

# MGFX39V0717

## 10.7~11.7GHz BAND 8W INTERNALLY MATCHED GaAs FET

### DESCRIPTION

The MGFX39V0717 is an internally impedance matched GaAs power FET especially designed for use in 10.7~11.7 GHz band amplifiers. The hermetically sealed metal-ceramic package guarantees high reliability.

### FEATURES

- Internally impedance matched
- High output power  
 $P_{1dB} = 8\text{ W (TYP.) @ } f = 10.7 \sim 11.7\text{ GHz}$
- High linear power gain  
 $G_{LP} = 7.0\text{ dB (TYP.) @ } f = 10.7 \sim 11.7\text{ GHz}$
- High power added efficiency  
 $\eta_{add} = 26\% \text{ (TYP.) @ } f = 10.7 \sim 11.7\text{ GHz, } P_{1dB}$

### APPLICATION

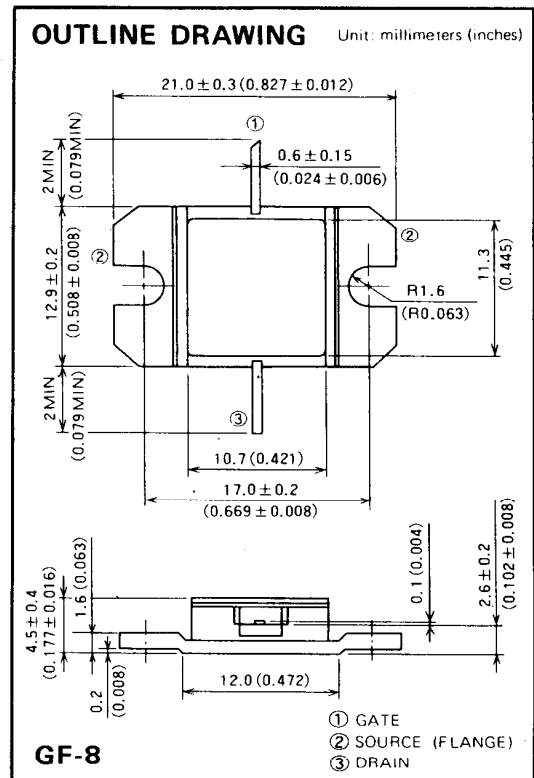
For use in 10.7~11.7 GHz band amplifiers

### QUALITY GRADE

- IG

### RECOMMENDED BIAS CONDITIONS

- $V_{DS} = 10\text{V}$
- $I_D = 2.4\text{A}$
- Refer to Bias Procedure



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

Symbol	Parameter	Rating	Unit
$V_{GDO}$	Gate to drain voltage	-15	V
$V_{GSO}$	Gate to source voltage	-15	V
$I_D$	Drain current	5.6	A
$I_{GR}$	Reverse gate current	-18	mA
$I_{GF}$	Forward gate current	36	mA
$P_T$	Total power dissipation *1	42.8	W
$T_{ch}$	Channel temperature	175	$^\circ\text{C}$
$T_{stg}$	Storage temperature	-65 ~ +175	$^\circ\text{C}$

