

**C-BAND
MEDIUM-POWER
0.5 WATT GaAs FET
MSC 88002**

**DATA SHEET
TE-802C**

MICROWAVE SEMICONDUCTOR CORP.

MSC

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Issue August 1983

Product Description

The MSC "88000 Series" of devices are high power GaAs Field Effect Transistors employing the latest state-of-the-art technology and fabrication techniques. The devices are designed for linear power amplifier applications up to X-Band, and for oscillator applications up to 16 GHz. These transistors are supplied in a low-loss, low-parasitic, metal-ceramic, microminiature FLIPACT™ package. The transistor pellet is flip-chip mounted for minimum thermal resistance as measured by Infra-Red Scanning Microscope.

Features

- High Linear Power Output
- High Power-Added Efficiency
- Wide Dynamic Range
- Low Distortion
- Metal-Ceramic Package
- Gold-Based Refractory Metalization

Absolute Maximum Ratings (T_A = 25 °C)

CHARACTERISTIC	SYMBOL	RATING	UNITS
Drain to Source Voltage	V _{DS}	10	V
Gate to Source Voltage	V _{GS}	-8	V
Total Dissipation	P _T	3.2	W
Storage Temperature	T _{STG}	-65 to +200	°C
Operating Temperature (Channel)	T _{channel}	-65 to +150	°C

Electrical Characteristics (T_A = 25 °C)

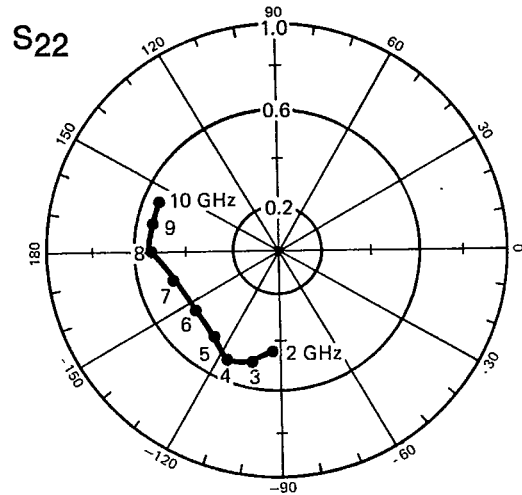
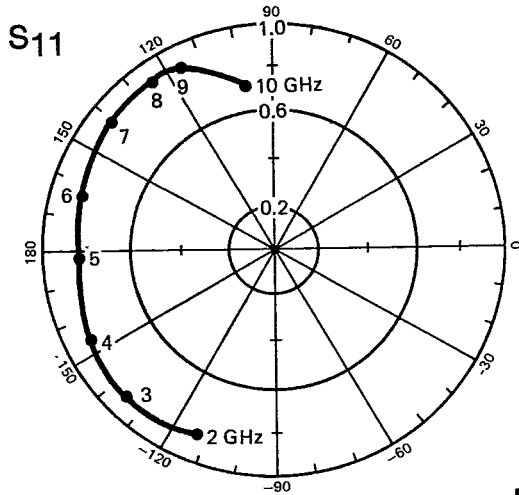
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Drain Current	I _{DSS}	V _{DS} = 5V, V _{GS} = 0	200	300	450	mA
Transconductance	G _m	V _{DS} = 5V	—	75	—	mS
Pinch-off Voltage	V _p	V _{DS} = 5V	—	4	10	V
Thermal Resistance	θ _{CC}	IR Scanning	—	22	25	°C/W
Output Power @ f = 6GHz	P _{OUT} (TEST)	V _{DS} = 9.0V, V _{GS} = -2V P _{IN} = +19.5 dBm	26.5	27.5	—	dBm

Typical RF Performance (T_A = 25 °C)

