

MGFC36V7177A

7.1~7.7GHz BAND 4W INTERNALLY MATCHED GaAs FET

PRELIMINARY

Notice: This is not a final specification
Some parametric limits are subject to change.

DESCRIPTION

The MGFC36V7177A is an internally impedance-matched GaAs power FET especially designed for use in 7.1~7.7GHz 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} = 4W(TYP) @ 7.1~7.7GHz
- High power gain
GLP = 9dB(TYP) @ 7.1~7.7GHz
- High power added efficiency
η_{add} = 30%(TYP) @ 7.1~7.7GHz
- Hermetically sealed metal-ceramic package
- Low distortion [Item: -51]
IM₃ = -45dBc(TYP) @ P_o = 25(dBm) S.C.L.

APPLICATION

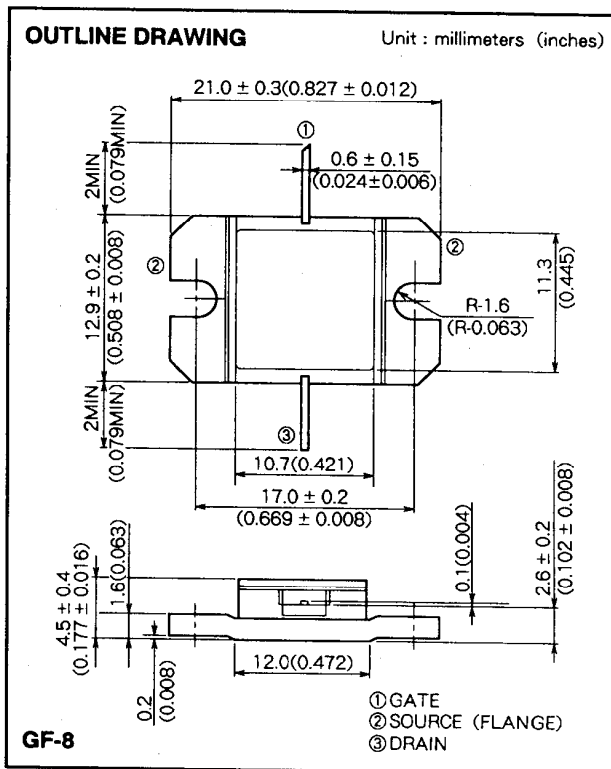
Item-01 : 7.1~7.7GHz band power amplifier
Item-51 : Digital radio communication

QUALITY GRADE

- IG

OUTLINE DRAWING

Unit : millimeters (inches)



RECOMMENDED BIAS CONDITIONS

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

ABSOLUTE MAXIMUM RATINGS (T_a = 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	3.75	A
I _{GR}	Reverse gate current	- 10	mA
I _{GF}	Forward gate current	21	mA
P _T	Total power dissipation * 1	25	W
T _{ch}	Channel temperature	175	°C
T _{stg}	Storage temperature	- 65 ~ + 175	°C

* 1 : T_c = 25°C

ELECTRICAL CHARACTERISTICS (T_a = 25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
I _{DSS}	Saturated drain current	V _{DS} = 3V, V _{GS} = 0V	-	-	3.75	A
g _m	Transconductance	V _{DS} = 3V, I _D = 1.1A	-	1	-	S
V _{GS(off)}	Gate to source cut-off voltage	V _{DS} = 3V, I _D = 10mA	-	-	- 4.5	V
P _{1dB}	Output power at 1dB gain compression	V _{DS} = 10V, I _D = 1.2A, f = 7.1~7.7GHz	35	36	-	dBm
GLP	Linear power gain		8	9	-	dB
I _D	Drain current		-	-	1.8	A
η _{add}	Power added efficiency		-	30	-	%
IM ₃	3rd order IM distortion * 1		- 42	- 45	-	dBc
R _{th(ch-c)}	Thermal resistance * 2	ΔV _f method	-	5	6	°C/W

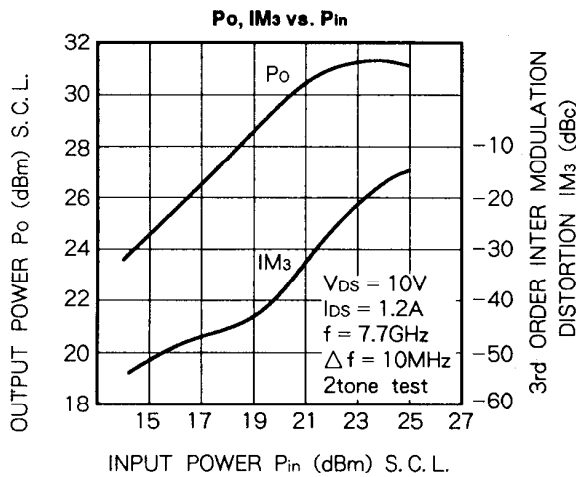
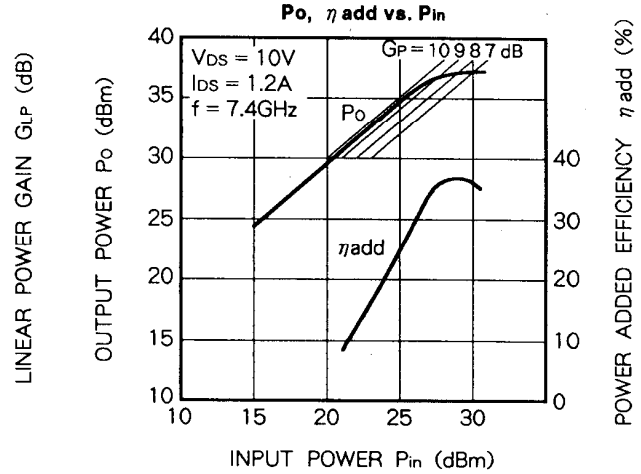
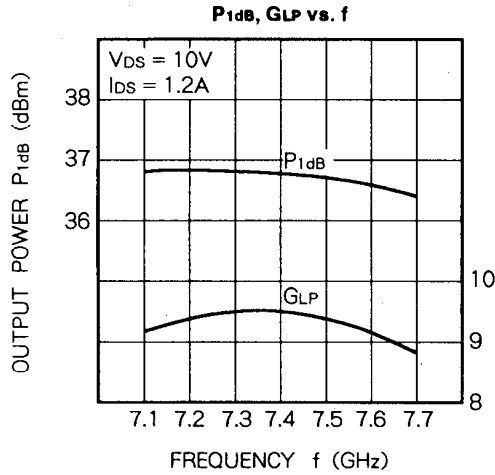
* 1 : Item-51, 2-tone test P_o = 25dBm Single Carrier Level f = 7.7GHz Δf = 10MHz

* 2 : Channel to case

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TYPICAL CHARACTERISTICS



S PARAMETERS (T_a = 25°C, V_{DS} = 10V, I_{DS} = 1.2A)

f (GHz)	S parameters							
	S ₁₁		S ₁₂		S ₂₁		S ₂₂	
	Magn.	Angle(deg.)	Magn.	Angle(deg.)	Magn.	Angle(deg.)	Magn.	Angle(deg.)
7.1	0.41	172	0.077	-157	2.85	-109	0.25	15
7.2	0.35	160	0.082	-171	2.92	-124	0.24	0
7.3	0.29	148	0.087	174	2.97	-139	0.23	-18
7.4	0.22	134	0.091	160	2.98	-154	0.21	-39
7.5	0.14	123	0.096	144	2.93	-169	0.20	-65
7.6	0.10	132	0.098	129	2.88	174	0.19	-93
7.7	0.18	130	0.099	113	2.79	158	0.21	-121