MGFC36V7177

Plan for production discontinue

7.1~7.7GHz BAND 4W INTERNALLY MATCHED GaAs FET

DESCRIPTION

The MGFC36V7177 is an internally impedance-matched GaAs power FET especially designed for use in 7.1 ~ 7.7 GHz band amplifiers. The hermetically sealed metal-ceramic package guarantees high reliability.

FEATURES

- Class A operation
- Internally matched to 50Ω system
- High output power
  P_{1dB} = 4 W (TYP) @ 7.1 ~ 7.7 GHz
- High power gain
  G_{LP} = 9 dB (TYP) @ 7.1 ~ 7.7 GHz
- High power added efficiency
  η_{add} = 30% (TYP) @ 7.1 ~ 7.7 GHz, P_{1dB}
- Hermetically sealed metal-ceramic package

APPLICATION

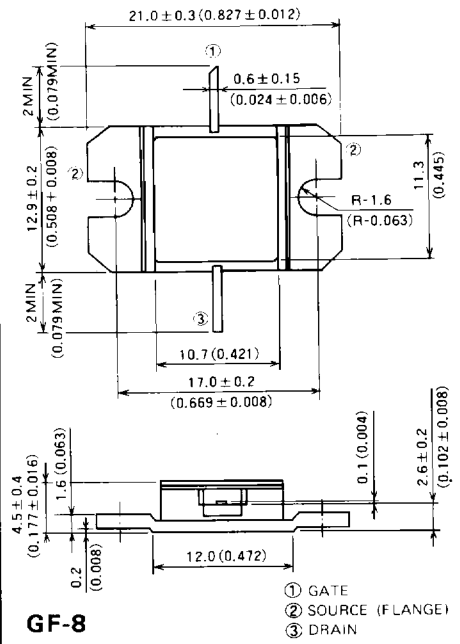
Item-01: 7.1~7.7 GHz band power amplifier
Item-51: Digital radio communication

QUALITY GRADE

- IG

OUTLINE DRAWING

Unit: millimeters (inches)



RECOMMENDED BIAS CONDITIONS

- V_{DS}= 10V
- I_D= 1.2A
- Rg= 100Ω
- Refer Bias Procedure

ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

Symbol	Parameter	Ratings	Unit
V_{GDO}	Gate to drain voltage	−15	V
V_{GSO}	Gate to source voltage	−15	V
I_D	Drain current	2.8	A
I_{GR}	Reverse gate current	−10	mA
I_{GF}	Forward gate current	+21	mA
P_T	Total power dissipation *1	25	W
Tch	Channel temperature	175	°C
Tstg	Storage temperature	−65~+175	°C

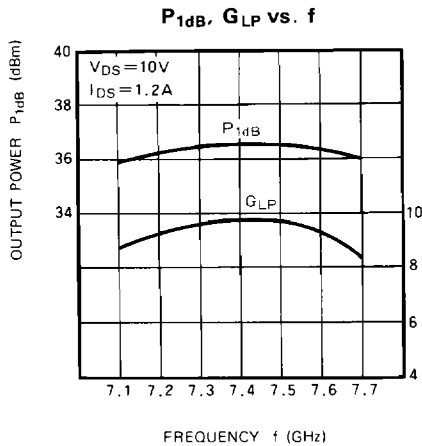
*1: T_C = 25°C

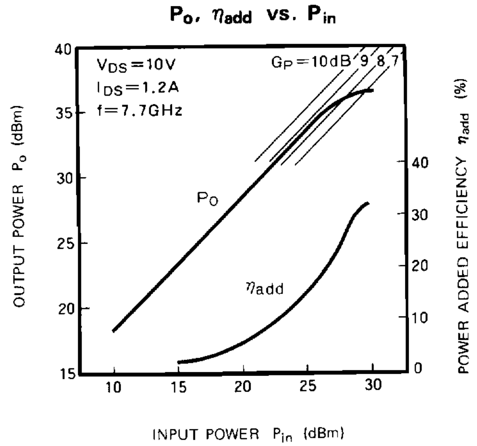
ELECTRICAL CHARACTERISTICS (Ta=25°C)

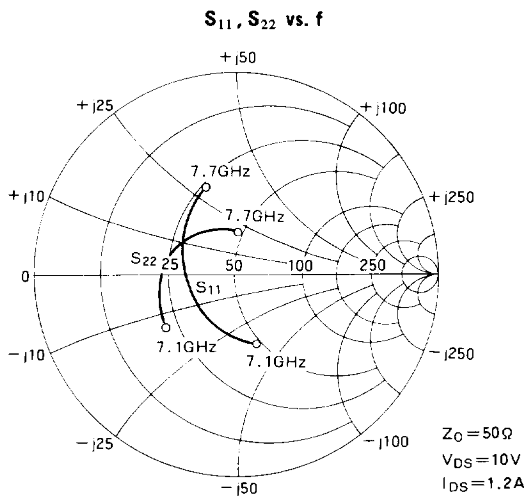
Symbol	Parameter	Test conditions	Limits Min	Limits Typ	Limits Max	Unit
I_{DSS}	Saturated drain current	V_{DS}=3V, V_{GS}=0V	—	2.0	2.8	A
g_m	Transconductance	V_{DS}=3V, I_D=1.1A	—	1.0	—	S
$V_{GS(off)}$	Gate to source cut-off voltage	V_{DS}=3V, I_D=10mA	−2	−3	−4	V
P_{1dB}	Output power at 1dB gain compression	V_{DS}=10V, I_D=1.2A, f=7.1~7.7GHz	35	36	—	dBm
G_{LP}	Linear power gain		8	9	—	dB
I_D	Drain current		—	1.1	1.4	A
η_{add}	Power added efficiency		—	30	—	%
IM_3	3rd order IM distortion *1		−42	−45	—	dBc
Rth(ch-c)	Thermal resistance *2	ΔV_f method	—	—	6	°C/W

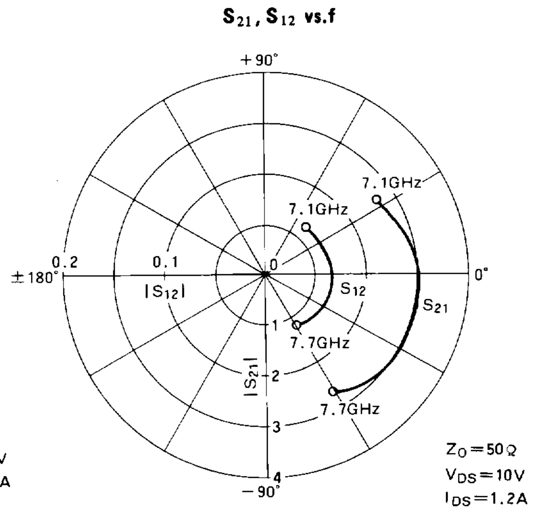
*1: Item-51, 2-tone test P_o = 25 dBm Single Carrier Level Δf = 10 MHz   *2: Channel to case

TYPICAL CHARACTERISTICS (Ta=25°C)









S PARAMETERS (Ta=25°C, VDS=10V, IDS=1.2A)

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.)
7.1	0.34	−77	2.65	32	0.061	42	0.46	−145
7.2	0.28	−105	2.87	17	0.062	24	0.41	−161
7.3	0.25	−139	3.02	2	0.064	8	0.38	178
7.4	0.27	180	3.06	−16	0.064	−11	0.33	159
7.5	0.33	148	3.00	−32	0.066	−28	0.28	135
7.6	0.38	126	2.90	−47	0.062	−43	0.24	114
7.7	0.46	109	2.66	−59	0.059	−58	0.22	93

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