

MGFX38V0510

10.5~11.0GHz BAND 6W INTERNALLY MATCHED GaAs FET

DESCRIPTION

The MGFX38V0510 is an internally impedance matched GaAs power FET especially designed for use in 10.5~11.0 GHz band amplifiers. The hermetically sealed metal-ceramic package guarantees high reliability.

FEATURES

- Internally impedance matched
- High output power
 $P_{1dB} = 6\text{ W (TYP.) @ } f = 10.5 \sim 11.0\text{ GHz}$
- High linear power gain
 $G_{LP} = 7.0\text{ dB (TYP.) @ } f = 10.5 \sim 11.0\text{ GHz}$
- High power added efficiency
 $\eta_{add} = 26\% \text{ (TYP.) @ } f = 10.5 \sim 11.0\text{ GHz, } P_{1dB}$

APPLICATION

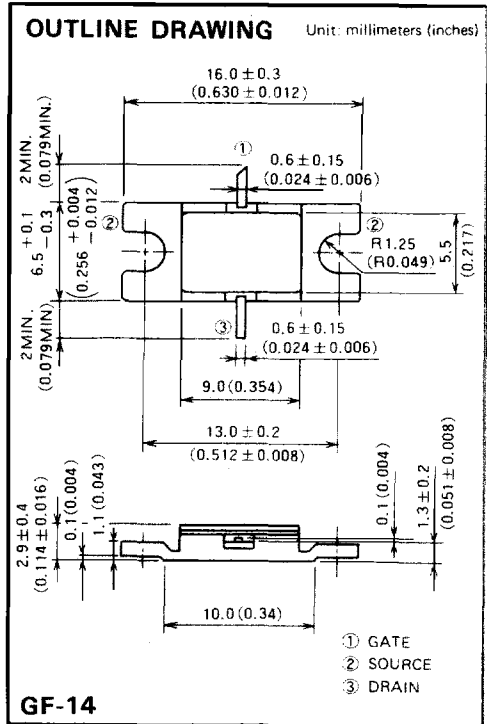
For use in 10.5~11.0 GHz band amplifiers

QUALITY GRADE

- IG

RECOMMENDED BIAS CONDITIONS

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



ABSOLUTE MAXIMUM RATINGS (Ta = 25°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	°C
T_{stg}	Storage temperature	-65 ~ +175	°C

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

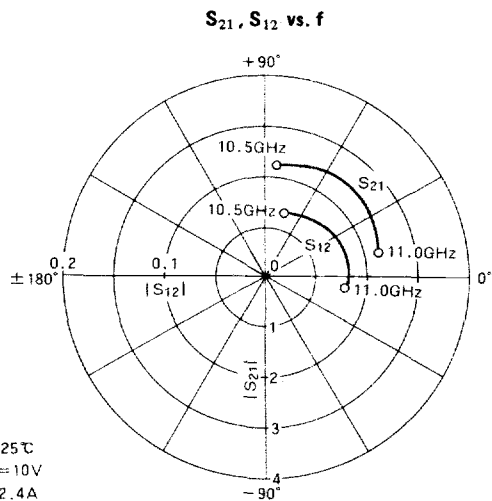
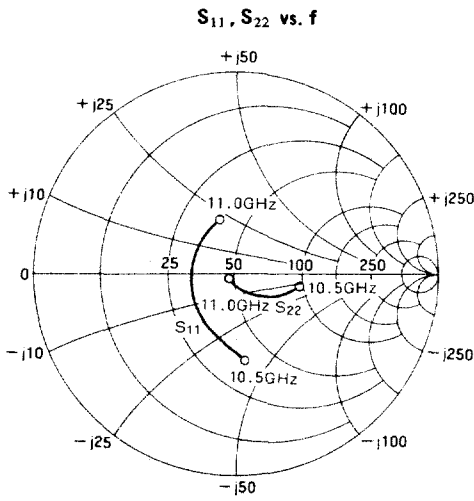
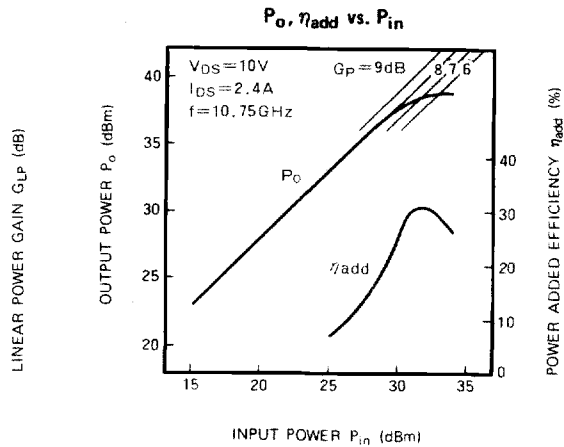
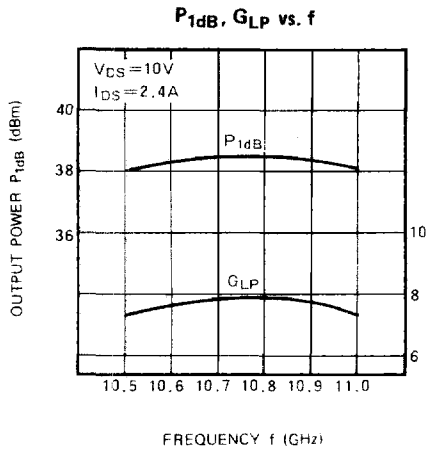
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

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	$V_{DS} = 10\text{V, } I_D = 2.4\text{A, } f = 10.5 \sim 11.0\text{GHz}$	37	38	—	dBm
G_{LP}	Linear power gain		6.0	7.0	—	dB
η_{add}	Power added efficiency		—	26	—	%
$R_{th(ch-c)}$	Thermal resistance *1	ΔV_f method	—	—	3.5	°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.)
10.5	0.414	-82	2.22	83	0.067	71	0.385	3
10.6	0.318	-101	2.33	68	0.074	54	0.328	-11
10.7	0.259	-134	2.39	55	0.079	39	0.251	-23
10.8	0.210	-176	2.42	40	0.083	23	0.189	-39
10.9	0.238	140	2.36	26	0.085	8	0.099	-58
11.0	0.283	105	2.25	12	0.080	-8	0.036	-121