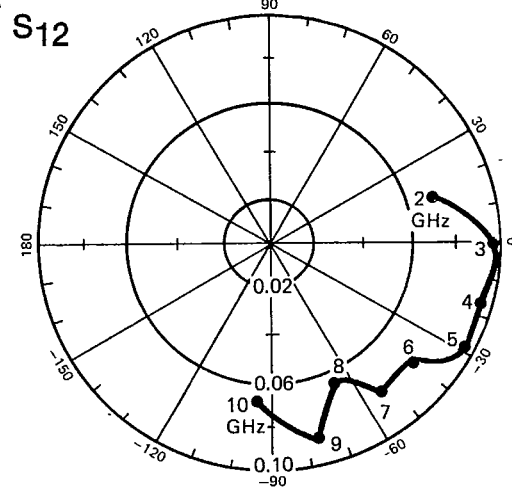
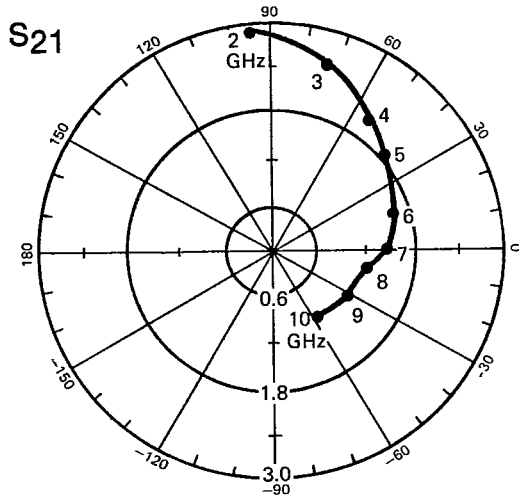
PARAMETER	SYMBOL	@ f = 4GHz	@ 6GHz	@ 8GHz	@ 12GHz	UNITS
Power at 1dB Compression Point	P _{OUT}	27.5	27.5	27.1	26.5	dBm
Gain at 1dB Compression Point	G _p	10	8	7.5	6.5	dB
Third Order Intercept Point	IMD ₃	37.3	37	36.8	—	dBm
Noise Figure (Optimum Bias)	NF	4.5	5.0	6.0	—	dB
Power Noise Figure (Power Amplifier Circuit and Bias)	NF _{PA}	6.0	7.1	8.2	—	dB
Spurious-Free Dynamic Range (1 MHz Bandwidth)	SFDR	90	90	90	90	dB

Typical S-Parameters

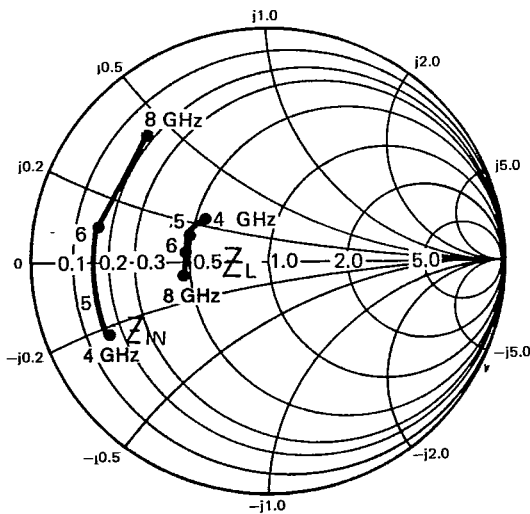
(Also available on COMPACT™ databank)



