MGFC38V6472

6.4～7.2GHz BAND 6W INTERNALLY MATCHED GaAs FET

DESCRIPTION

The MGFC38V6472 is an internally impedance-matched GaAs power FET especially designed for use in 6.4～7.2 GHz band amplifiers. The hermetically sealed metal-ceramic package guarantees high reliability.

FEATURES

- Class A operation
- Internally matched to 50Ω system
- High output power
  P_{1dB} = 6W (TYP) @ 6.4～7.2GHz
- High power gain
  G_{LP} = 9 dB (TYP) @ 6.4～7.2GHz
- High power added efficiency
  η_{add} = 31% (TYP) @ 6.4～7.2GHz, P_{1dB}
- Hermetically sealed metal-ceramic package
- Low distortion [Item: -51]
  IM_3 = -45 dBc (TYP) @ P_o = 27 (dBm) S.C.L.

APPLICATION

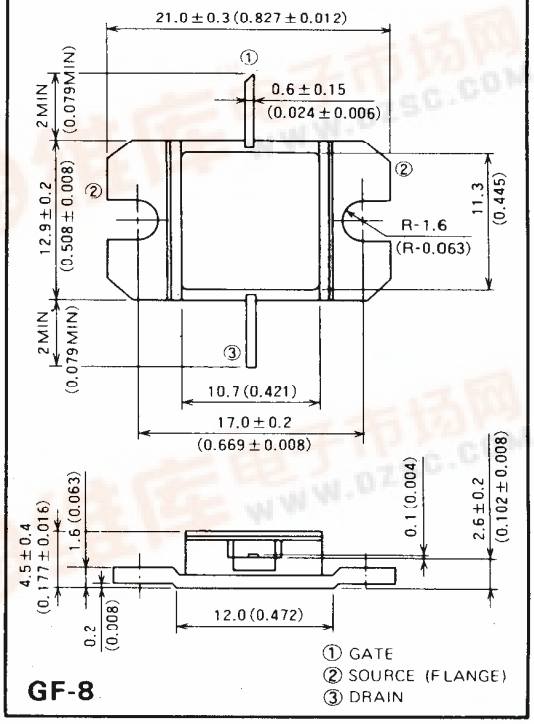
Item-01: 6.4～7.2GHz band power amplifier
Item-51: Digital radio communication

QUALITY GRADE

- IG

OUTLINE DRAWING

Unit: millimeters (inches)



GF-8

ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

Symbol	Parameter	Ratings	Unit
V_{GDO}	Gate to drain voltage	−15	V
V_{GSO}	Gate to source voltage	−15	V
I_D	Drain current	5.0	A
I_{GR}	Reverse gate current	−15	mA
I_{GF}	Forward gate current	31.5	mA
P_T	Total power dissipation *1	30	W
T_{ch}	Channel temperature	175	°C
T_{stg}	Storage temperature	−65～+175	°C

*1: T_C = 25°C

RECOMMENDED BIAS CONDITIONS

- V_{DS} = 10V
- I_D = 1.8A
- Rg = 100Ω
- Refer to Bias Procedure

ELECTRICAL CHARACTERISTICS (Ta=25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
I_{DSS}	Saturated drain current	V_{DS}=3V, V_{GS}=0V	—	—	5.0	A
g_m	Transconductance	V_{DS}=3V, I_D=1.5A	—	2	—	S
$V_{GS(off)}$	Gate to source cut-off voltage	V_{DS}=3V, I_D=15mA	—	−3.5	−5.0	V
P_{1dB}	Output power at 1dB gain compression	V_{DS}=10V, I_D=1.8A, f=6.4～7.2GHz	37	38	—	dBm
G_{LP}	Linear power gain		8	9	—	dB
I_D	Drain current		—	1.7	—	A
η_{add}	Power added efficiency		—	31	—	%
IM_3	3rd order IM distortion *1		−42	−45	—	dBc
$R_{th(ch-c)}$	Thermal resistance *2	△V_f method	—	—	5.0	°C/W

