MITSUBISHI ELECTRIC

< L/S band internally matched power GaAs FET >

MGFL45V1920A

1.9 – 2.0 GHz BAND / 32W

DESCRIPTION

The MGFL45V1920A is an internally impedance-matched 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

Class A operation
Internally matched to 50(ohm) system
- High output power
  P1dB=32W (TYP.) @f=1.9 - 2.0GHz
- High power gain
  GLP=13.0dB (TYP.) @f=1.9 - 2.0GHz
- High power added efficiency
  P.A.E.=45% (TYP.) @f=1.9 - 2.0GHz
- Low distortion [item -51]
  IM3=-45dBc (TYP.) @Po=34.5dBm S.C.L

APPLICATION

- item 01 : 1.9 - 2.0 GHz band power amplifier
- item 51 : 1.9 - 2.0 GHz band digital radio communication

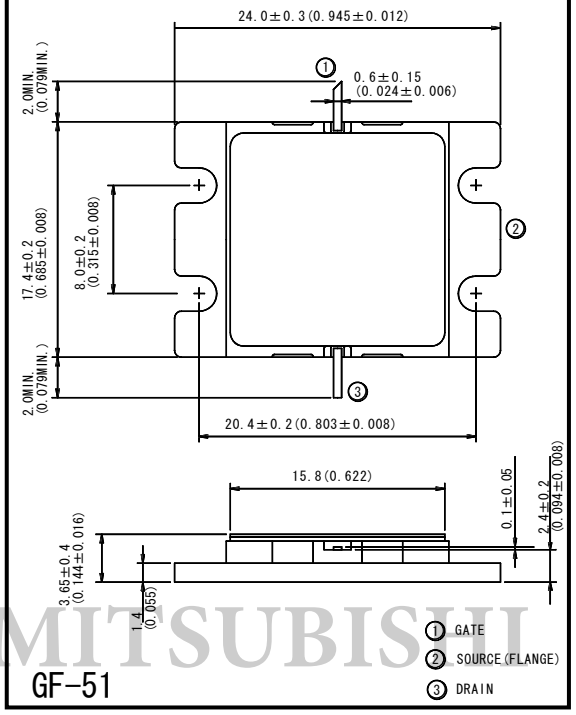
QUALITY

- IG

RECOMMENDED BIAS CONDITIONS

- VDS=10V • ID=6.5A • RG=25ohm

OUTLINE DRAWING Unit : millimeters (inches)



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	22	A
IGR	Reverse gate current	-61	mA
IGF	Forward gate current	76	mA
PT *1	Total power dissipation	100	W
Tch	Cannel temperature	175	°C
Tstg	Storage temperature	-65 to +175	°C

*1 : Tc=25°C

Keep Safety first in your circuit designs!

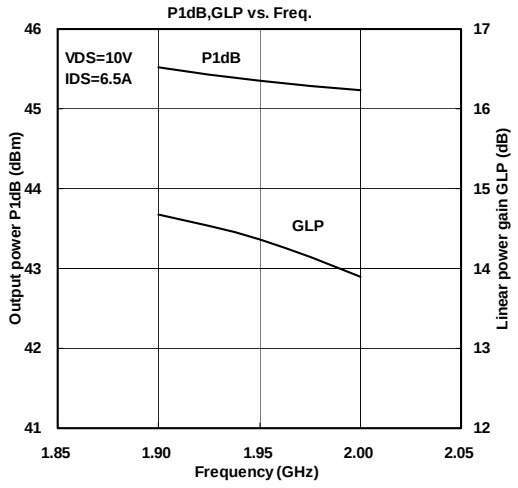
Mitsubishi Electric Corporation puts the maximum effort into making semiconductor products better and more reliable , but there is always the possibility that trouble may occur with them. Trouble with semiconductors may lead to personal injury , fire or property damage. Remember to give due consideration to safety when making your circuit designs , with appropriate measure such as (I) placement of substitutive , auxiliary circuits , (ii) use of non-flammable material or (iii) prevention against any malfunction or mishap.

