

< C band internally matched power GaAs FET >

MGFC41V7177

7.1 – 7.7 GHz BAND / 12W

DESCRIPTION

The MGFC41V7177 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=12W (TYP.) @f=7.1 – 7.7GHz
- High power gain
GLP=9.5dB (TYP.) @f=7.1 – 7.7GHz
- High power added efficiency
P.A.E.=33% (TYP.) @f=7.1 – 7.7GHz
- Low distortion [item -51]
IM3=-45dBc (TYP.) @Po=30dBm S.C.L.

APPLICATION

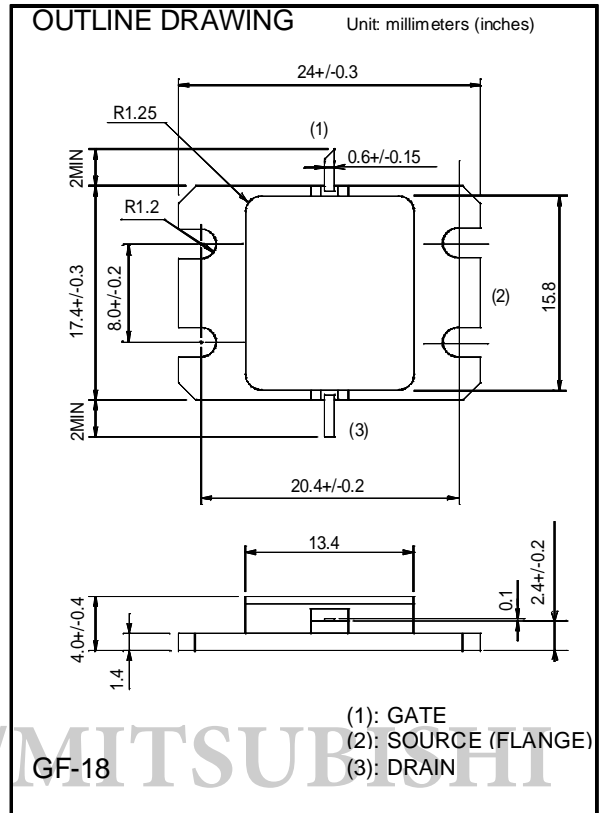
- item 01 : 7.1 – 7.7 GHz band power amplifier

QUALITY

- IG

RECOMMENDED BIAS CONDITIONS

- VDS=10V • ID=3.4A • RG=50ohm Refer to Bias Procedure



Absolute maximum ratings (Ta=25°C)

Symbol	Parameter	Ratings	Unit
VGDO	Gate to drain breakdown voltage	-15	V
VGSO	Gate to source breakdown voltage	-15	V
ID	Drain current	12	A
IGR	Reverse gate current	-30	mA
IGF	Forward gate current	63	mA
PT *1	Total power dissipation	53.6	W
Tch	Channel temperature	175	°C
Tstg	Storage temperature	-65 to +175	°C

*1 : Tc=25°C

Electrical characteristics (Ta=25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
IDSS	Saturated drain current	VDS=3V, VGS=0V	-	-	12	A
gm	Transconductance	VDS=3V, ID=3.0A	-	3	-	S
VGS(off)	Gate to source cut-off voltage	VDS=3V, ID=30mA	-	-	-5	V
P1dB	Output power at 1dB gain compression	VDS=10V, ID(RF off)=3.4A	40	41	-	dBm
GLP	Linear Power Gain	f=7.1 – 7.7GHz	7	8	-	dB
P.A.E.	Power added efficiency		-	30	-	%
IM3*2	3rd order IM distortion		-42	-45	-	dBc
Rth(ch-c) *3	Thermal resistance	delta Vf method	-	-	2.8	°C/W

*2 : Item-51, 2-tone test Po=30dBm Signal Carrier Level f=7.7GHz Δf=10MHz

*3 : Channel-case

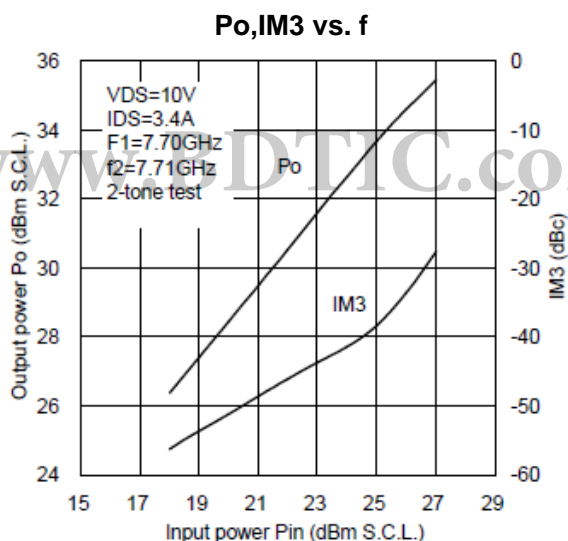
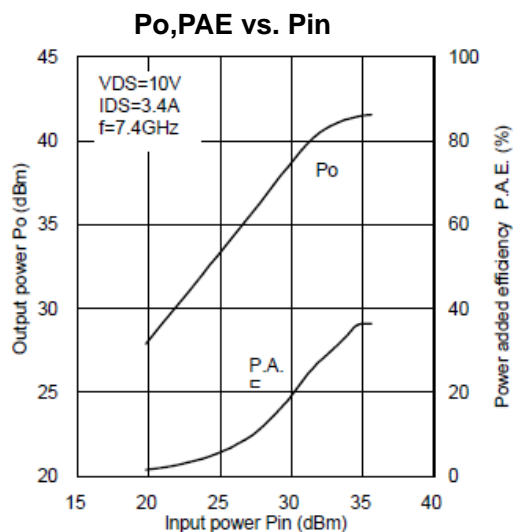
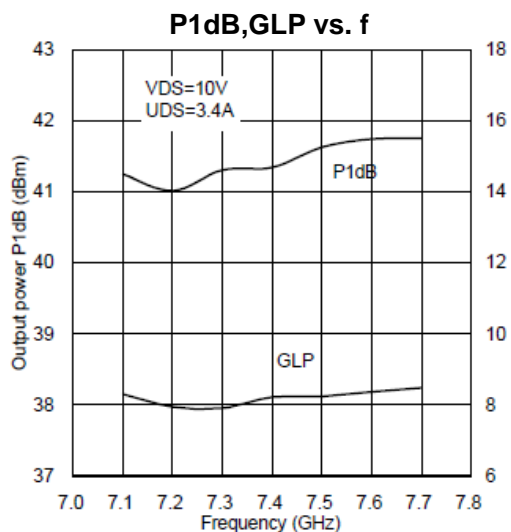
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MGFC41V7177 TYPICAL CHARACTERISTICS(Ta=25deg.C)



MGFC41V7177 S-parameters(Ta=25deg.C , VDS=10(V),IDS=3.4(A))

f (GHz)	S Parameters(Typ.)							
	S11		S21		S12		S22	
	Magn.	Angle(deg.)	Magn.	Angle(deg.)	Magn.	Angle(deg.)	Magn.	Angle(deg.)
7.1	0.51	66	2.60	-131	0.066	172	0.22	106
7.2	0.45	57	2.60	-146	0.073	160	0.22	89
7.3	0.38	48	2.64	-161	0.079	146	0.22	71
7.4	0.29	40	2.65	-177	0.085	133	0.21	53
7.5	0.18	34	2.67	167	0.092	118	0.18	38
7.6	0.06	59	2.64	149	0.094	103	0.13	20
7.7	0.13	146	2.57	131	0.097	84	0.07	-13

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