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

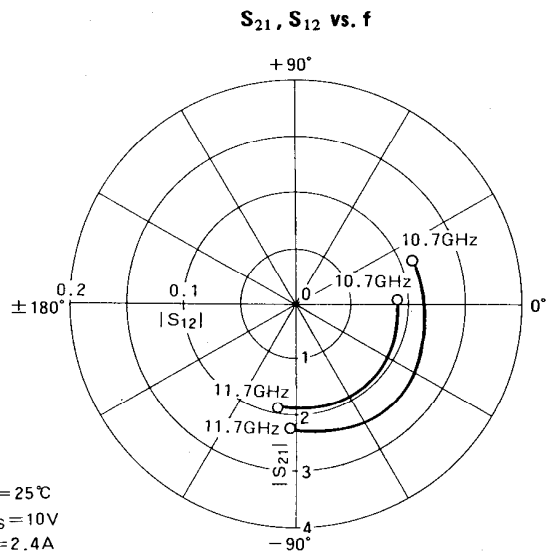
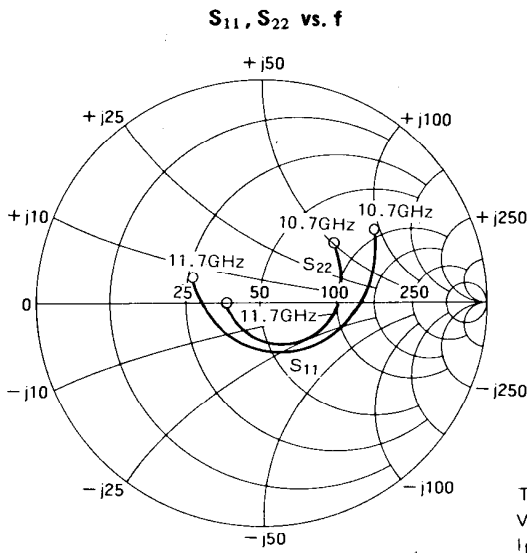
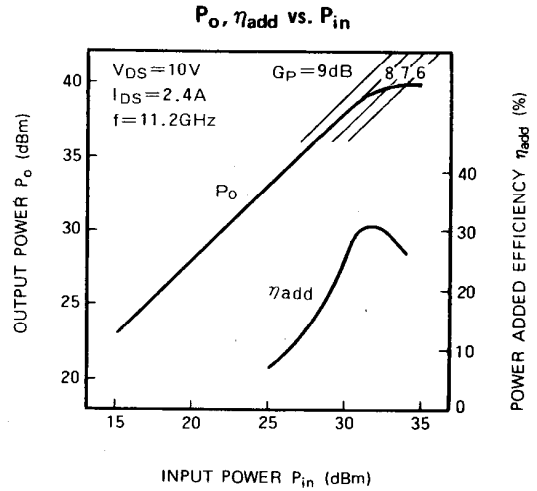
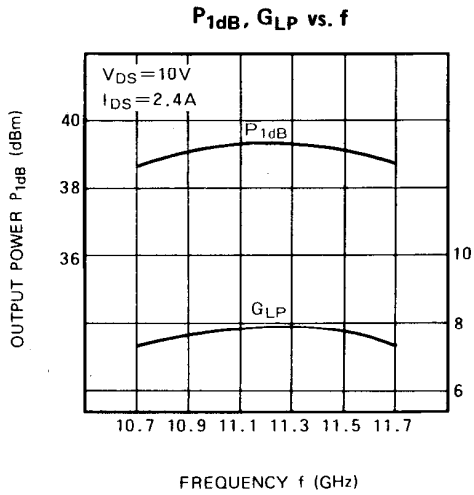
### ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ )

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
$I_{DSS}$	Saturated drain current	$V_{DS} = 3\text{V, } V_{GS} = 0\text{V}$		4.0	5.6	A
$g_m$	Transconductance	$V_{DS} = 3\text{V, } I_D = 2.2\text{A}$	—	2.0	—	S
$V_{GS(off)}$	Gate to source cut-off voltage	$V_{DS} = 3\text{V, } I_D = 20\text{mA}$	-2	-3	-4	V
$P_{1dB}$	Output power at 1dB gain compression	$V_{DS} = 10\text{V, } I_D = 2.4\text{A, } f = 10.7 \sim 11.7\text{GHz}$	37.5	39	—	dBm
$G_{LP}$	Linear power gain		6.0	7.0	—	dB
$\eta_{add}$	Power added efficiency		—	26	—	%
$R_{th(ch-c)}$	Thermal resistance *1	$\Delta V_f$ method	—	—	3.5	$^\circ\text{C/W}$

\*1: Channel to case

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**TYPICAL CHARACTERISTICS** ( $T_a=25^\circ\text{C}$ )



**S PARAMETERS** ( $T_a=25^\circ\text{C}$ ,  $V_{DS}=10\text{V}$ ,  $I_{DS}=2.4\text{A}$ )

f (GHz)	S Parameters (TYP.)							
	$S_{11}$		$S_{21}$		$S_{12}$		$S_{22}$	
	Magn.	Angle (deg.)	Magn.	Angle (deg.)	Magn.	Angle (deg.)	Magn.	Angle (deg.)
10.7	0.64	40	2.15	23	0.082	2	0.44	41
10.9	0.50	15	2.28	-4	0.085	-14	0.34	14
11.1	0.34	-15	2.38	-25	0.087	-34	0.24	-17
11.3	0.16	-71	2.45	-52	0.093	-57	0.14	-73
11.5	0.20	-168	2.30	-73	0.092	-79	0.16	-136
11.7	0.32	151	2.15	-93	0.087	-98	0.18	176

MITSUBISHI SEMICONDUCTOR <GaAs FET>

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MITSUBISHI  
ELECTRIC

June/2004