

< L/S band internally matched power GaAs FET >

# MGFL48V1920

1.9 – 2.0 GHz BAND / 60W

## DESCRIPTION

The MGFL48V1920 is a 60W push-pull type GaAs power FET especially designed for use in 1.9 - 2.0 GHz band amplifiers. The hermetically sealed metal-ceramic package guarantees high reliability.

## FEATURES

Push-pull configuration

- High output power  
Pout=60W (TYP.) @f=1.9 - 2.0GHz
- High power gain  
GLP=11.5dB (TYP.) @f=1.9 - 2.0GHz
- High power added efficiency  
P.A.E.=45% (TYP.) @f=1.9 - 2.0GHz

## APPLICATION

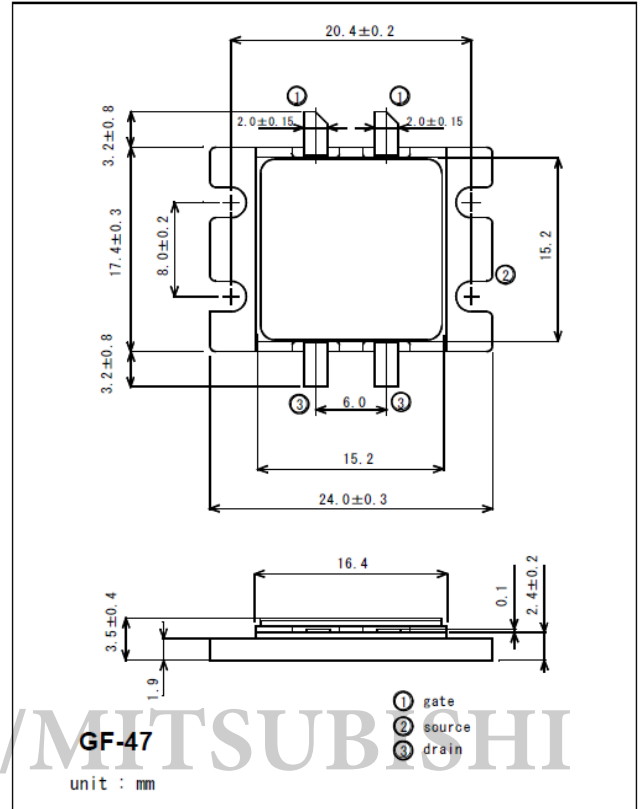
- item 01 : 1.9 - 2.0 GHz band power amplifier

## QUALITY

- IG

## RECOMMENDED BIAS CONDITIONS

- VDS=12V • ID=4.0A • RG=20ohm for each gate



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## Absolute maximum ratings (Ta=25°C)

Symbol	Parameter	Ratings	Unit
VGDO	Gate to drain breakdown voltage	-20	V
VGSO	Gate to source breakdown voltage	-10	V
PT *1	Total power dissipation	10	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.	
VGS(off)	Gate to source cut-off voltage	VDS=3V, ID=17.3mA	-1	-	-4	V
P2dB	Output power at 2dB gain compression	VDS=12V, ID(RF off)=4.0A	47	48	-	dBm
GLP	Linear Power Gain	f=1.9 - 2.0GHz	10	11.5	-	dB
ID	Drain current		-	11	15	A
P.A.E.	Power added efficiency		-	45	-	%
Rth(ch-c) *2	Thermal resistance	delta Vf method	-	1.0	1.4	°C/W