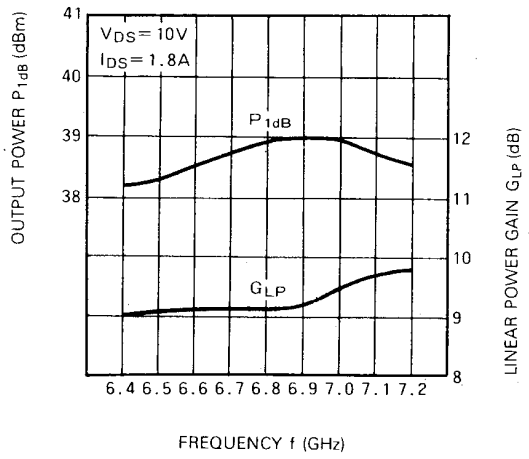
*1: Item-51, 2-tone test P_o = 27 dBm Single Carrier Level f = 7.2GHz Δf = 10 MHz. *2: Channel to case

MGFC38V6472

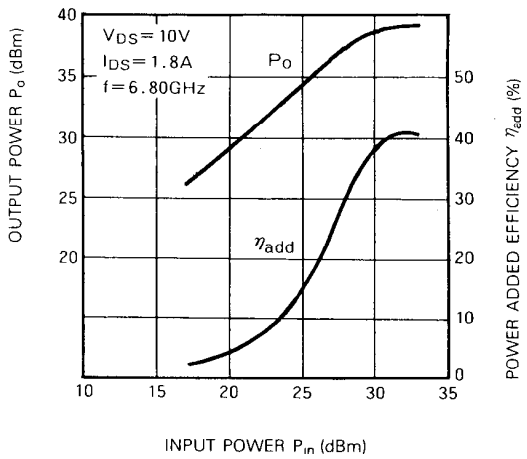
6.4~7.2GHz BAND 6W INTERNALLY MATCHED GaAs FET

TYPICAL CHARACTERISTICS (Ta=25℃)

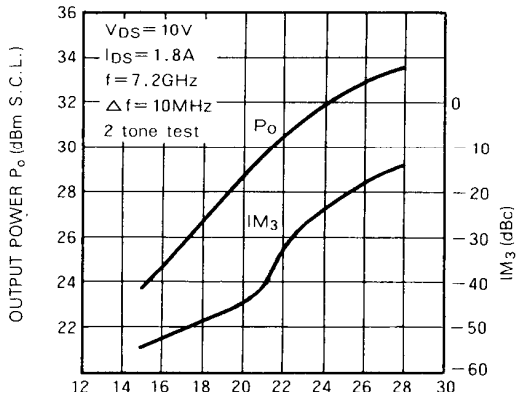
P_{1dB}, G_{LP} vs. f



P_o, η_{add} vs. P_{in}



P_o, IM_3 vs. P_{in}



S PARAMETERS (Ta=25℃, VDS=10V, IDS=1.8A)

f (GHz)	S Parameters (TYP.)							
	S_{11}		S_{21}		S_{12}		S_{22}	
	Magn.	Angle (deg.)	Magn.	Angle (deg.)	Magn.	Angle (deg.)	Magn.	Angle (deg.)
6.4	0.56	154	2.86	− 47	0.049	− 91	0.15	−172
6.5	0.52	142	2.96	− 64	0.051	−105	0.17	148
6.6	0.45	131	2.94	− 80	0.053	−123	0.21	128
6.7	0.39	123	3.01	− 97	0.059	−138	0.27	106
6.8	0.30	119	3.02	−115	0.062	−155	0.30	89
6.9	0.25	126	2.98	−134	0.071	−171	0.31	76
7.0	0.21	143	2.91	−153	0.070	170	0.30	57
7.1	0.24	153	2.84	−166	0.070	161	0.28	44
7.2	0.33	161	2.68	174	0.063	138	0.26	30