

# MGF0905A

## L, S BAND POWER GaAs FET

### DESCRIPTION

The MGF0905A, GaAs FET with an N-channel schottky gate, is designed for use in UHF band amplifiers.

### FEATURES

- High output power  
 $P_o = 34\text{dBm (TYP.) @ } f = 1.65\text{GHz, } P_{in} = 26\text{dBm}$
- High power gain  
 $G_p = 8\text{dB (TYP.) @ } f = 1.65\text{GHz, } P_{in} = 26\text{dBm}$
- High power added efficiency  
 $\eta_{add} = 40\% \text{ (TYP.) @ } f = 1.65\text{GHz, } P_{in} = 26\text{dBm}$

### APPLICATION

For UHF Band power amplifiers

### QUALITY GRADE

- GG

### RECOMMENDED BIAS CONDITIONS

- $V_{DS} = 8\text{V}$
- $I_D = 800\text{mA}$
- $R_g = 100\Omega$
- Refer to Bias Procedure

### ABSOLUTE MAXIMUM RATINGS ( $T_a = 25^\circ\text{C}$ )

Symbol	Parameter	Ratings	Unit
$V_{GS0}$	Gate to source voltage	-17	V
$V_{GDO}$	Gate to drain voltage	-17	V
$I_D$	Drain current	3200	mA
$I_{GR}$	Reverse gate current	-10	mA
$I_{GF}$	Forward gate current	21.5	mA
$P_T$	Total power dissipation *1	12	W
$T_{ch}$	Channel temperature	175	$^\circ\text{C}$
$T_{stg}$	Storage temperature	-65 ~ +175	$^\circ\text{C}$

\*1:  $T_C = 25^\circ\text{C}$

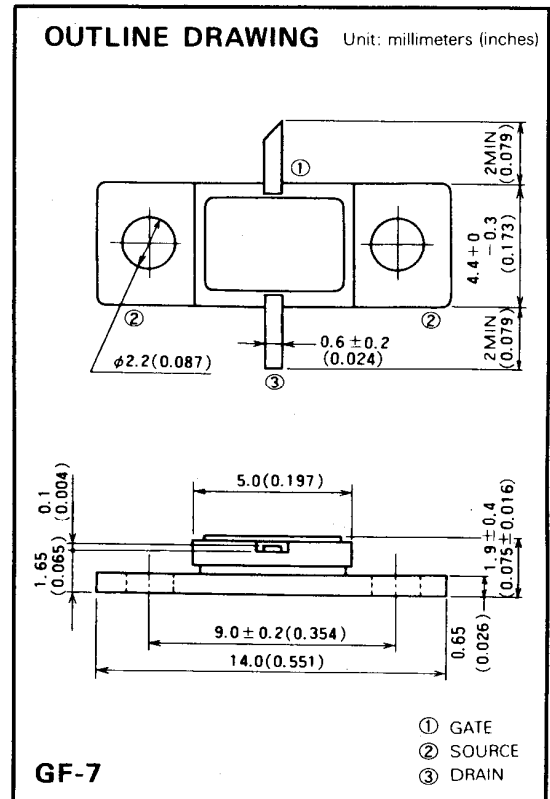
### ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ )

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
$I_{DSS}$	Saturated drain current	$V_{DS} = 3\text{V, } V_{GS} = 0\text{V}$	1600	2400	3200	mA
$V_{GS(off)}$	Gate to source cut-off voltage	$V_{DS} = 3\text{V, } I_D = 10\text{mA}$	-1	-3	-5	V
$g_m$	Transconductance	$V_{DS} = 3\text{V, } I_D = 800\text{mA}$	500	800	—	mS
$P_o$	Output power	$V_{DS} = 8\text{V, } I_D = 800\text{mA, } f = 1.65\text{GHz, } P_{in} = 26\text{dBm}$	33	34	—	dBm
$\eta_{add}$	Power added efficiency		—	40	—	%
$R_{th(ch-c)}$	Thermal resistance *1	$\Delta V_f$ method	—	—	12.5	$^\circ\text{C/W}$
$R_{th(ch-a)}$	Thermal resistance *2	$\Delta V_f$ method	—	—	72.5	$^\circ\text{C/W}$