\*2 : Channel-case

## Keep Safety first in your circuit designs!

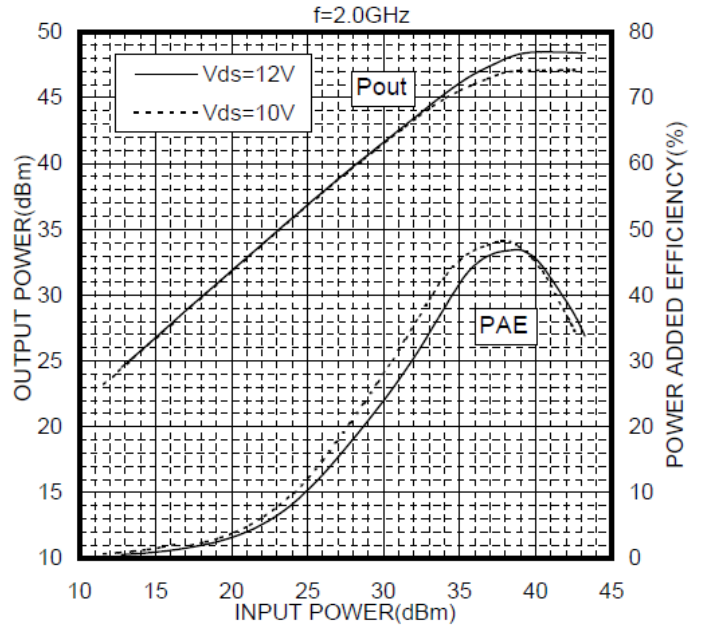
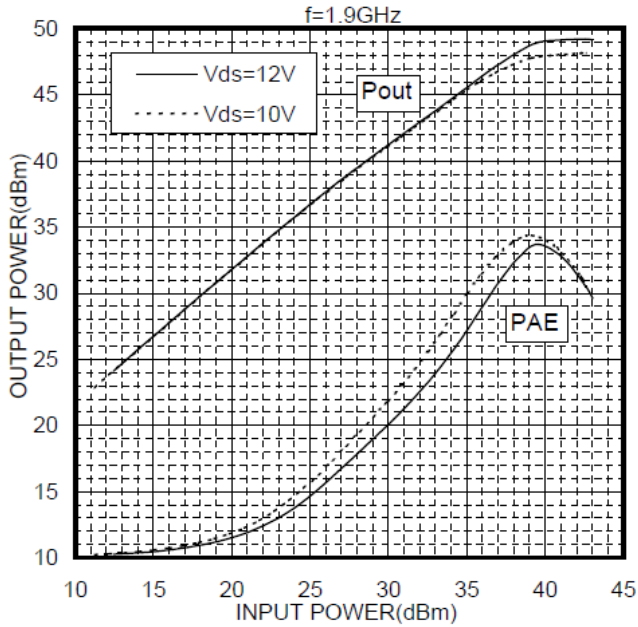
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## MGFL45V1920 TYPICAL CHARACTERISTICS

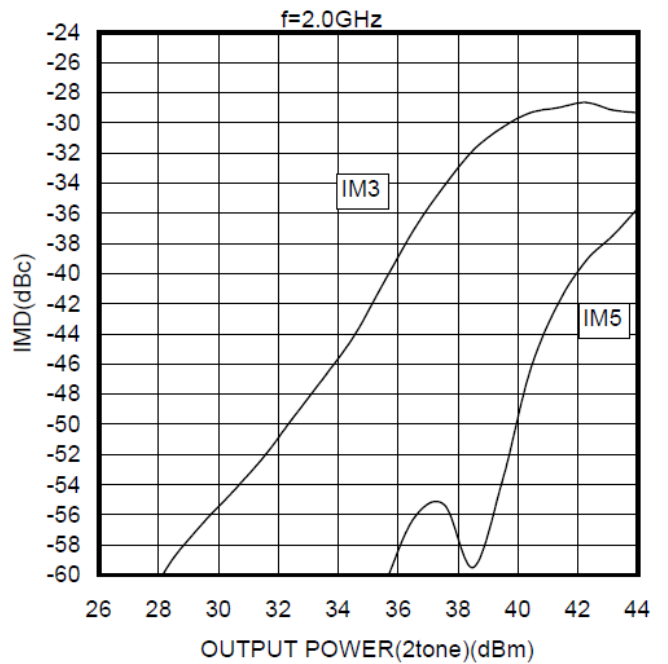
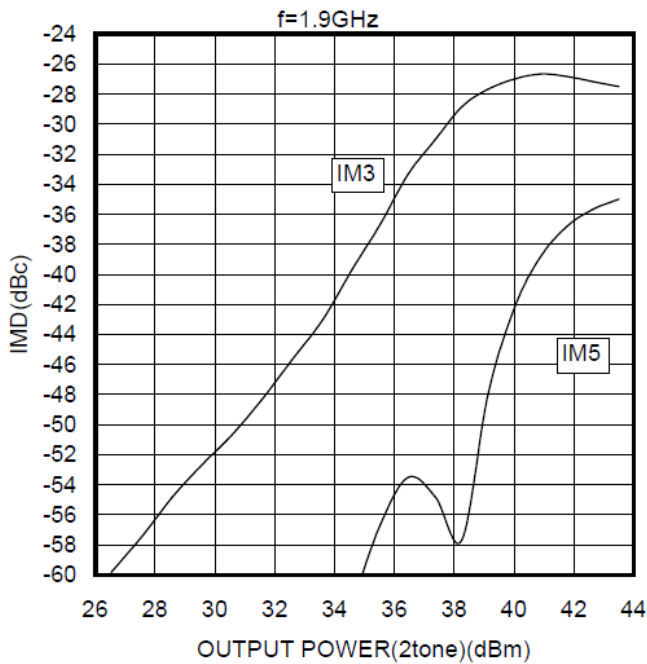
Pout , PAE vs. Pin



