PRELIMINARY

Notice: This is not a final specification. Some parametric limits are subject to change.

MGFC36V5964A

5.9~6.4GHz BAND 4W INTERNALLY MATCHED GaAs FET

DESCRIPTION

The MGFC36V5964A is an internally impedance-matched GaAs power FET especially designed for use in 5.9~6.4GHz 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} = 4W(TYP) @5.9~6.4GHz
- High power gain
  G_{LP} = 10dB(TYP) @5.9~6.4GHz
- High power added efficiency
  η_{add} = 30%(TYP) @5.9~6.4GHz
- Hermetically sealed metal-ceramic package
- Low distortion [Item : −51]
  IM_3 = −45dBc(TYP) @P_o = 25(dBm) S.C.L.

APPLICATION

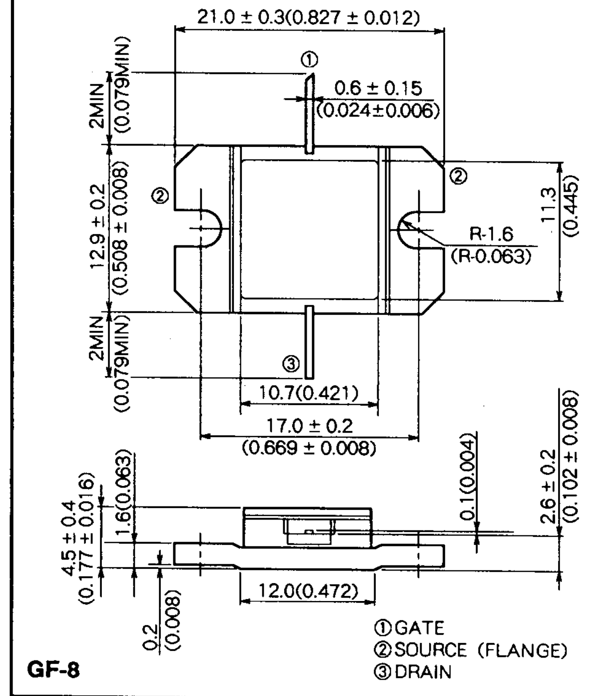
Item-01 : 5.9~6.4GHz band power amplifier
Item-51 : Digital radio communication

QUALITY GRADE

- IG

OUTLINE DRAWING

Unit : millimeters (inches)



RECOMMENDED BIAS CONDITIONS

- V_{DS} = 10V
- I_D = 1.2A
- R_G = 100(Ω)
- Refer to Bias Procedure

ABSOLUTE MAXIMUM RATINGS (Ta = 25℃)

Symbol	Parameter	Ratings	Unit
V_{GDO}	Gate to drain voltage	−15	V
V_{GSO}	Gate to source voltage	−15	V
I_D	Drain current	3.75	A
I_{GR}	Reverse gate current	−10	mA
I_{GF}	Forward gate current	21	mA
P_T	Total power dissipation *1	25	W
T_{ch}	Channel temperature	175	℃
T_{stg}	Storage temperature	−65~+175	℃

*1 : Tc = 25℃

ELECTRICAL CHARACTERISTICS (Ta = 25℃)

Symbol	Parameter	Test conditions	Limits Min	Limits Typ	Limits Max	Unit
I_{DSS}	Saturated drain current	V_{DS} = 3V, V_{GS} = 0V	−	−	3.75	A
g_m	Transconductance	V_{DS} = 3V, I_D = 1.1A	−	1	−	S
$V_{GS(off)}$	Gate to source cut-off voltage	V_{DS} = 3V, I_D = 10mA	−	−	−4.5	V
P_{1dB}	Output power at 1dB gain compression	V_{DS} = 10V, I_D = 1.2A, f = 5.9~6.4GHz	35	36	−	dBm
G_{LP}	Linear power gain		9	10	−	dB
I_D	Drain current		−	−	1.8	A
η_{add}	Power added efficiency		−	30	−	%
IM_3	3rd order IM distortion *1		−42	−45	−	dBc
$R_{th(ch-c)}$	Thermal resistance *2	ΔVf method	−	5	6	℃/W

