

MGFL45V1920

1.9 - 2.0GHz BAND 32W INTERNALLY MATCHED GaAs FET

DESCRIPTION

The MGFL45V1920 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 (TARGET)

- Class A operation
- Internally matched to 50(ohm) system
- High output power
P1dB = 32W (TYP.) @ f=1.9 - 2.0 GHz
- High power gain
GLP = 13 dB (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 ratio communication

QUALITY GRADE

IG

RECOMMENDED BIAS CONDITIONS

- VDS = 10 (V)
- ID = 6.5 (A)
- RG=25 (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	22	A
IGR	Reverse gate current	-61	mA
IGF	Forward gate current	76	mA
PT *1	Total power dissipation	88	W
Tch	Channel temperature	175	deg.C
Tstg	Storage temperature	-65 - +175	deg.C

*1 : Tc=25 (deg.C)

ELECTRICAL CHARACTERISTICS (TARG (Ta=25 deg.C)

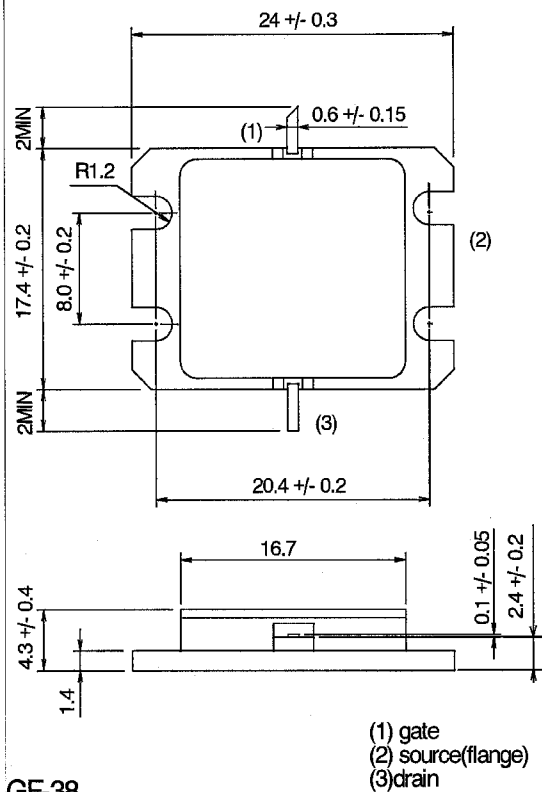
Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
VGS(off)	Saturated drain current	VDS = 3V , ID = 60mA	-	-	-5	V
P1dB	Output power at 1dB gain compression	VDS=10V, ID(RF off)=6.5A, f=1.9 - 2.0GHz	44	45	-	dBm
GLP	Linear power gain		12	13	-	dB
ID	Drain current		-	7.5	-	A
P.A.E.	Power added efficiency		-	45	-	%
IM3 *2	3rd order IM distortion		-42	-45	-	dBc
Rth(ch-c) *3	Thermal resistance	delta Vf method	-	-	1.7	deg.C/W

*2 : item -51,2 tone test, Po=34.5dBm Single Carrier Level, f=1.9, 1.95, 2.0GHz, delta f=5MHz

