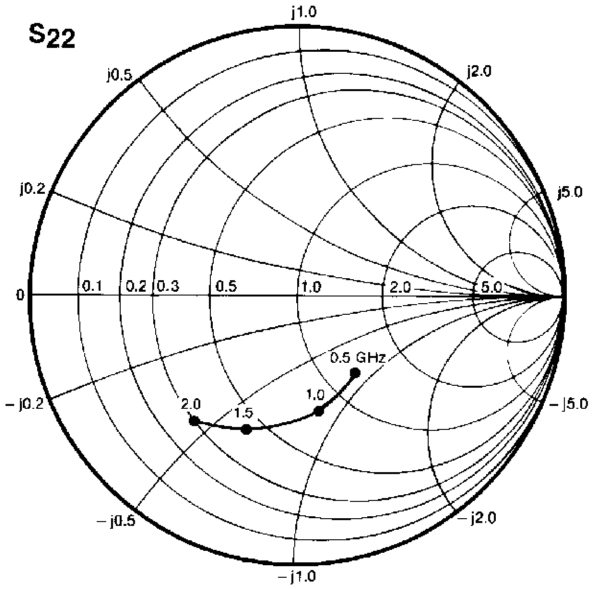


TYPICAL S–PARAMETERS

S_{11}

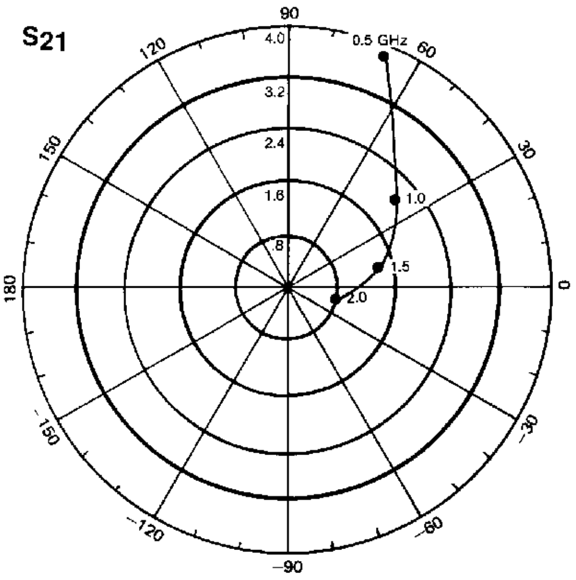


S_{22}

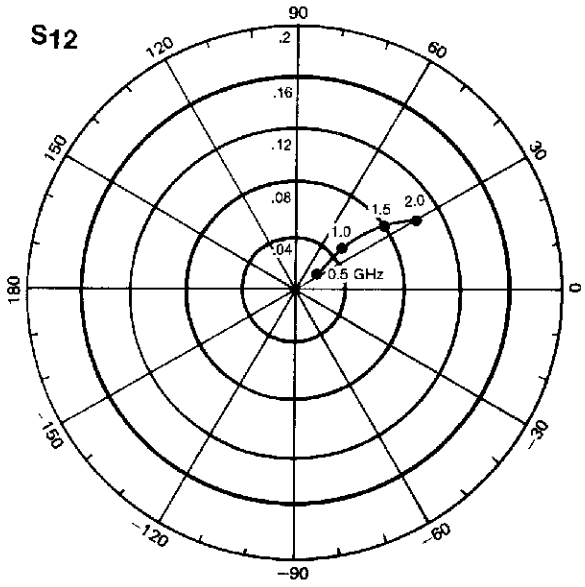


V_{CE} = 18 V
I_C = 100 mA
Zg = 50 ohms

S_{21}

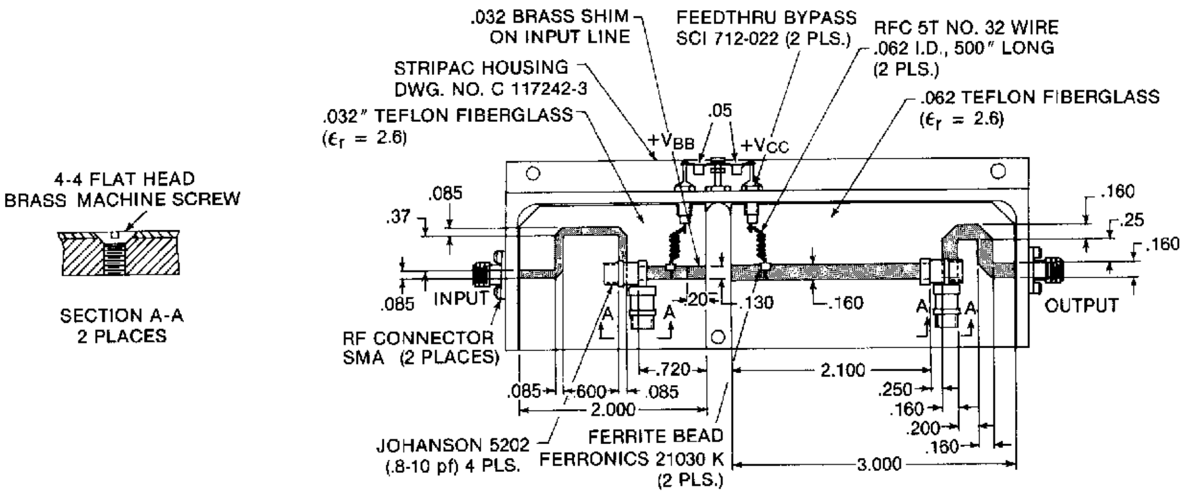


S_{12}



TEST CIRCUIT

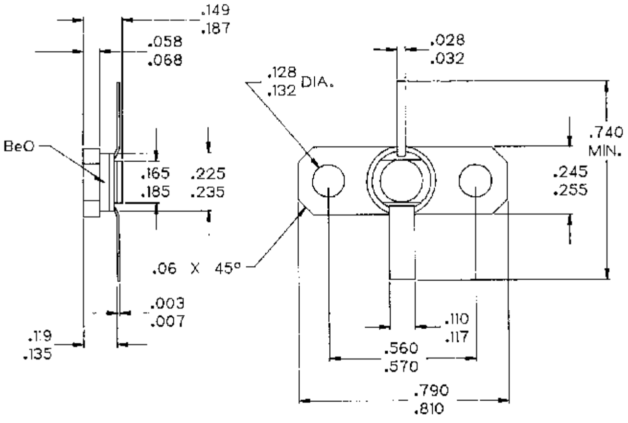
Ref.: Dwg. No. C127323



All dimensions are in inches.
Frequency 1.0 GHz

PACKAGE MECHANICAL DATA

Ref.: Dwg. No.: J135021C



NOTES:
1. ALL TOLERANCE ± .010 EXCEPT WHERE NOTED;
DIMENSIONS IN INCHES.

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