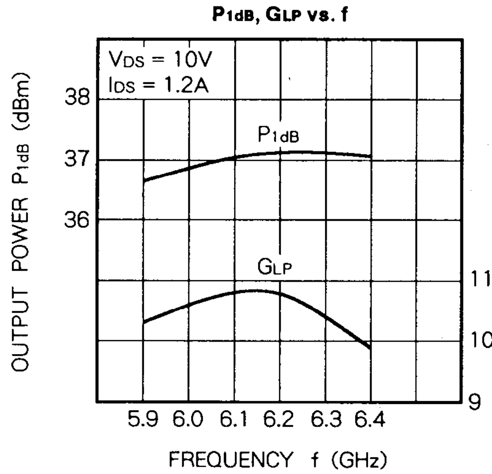
*1 : Item-51, 2-tone test Po = 25dBm Single Carrier Level f = 6.4GHz Δf = 10MHz *2 : Channel to case

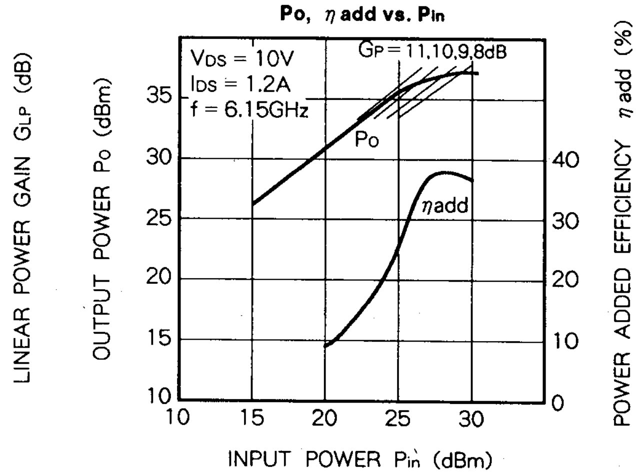
NOV. '97

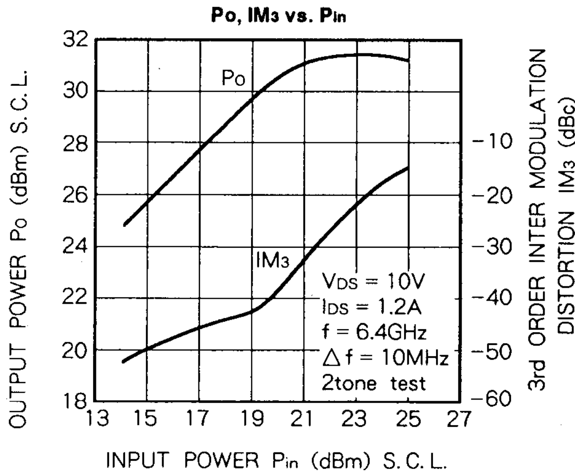
PRELIMINARY

Notice: This is not a final specification.
Some parametric limits are subject to change.

TYPICAL CHARACTERISTICS







S PARAMETERS (T_a = 25℃, V_{DS} = 10V, I_{DS} = 1.2A)

f (GHz)	S parameters							
	S_{11}		S_{21}		S_{12}		S_{22}	
	Magn.	Angle(deg.)	Magn.	Angle(deg.)	Magn.	Angle(deg.)	Magn.	Angle(deg.)
5.9	0.22	−171	3.29	−27	0.079	−70	0.47	−172
6.0	0.12	145	3.40	−44	0.081	−89	0.41	178
6.1	0.12	60	3.49	−59	0.082	−104	0.34	166
6.2	0.23	20	3.49	−75	0.084	−120	0.27	153
6.3	0.35	−1	3.32	−91	0.081	−135	0.19	139
6.4	0.44	−16	3.08	−106	0.079	−149	0.13	124