Test Condition :  $I_{dq}=4\text{A}$ ,  $T_a=25\text{deg.C}$

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IMD vs. Pout



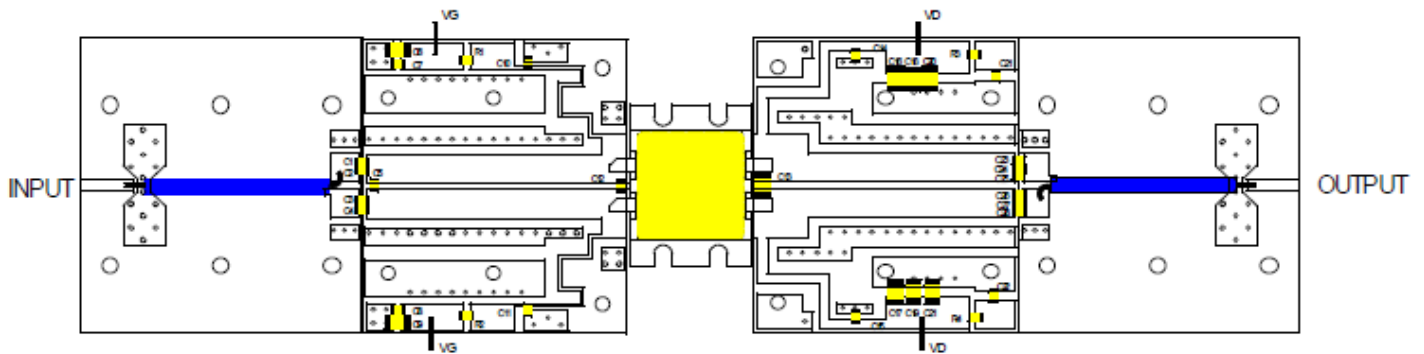
Test Condition :  $V_{ds}=12\text{V}$ ,  $I_{dq}=4\text{A}$ ,  $T_a=25\text{deg.C}$   
2-tone test ,  $\Delta f=5\text{MHz}$

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### MGFL45V1920 RF TEST FIXTURE



C1,C2,C3,C4:8pF(GR708)  
C5:0.5pF(GR40)  
C7,C8:4700pF(GR40)  
C6,C9,C16,C17,C18,C19,C20,C21:4.7uF(CM32)  
C10,C11,C14,C15:20pF(GR40)  
C12:1.5pF(GR40)  
C13:2pF(GR110)  
C21,C22:1000pF(GR40)  
C23,C24,C25,C26,C27,C28:13pF(GR708)  
R1,R2=20ohm  
R3,R4=51ohm