FLIPAC PACKAGE
 $V_{DS} = 8.0$ VOLTS
 $I_D \approx 200$ mA

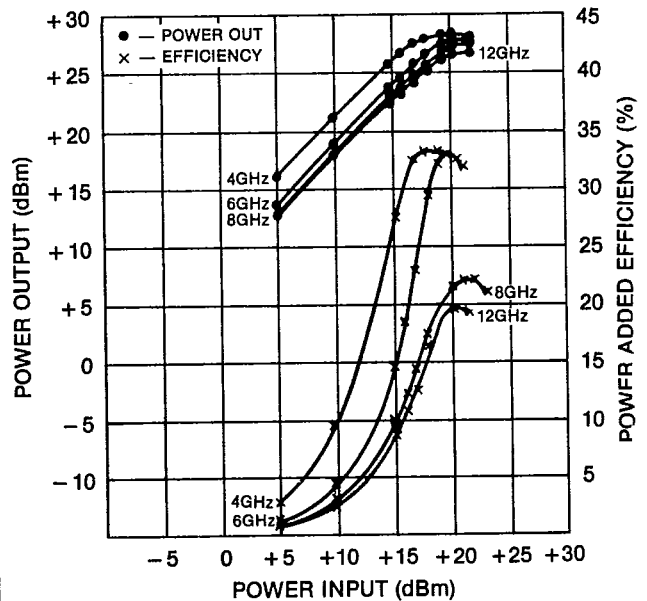


Large-Signal Impedances



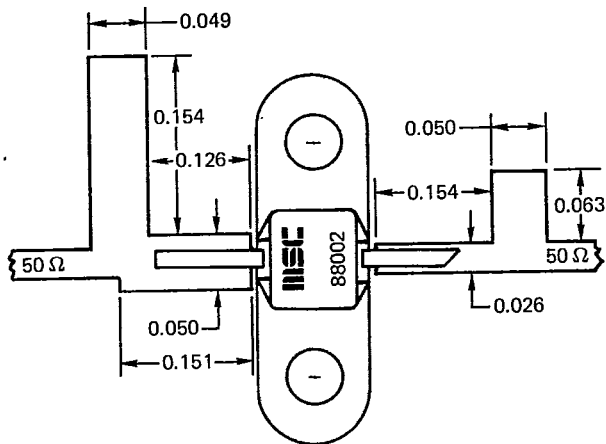
$Z_0 = 50 \Omega$
 $P_{OUT} \approx 0.5$ WATTS
 $V_{DS} = 8.0$ VOLTS
 $I_D \approx 200$ MA

Power Output and Efficiency vs. RF Input Power

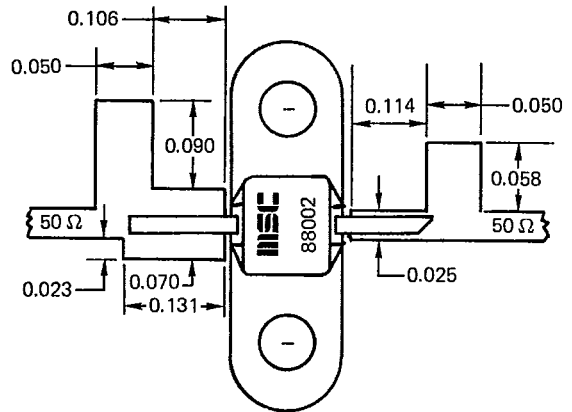


Typical Circuits (Telecommunication Bandwidths)

