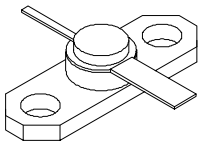
SGS-THOMSON MICROELECTRONICS

MSC80197

RF & MICROWAVE TRANSISTORS GENERAL PURPOSE LINEAR APPLICATIONS

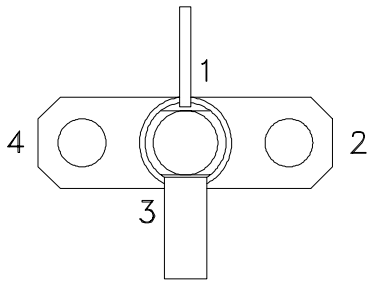
- EMITTER BALLASTED
- CLASS A LINEAR OPERATION
- COMMON EMITTER
- VSWR CAPABILITY 15:1 @ RATED CONDITIONS
- ft 3.2 GHz TYPICAL
- NOISE FIGURE 12.5 dB @ 2 GHz
- P_{OUT} = 31.7 dBm MIN. @ 2.0 GHz



.250 2LFL (S011)
hermetically sealed

ORDER CODE	BRANDING
MSC80197	80197

PIN CONNECTION



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

www.DataSheet4U.com

DESCRIPTION

The MSC80197 is a hermetically sealed NPN power transistor featuring a unique matrix structure. This device is specifically designed 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	700	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*	8.5	°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	50	—	—	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		—	—	1.0	mA
h_{FE}	V_{CE} = 5V	I_C = 500mA	15	—	120	—

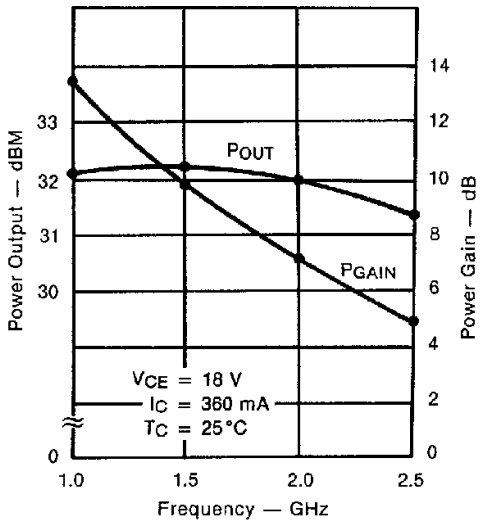
DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
G_P*	f = 2.0 GHz	P_{OUT} = 31.7 dBm		6.0	7.0	—	dB
ΔG_P*	f = 2.0 GHz	P_{OUT} = 31.7 dBm	ΔP_{OUT} = 10 dB	—	—	1	dB
C_{OB}	f = 1 MHz	V_{CB} = 28 V		—	—	7.0	pF

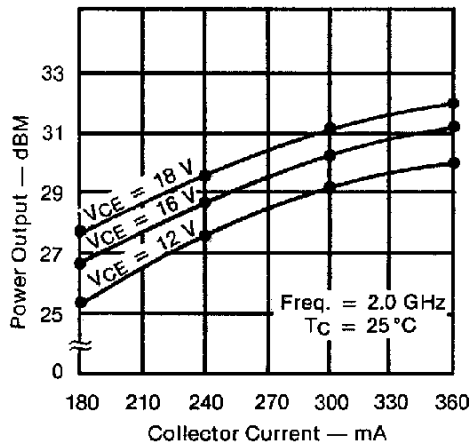
* Note: V_{CE} = 18 V
I_C = 360 mA

TYPICAL PERFORMANCE

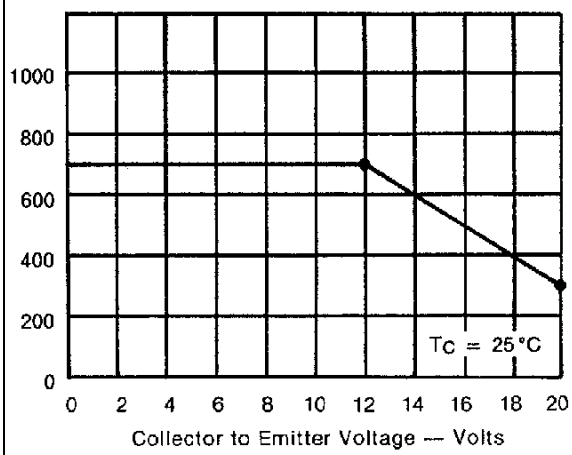
TYPICAL POWER OUTPUT & GAIN @ 1dB COMPRESSION POINT vs FREQUENCY