Board material:Teflon Thickness=0.6(mm)  
Specific dielectric constant=2.6

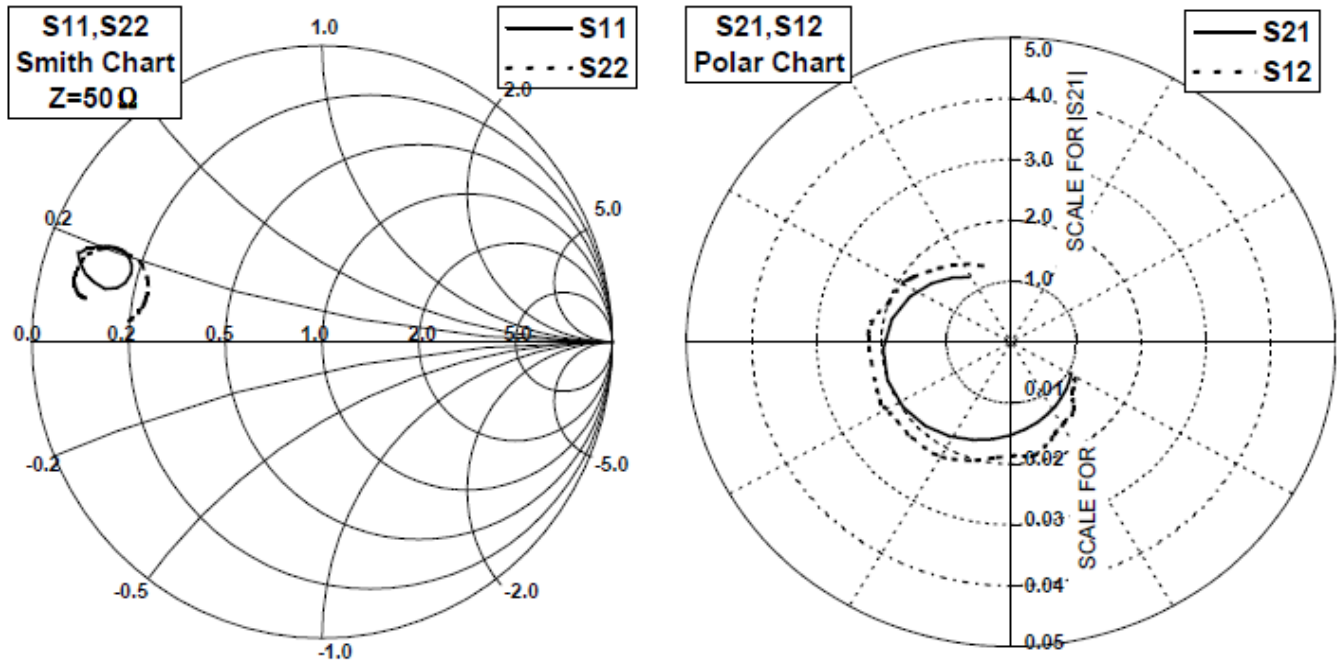
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## MGFL48V1920 S-parameters( Ta=25deg.C , VDS=12(V),IDS=1.5(A) )



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f (GHz)	S Parameters (TYP.)							
	S11		S21		S12		S22	
	Mag.	Ang(deg.)	Mag.	Ang(deg.)	Mag.	Ang(deg.)	Mag.	Ang(deg.)
1.50	0.889	160.2	1.056	-28.4	0.012	-31.0	0.830	169.7
1.55	0.879	159.5	1.101	-35.3	0.012	-38.3	0.837	169.6
1.60	0.869	158.7	1.147	-42.4	0.013	-40.8	0.840	169.5
1.65	0.854	158.2	1.197	-49.6	0.014	-48.0	0.846	169.4
1.70	0.843	157.6	1.253	-57.1	0.015	-50.4	0.854	169.2
1.75	0.829	157.2	1.310	-64.9	0.016	-65.6	0.862	168.6
1.80	0.814	156.6	1.379	-73.0	0.017	-67.8	0.870	167.7
1.85	0.800	156.3	1.451	-81.6	0.019	-79.1	0.878	166.8
1.90	0.782	155.8	1.529	-90.6	0.019	-88.1	0.881	165.3
1.95	0.761	155.9	1.617	-100.0	0.019	-98.3	0.877	163.8
2.00	0.741	156.1	1.710	-110.3	0.020	-108.0	0.873	161.9
2.05	0.722	157.0	1.813	-121.5	0.022	-121.7	0.858	159.8
2.10	0.705	158.5	1.909	-133.8	0.022	-136.4	0.827	157.7
2.15	0.697	160.7	1.977	-147.2	0.022	-150.5	0.782	156.1
2.20	0.707	163.6	2.005	-161.9	0.022	-153.5	0.732	156.0
2.25	0.730	165.5	1.971	-176.8	0.022	176.6	0.673	157.4
2.30	0.769	166.6	1.873	168.3	0.020	161.0	0.635	161.2
2.35	0.811	165.6	1.725	154.3	0.019	148.0	0.624	166.0
2.40	0.847	164.3	1.560	141.6	0.016	132.7	0.635	170.3
2.45	0.875	162.3	1.395	130.6	0.015	118.7	0.661	173.3
2.50	0.895	160.1	1.246	120.8	0.013	105.3	0.687	175.2

This S-Parameter data show measurements performed on each single-ended FET.

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