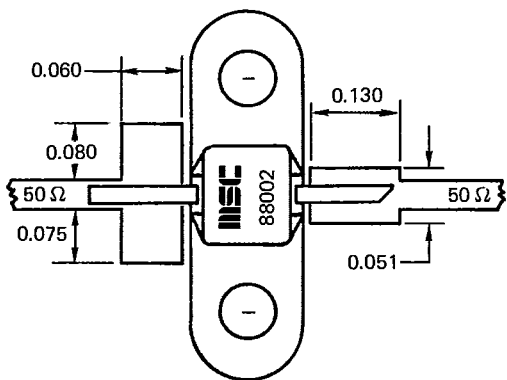
FREQUENCY
3.7 - 4.2 GHz



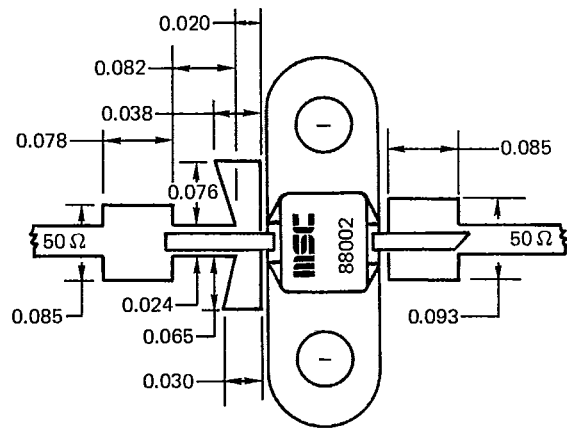
FREQUENCY
4.4 - 5.0 GHz



FREQUENCY
5.9 - 6.4 GHz



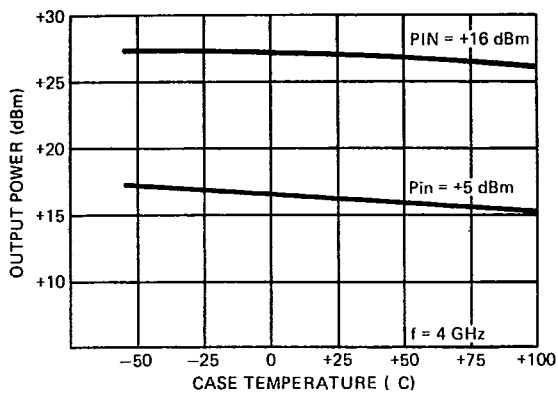
FREQUENCY
7.9 - 8.4 GHz



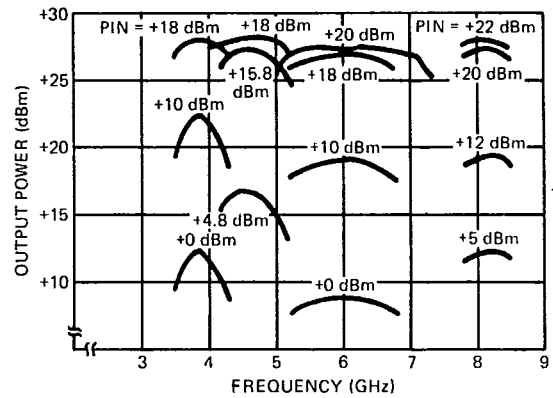
Note: Additional Telecommunication Bandwidths
will be provided by contacting factory
Frequency 6.4 - 7.1 GHz
Frequency 7.1 - 7.7 GHz

Dimensions in inches for 0.025 inch thick Alumina (Al₂O₃) substrate.

Thermal Slump



Frequency Response of Typical Circuits



Note: Refer to page 3 Circuits

Outline Drawings

FLIPAC™
Case Style 98
Without Flange
Ref: Dwg J135049

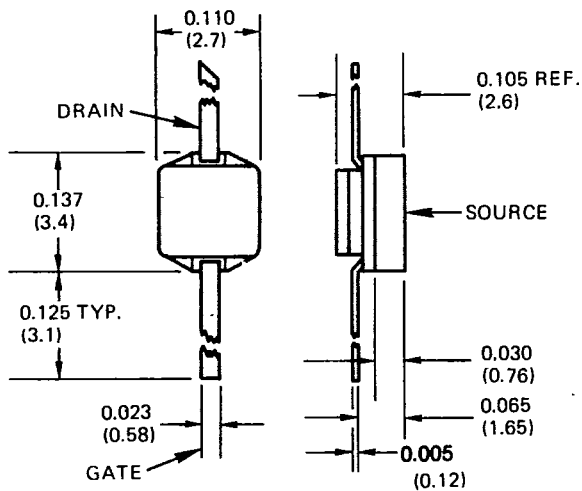


FIG. 1

FIG. 2

FLIPAC™
Case Style 97
With Flange
Ref: Dwg J135047A

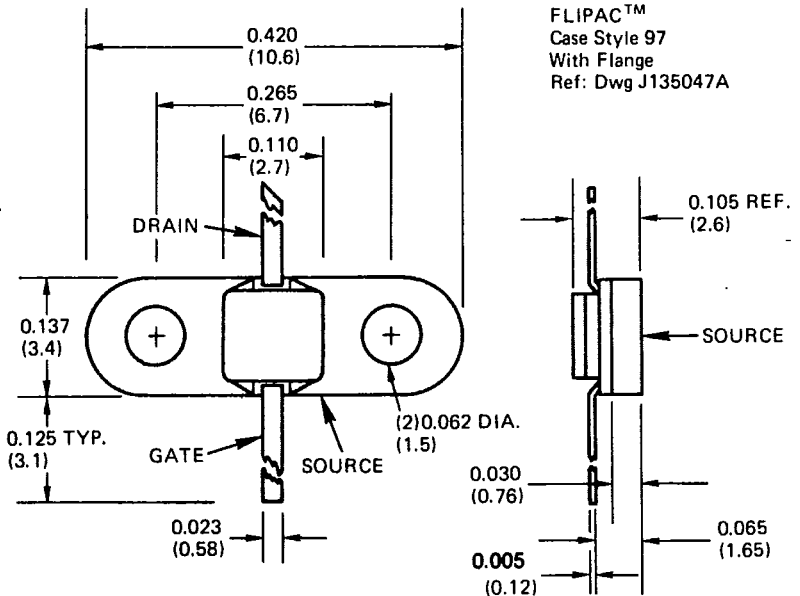


FIG. 3

FIG. 4

Notes: 1. Dimensions in parenthesis, Millimeters
2. All Tolerances ± 0.010 Inches



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A Siemens Company

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