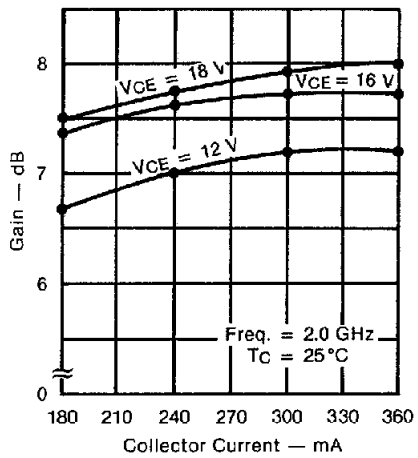
TYPICAL POWER OUTPUT & GAIN @ 1dB COMPRESSION POINT vs COLLECTOR CURRENT



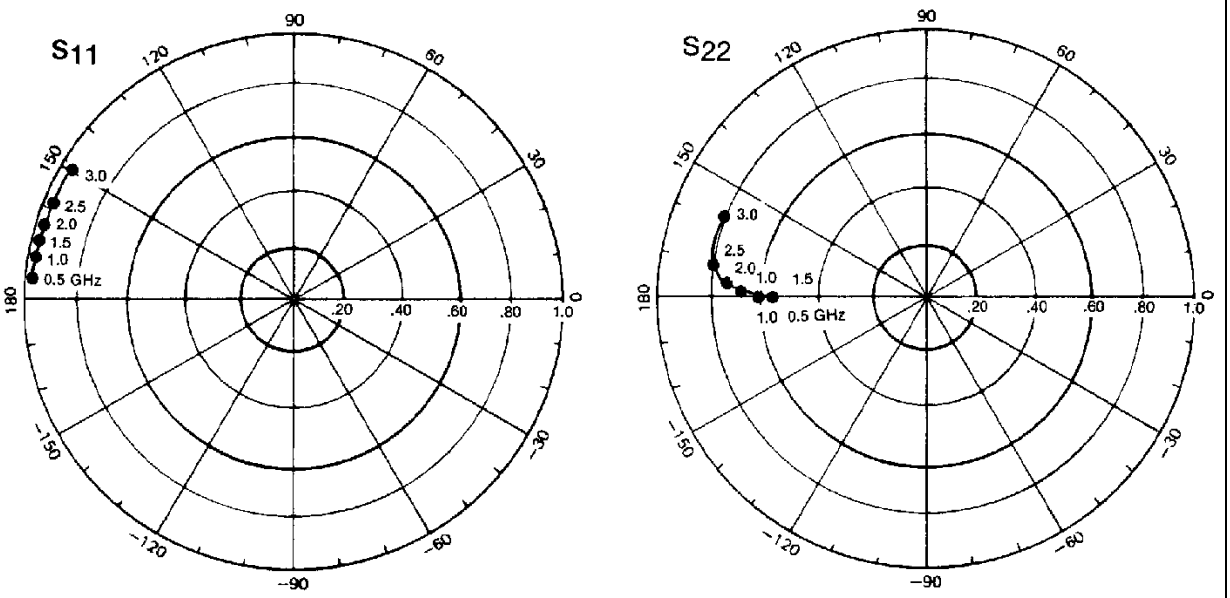
MAXIMUM OPERATING AREA FOR FORWARD BIAS OPERATION



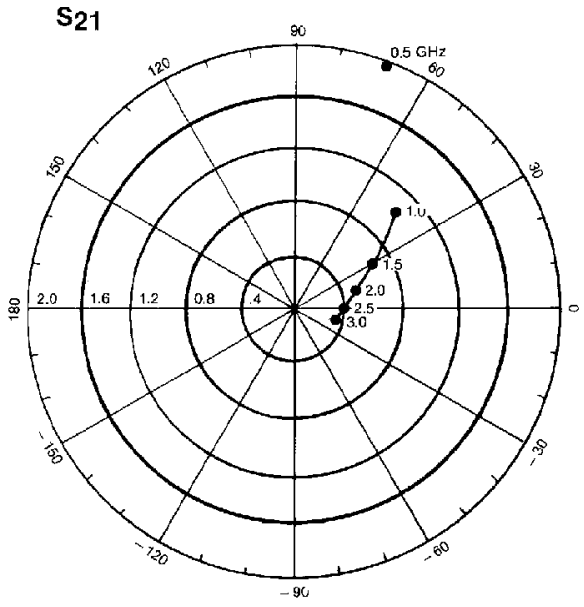
TYPICAL LINEAR GAIN vs COLLECTOR CURRENT