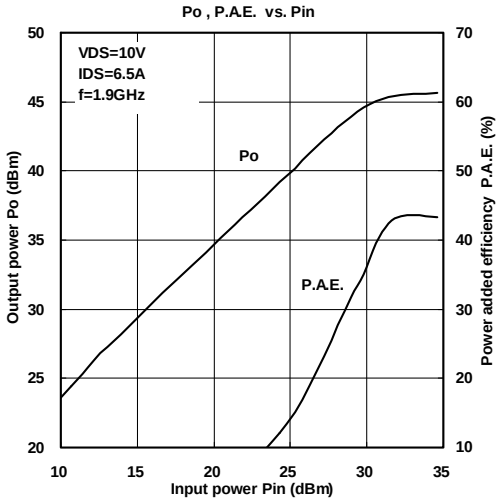
Electrical characteristics (Ta=25°C)

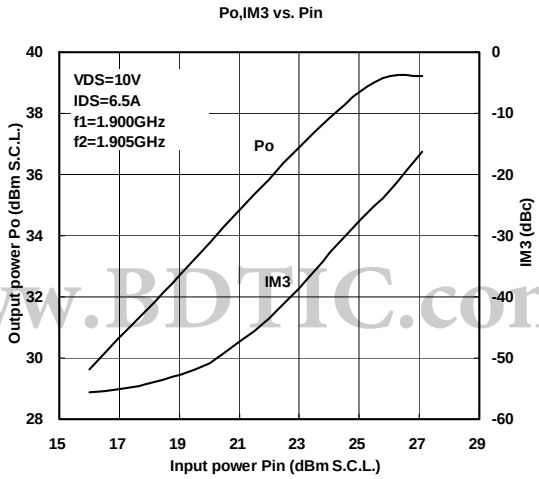
Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
VGS(off)	Gate to source cut-off voltage	VDS=3V,ID=60mA	-	-	-5	V
P1dB	Output power at 1dB gain compression	VDS=10V,ID(RF off)=6.5A	44	45	-	dBm
GLP	Linear Power Gain	f=1.9 - 2.0GHz	12	13	-	dB
ID	Drain current		-	7.5	-	A
P.A.E.	Power added efficiency		-	45	-	%
IM3 *2	3rd order IM distortion		-42	-45	-	dBc
Rth(ch-c) *3	Thermal resistance	delta Vf method	-	-	1.5	°C/W

*2 :item -51 ,2 tone test,Po=34.5dBm Single Carrier Level ,f=1.9,2.0GHz,delta f=5MHz
*3 :Channel-case

MGFL45V1920A TYPICAL CHARACTERISTICS







MGFL45V1920A S-parameters (Ta=25deg.C , VDS=10(V),IDS=6.5(A))

f	S-Parameter (TYP.)							
	S11		S21		S12		S22	
(GHz)	Magn.	Angle(deg)	Magn.	Angle(deg)	Magn.	Angle(deg)	Magn.	Angle(deg)
1.70	0.55	53	4.18	-151	0.03	-176	0.49	66
1.75	0.41	27	4.76	-170	0.03	161	0.44	51
1.80	0.29	-16	5.21	167	0.03	135	0.37	33
1.85	0.28	-78	5.43	145	0.04	108	0.28	11
1.90	0.38	-124	5.34	122	0.04	84	0.20	-21
1.95	0.49	-152	5.07	102	0.04	59	0.16	-61
2.00	0.57	-170	4.74	84	0.04	41	0.16	-98
2.05	0.62	178	4.48	70	0.03	25	0.19	-120
2.10	0.65	166	4.23	54	0.03	7	0.23	-136
2.15	0.66	156	4.05	40	0.03	-10	0.26	-147
2.20	0.66	146	3.95	26	0.03	-24	0.30	-154

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