

MGFC36V7177A

7.1 ~ 7.7GHz BAND 4W INTERNALLY MATCHED GaAs FET

DESCRIPTION

The MGFC36V7177A 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 50(ohm) system
- High output power
P1dB = 4W (TYP.) @ f=7.1~7.7GHz
- High power gain
GLP = 9 dB (TYP.) @ f=7.1~7.7GHz
- High power added efficiency
P.A.E. = 30 % (TYP.) @ f=7.1~7.7GHz
- Low distortion [item -51]
IM3= -45 dBc(TYP.) @Po=25dBm S.C.L.

APPLICATION

- item 01 : 7.1~7.7 GHz band power amplifier
- item 51 : 7.1~7.7 GHz band digital radio communication

QUALITY GRADE

IG

RECOMMENDED BIAS CONDITIONS

- VDS = 10 (V)
- ID = 1.2 (A) Refer to Bias Procedure
- RG= 100 (ohm)

ABSOLUTE MAXIMUM RATINGS

(Ta=25 deg.C)

Symbol	Parameter	Ratings	Unit
VGDO	Gate to drain voltage	-15	V
VGSO	Gate to source voltage	-15	V
ID	Drain current	3.75	A
IGR	Reverse gate current	-10	mA
IGF	Forward gate current	21	mA
PT	Total power dissipation *1	25	W
Tch	Channel temperature	175	deg.C
Tstg	Storage temperature	-65 / +175	deg.C

*1 : Tc=25 deg.C

ELECTRICAL CHARACTERISTICS

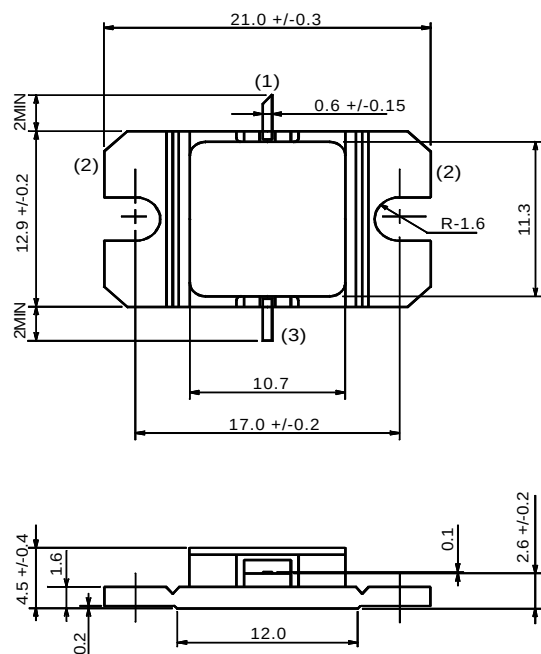
(Ta=25 deg.C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
IDSS	Saturated drain current	VDS=3V, VGS=0V	-	-	3.75	A
gm	Transconductance	VDS=3V, ID=1.1A	-	1	-	S
VGS(off)	Gate to source cut-off voltage	VDS=3V, ID=10mA	-	-	-4.5	V
P1dB	Output power at 1dB gain compression	VDS=10V, ID(RF off)=1.2A, f=7.1~7.7GHz	35	36.5	-	dBm
GLP	Linear power gain		8	9	-	dB
ID	Drain current		-	-	1.8	A
P.A.E.	Power added efficiency		-	30	-	%
IM3	3rd order IM distortion *1		-42	-45	-	dBc
Rth(ch-c)	Thermal resistance *2	Delta Vf method	-	5	6	deg.C/W

*1 : item -51, 2 tone test, Po=25dBm Single Carrier Level, f=7.7GHz, Delta f=10MHz

*2 : Channel to case

OUTLINE DRAWING Unit : millimeters



GF-8

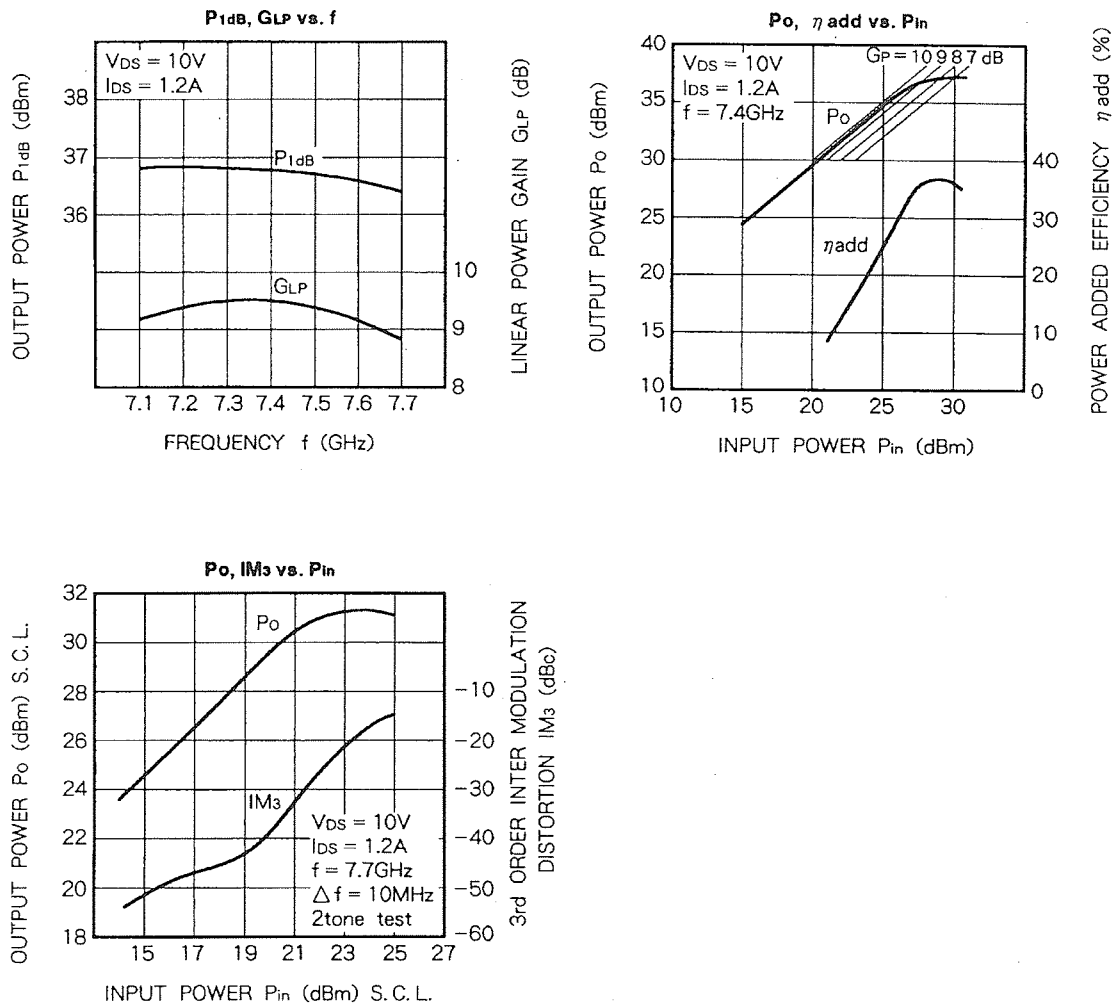
- (1) GATE
- (2) SOURCE (FLANGE)
- (3) DRAIN

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TYPICAL CHARACTERISTICS



S PARAMETERS ($T_a = 25^\circ C$, $V_{DS} = 10V$, $I_{DS} = 1.2A$)

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

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