*3 : Channel-case

OUTLINE

unit : mm



GF-38

- (1) gate
- (2) source(flange)
- (3) drain

< Keep safety first in your circuit designs! >

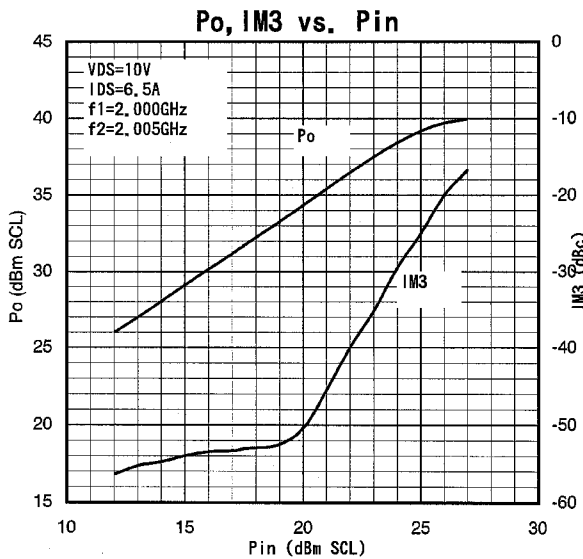
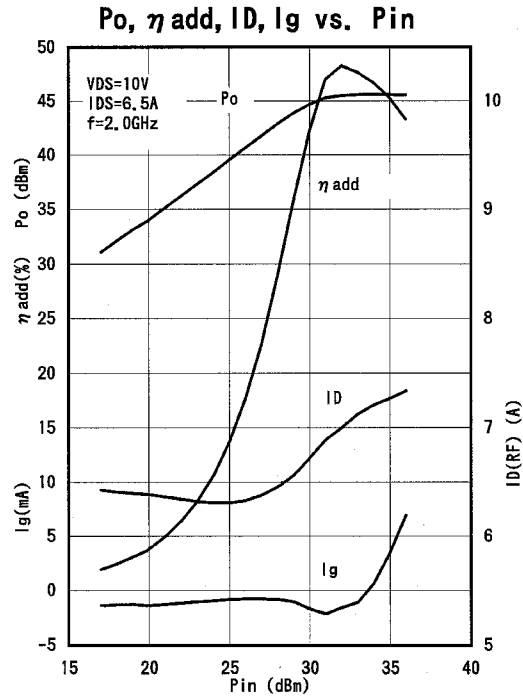
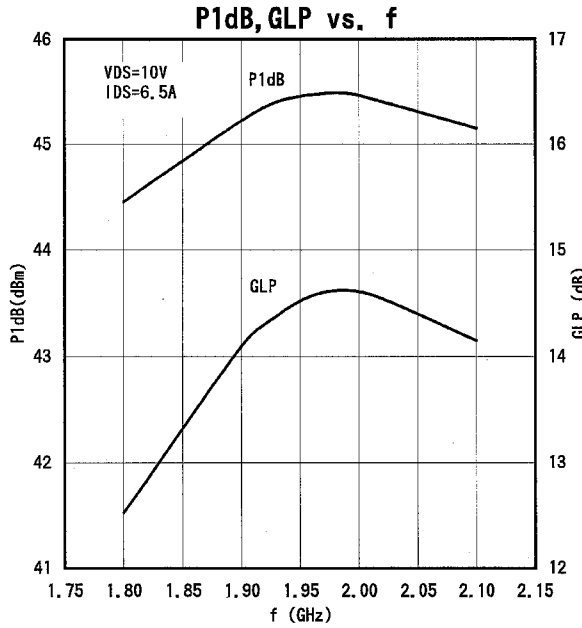
Mitsubishi Electric Corporation puts the maximum effort into making semiconductor products better and more reliable, but there is always the possibility that trouble may occur with them. Trouble with semiconductors may lead to personal injury, fire or property damage. Remember to give due consideration to safety when making your circuit designs, with appropriate measures such as (1) placement of substitutive, auxiliary circuits, (2) use of non-flammable material or (3) prevention against any malfunction or mishap.



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1.9 - 2.0GHz BAND 32W INTERNALLY MATCHED GaAs FET

Typical data (Ta=25°C)



S parameters (Ta=25°C , VDS=10(V), IDS=6.5(A))

f (GHz)	S-Parameter (TYP.)							
	S11		S21		S12		S22	
	Magn.	Angle(deg)	Magn.	Angle(deg)	Magn.	Angle(deg)	Magn.	Angle(deg)
1.80	0.39	19	4.67	-176	0.028	154	0.52	59
1.85	0.25	-16	5.09	164	0.032	130	0.46	45
1.90	0.18	-71	5.39	143	0.033	108	0.39	28
1.95	0.22	-131	5.55	122	0.034	83	0.31	7
2.00	0.29	-166	5.54	101	0.037	58	0.25	-17
2.05	0.35	168	5.43	81	0.033	41	0.20	-50
2.10	0.38	146	5.33	63	0.038	21	0.19	-80



MHGL45V1920 Po,IM3,IM5 vs. Pin

Bias conditions : $V_{DS}=10(V)$, $I_D(RF\ off)=6.5(A)$, $R_g=25(\text{ohm})$
 2-tone test , delta $f=5(\text{MHz})$

