MGFX39V0717

10.7~11.7GHz BAND 8W INTERNALLY MATCHD 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 W (TYP.) @ f = 10.7~11.7 GHz
- High linear power gain
  G_{LP} = 7.0 dB (TYP.) @ f = 10.7~11.7 GHz
- High power added efficiency
  η_{add} = 26% (TYP.) @ f = 10.7~11.7 GHz, P_{1dB}

APPLICATION

For use in 10.7~11.7 GHz band amplifiers

QUALITY GRADE

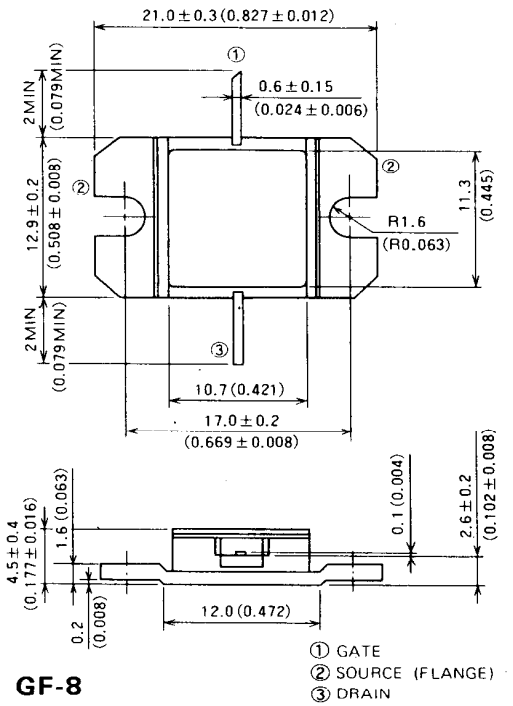
- IG

RECOMMENDED BIAS CONDITIONS

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

OUTLINE DRAWING

Unit: millimeters (inches)



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
Tch	Channel temperature	175	°C
Tstg	Storage temperature	−65~+175	°C

*1: Tc = 25°C

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

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

*1: Channel to case

MITSUBISHI ELECTRIC

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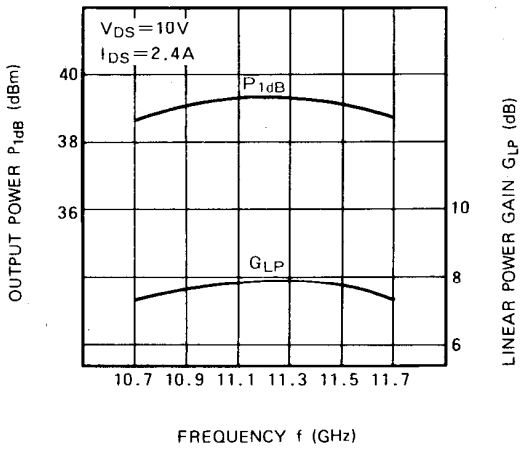
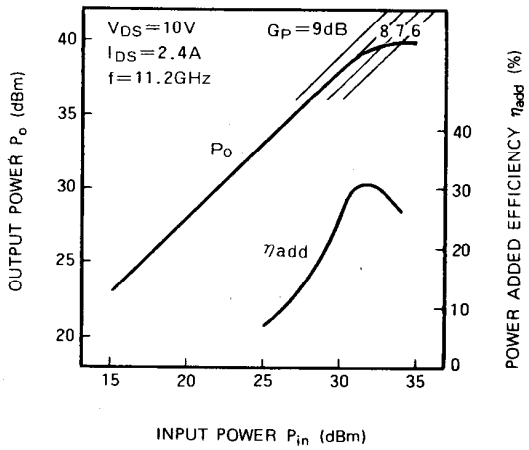
TYPICAL CHARACTERISTICS (Ta=25°C)

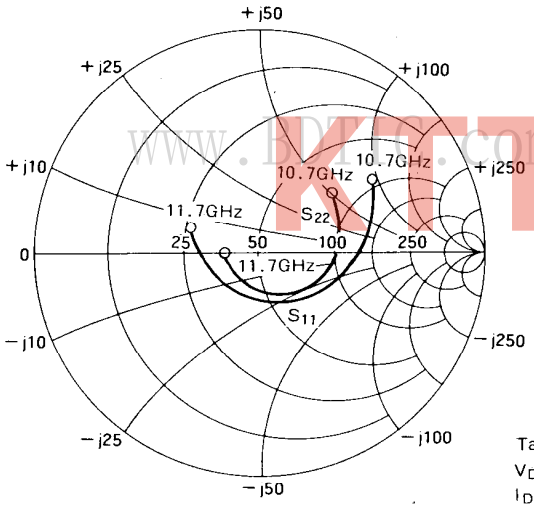
P_{1dB}, G_{LP} vs. f



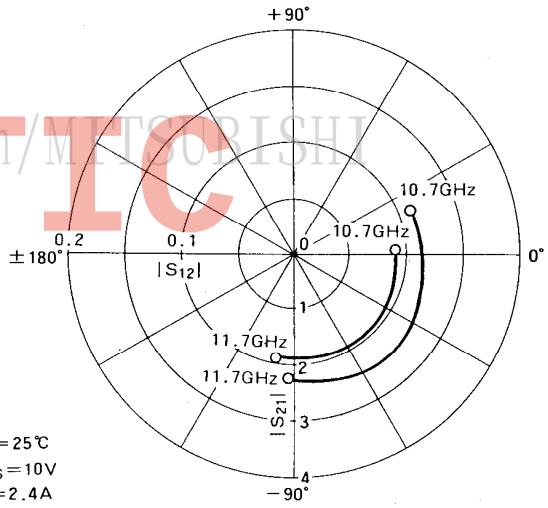
P_o, η_{add} vs. P_{in}



S_{11}, S_{22} vs. f



S_{21}, S_{12} vs. f



Ta=25°C
VDS=10V
ID=2.4A

S PARAMETERS (Ta=25°C, VDS=10V, IDS=2.4A)

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

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