\*1: Channel to case    \*2: Channel to ambient

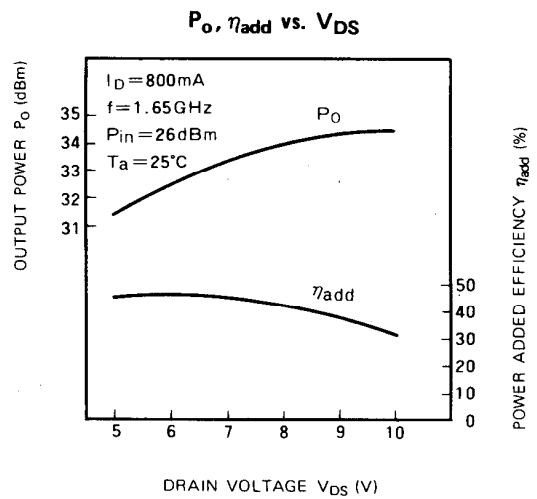
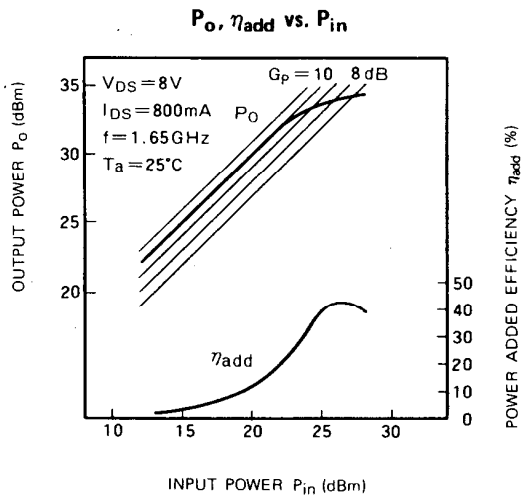
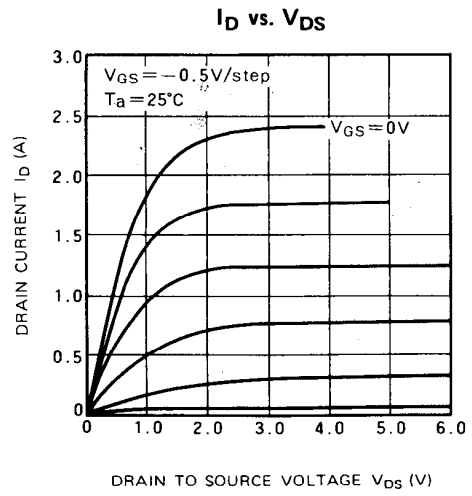
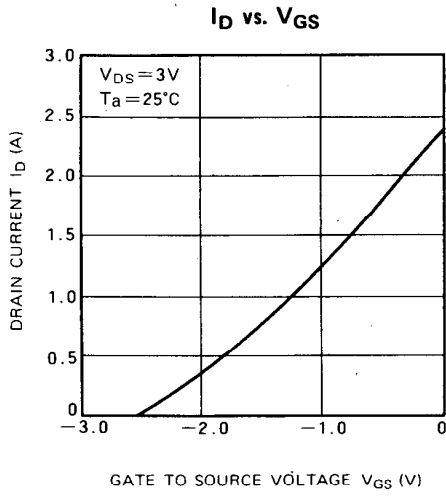
### OUTLINE DRAWING

Unit: millimeters (inches)

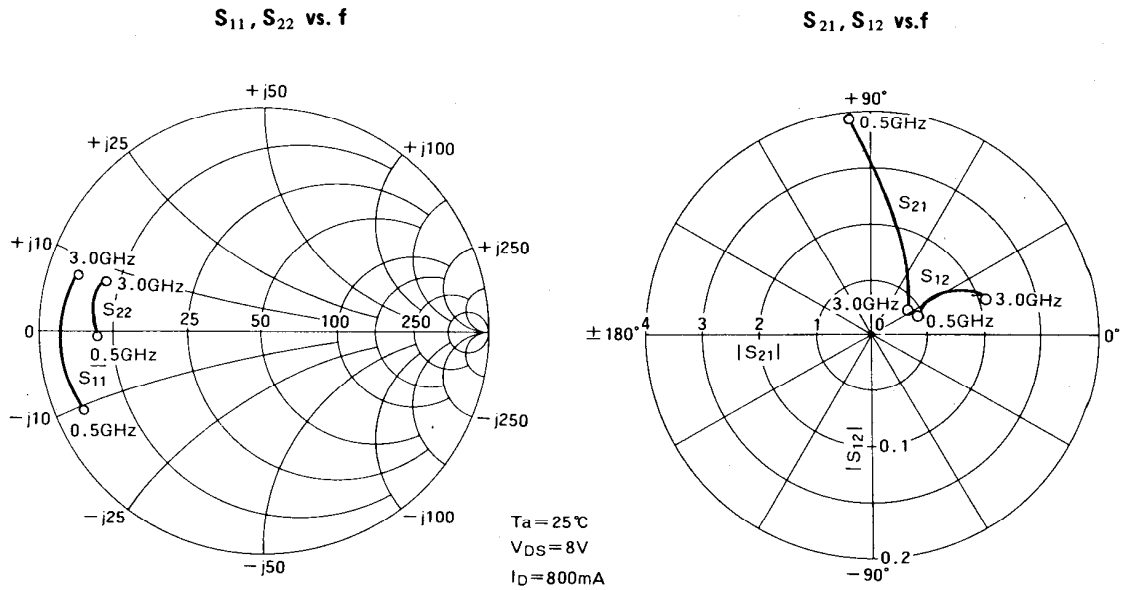


**L, S BAND POWER GaAs FET**

**TYPICAL CHARACTERISTICS**



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**S PARAMETERS** (Ta = 25°C, V<sub>DS</sub> = 8V, I<sub>D</sub> = 800mA)

f (GHz)	S <sub>11</sub>		S <sub>21</sub>		S <sub>12</sub>		S <sub>22</sub>		K	MSG/MAG dB
	Magn.	Angle (deg.)	Magn.	Angle (deg.)	Magn.	Angle (deg.)	Magn.	Angle (deg.)		
0.5	0.861	-155.5	3.895	96.0	0.022	25.0	0.731	-179.0	0.806	22.5
1.0	0.887	-170.5	1.999	78.0	0.025	33.0	0.753	175.5	1.133	16.8
1.5	0.894	177.0	1.485	68.0	0.033	33.0	0.747	172.5	1.175	14.0
2.0	0.887	173.0	1.205	58.0	0.039	29.0	0.743	169.5	1.205	12.2
2.5	0.877	169.0	1.000	48.5	0.047	24.0	0.738	166.5	1.221	10.4
3.0	0.864	165.0	0.795	35.0	0.054	18.0	0.723	164.0	1.365	8.1