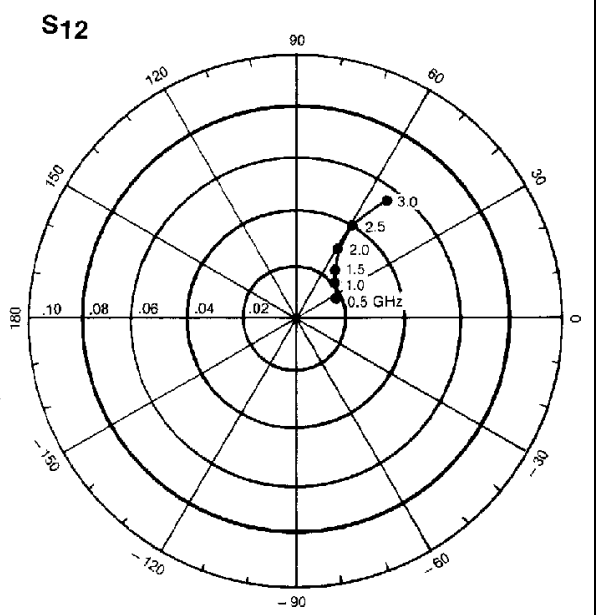


TYPICAL S–PARAMETERS



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

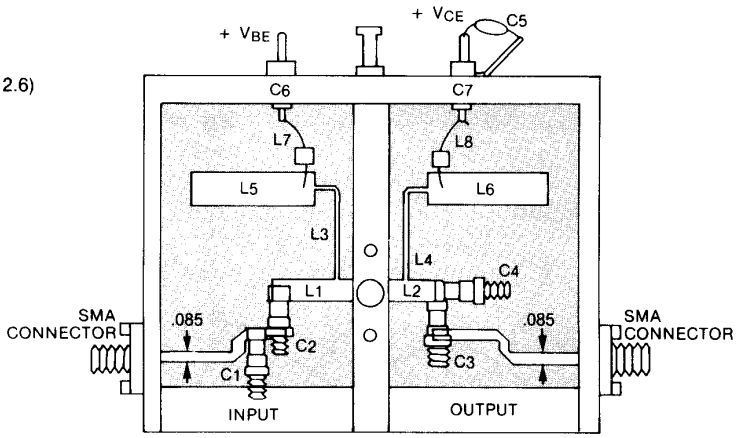




TEST CIRCUIT

Ref.: Dwg. No. C127271

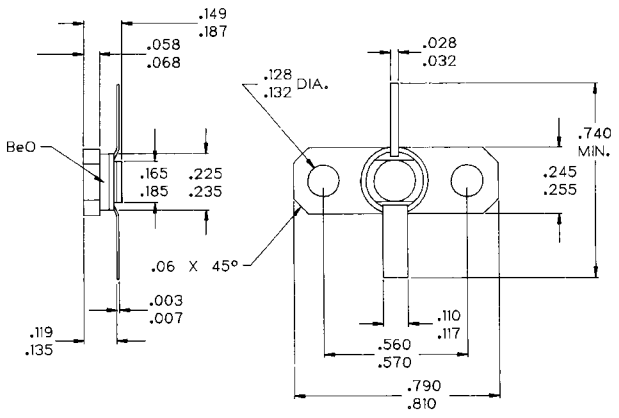
Board Material 1/32'' Teflon — Fiberglass (ϵr = 2.6)
C_1, C_2, C_3, C_4, 0.35 to 3.5 pf Johanson #5800
C_5, 0.1 *uf* Disk Capacitor
C_6, C_7, Feedthru Filter SCI 712 — 022 (1500 pf)
or AMP P/N 8596184
L_1, .160 Wide, 590 Long
L_2, .160 Wide, 425 Long
L_3, L_4, .020 Wide, .825 Long
L_5, L_6, .250 Wide, .900 Long
L_7, L_8, #20 A.W.G. Tinned Copper, .600 Long,
Ferronics Chokebead #21 - 030 - J



Frequency 2.0 GHz
All dimensions are in inches.

PACKAGE MECHANICAL DATA

Ref.: Dwg. No.: J135021C



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

Information furnished is believed to be accurate and reliable. However, SGS-THOMSON Microelectronics assumes no responsability for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may results from its use. No license is granted by implication or otherwise under any patent or patent rights of SGS-THOMSON Microelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied.
SGS-THOMSON Microelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of SGS-THOMSON Microelectonics.

© 1994 SGS-THOMSON Microelectronics - All Rights Reserved

SGS-THOMSON Microelectronics GROUP OF COMPANIES
Australia - Brazil - France - Germany - Hong Kong - Italy - Japan - Korea - Malaysia - Malta - Morocco - The Netherlands - Singapore - Spain - Sweden - Switzerland - Taiwan - Thailand - United Kingdom - U.S.A