MGFC36V7785

Plan for production discontinue

7.7~8.5GHz BAND 4W INTERNALLY MATCHED GaAs FET

DESCRIPTION

The MGFC36V7785 is an internally impedance-matched GaAs power FET especially designed for use in 7.7 ~ 8.5 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) @ 7.7 ~ 8.5 GHz
- High power gain
  G_{LP} = 8 dB (TYP) @ 7.7 ~ 8.5 GHz
- High power added efficiency
  η_{add} = 29% (TYP) @ 7.7 ~ 8.5 GHz, P_{1dB}
- Hermetically sealed metal-ceramic package

APPLICATION

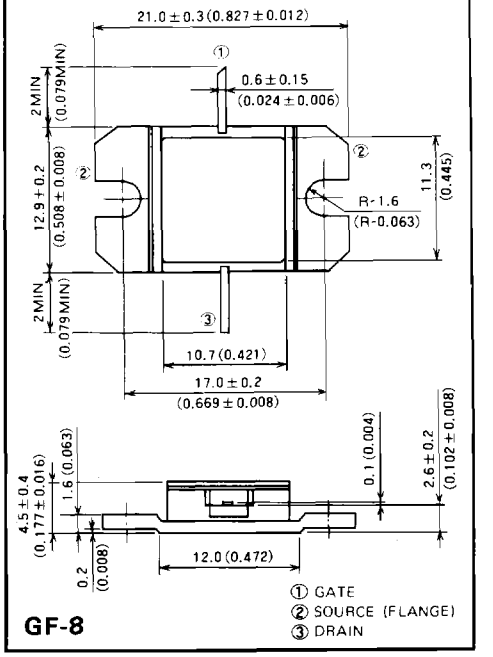
Item-01: 7.7~8.5 GHz band power amplifier
Item-51: Digital radio communication

QUALITY GRADE

- IG

OUTLINE DRAWING

Unit: millimeters (inches)



GF-8

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

RECOMMENDED BIAS CONDITIONS

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

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
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 = 7.7~8.5GHz	35	36	—	dBm
G_{LP}	Linear power gain		7	8	—	dB
I_D	Drain current		—	1.1	1.4	A
η_{add}	Power added efficiency		—	29	—	%
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

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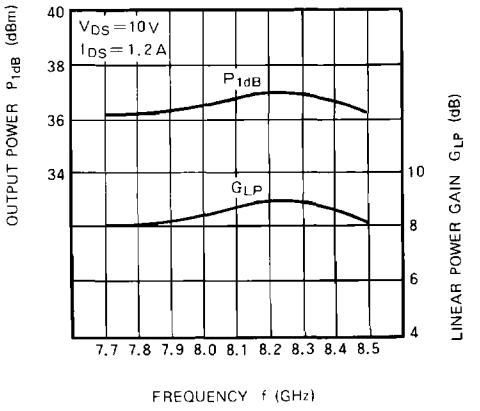
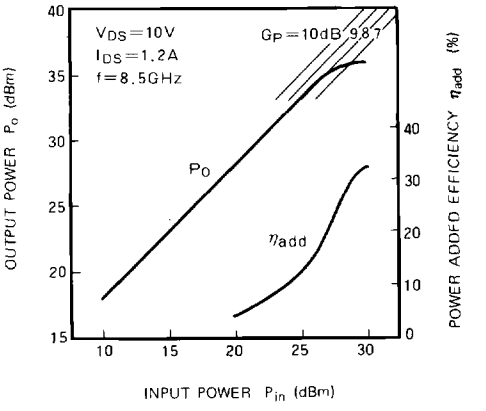
TYPICAL CHARACTERISTICS (Ta=25°C)

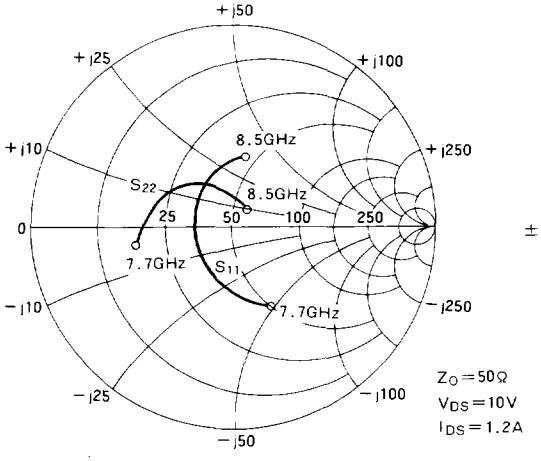
P_{1dB}, G_{LP} vs. f



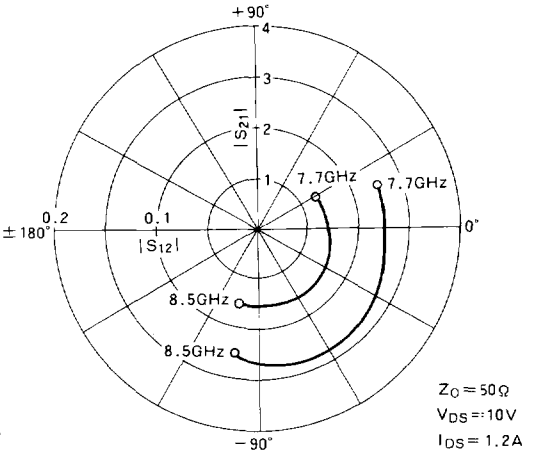
P_o, η_{add} vs. P_{in}



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



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



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.)
7.7	0.43	−65	2.51	17	0.066	30	0.48	−170
7.8	0.36	−80	2.53	5	0.068	14	0.44	−180
7.9	0.27	−103	2.54	−15	0.070	−6	0.41	165
8.0	0.21	−120	2.62	−30	0.073	−21	0.36	155
8.1	0.20	−159	2.69	−43	0.076	−34	0.33	140
8.2	0.18	170	2.75	−57	0.076	−53	0.27	125
8.3	0.24	126	2.77	−71	0.080	−70	0.21	107
8.4	0.30	101	2.68	−86	0.076	−88	0.16	81
8.5	0.37	80	2.51	−100	0.076	−104	0.13	50

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