

MGFC44V5964

5.9~6.4GHz BAND 24W INTERNALLY MATCHED GaAs FET

DESCRIPTION

The MGFC44V5964 is an internally impedance-matched GaAs power FET especially designed for use in 5.9 ~ 6.4 GHz band amplifiers. The hermetically sealed metal-ceramic package guarantees high reliability.

FEATURES

- Class A operation
- Internally matched to 50Ω system
- High output power
 $P_{1dB} = 24W (TYP) @ 5.9 \sim 6.4 GHz$
- High power gain
 $G_{LP} = 9 dB (TYP) @ 5.9 \sim 6.4 GHz$
- High power added efficiency
 $\eta_{add} = 33% (TYP) @ 5.9 \sim 6.4 GHz$
- Hermetically sealed metal-ceramic package
- Low distortion [Item: -51]
 $IM_3 = -42dBc(MIN) @ P_o = 33.5(dBm) S.C.L.$

APPLICATION

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

QUALITY GRADE

- IG

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	20	A
I _{GR}	Reverse gate current	-60	mA
I _{GF}	Forward gate current	126	mA
P _T	Total power dissipation *1	93	W
T _{ch}	Channel temperature	175	°C
T _{stg}	Storage temperature	-65 ~ +175	°C

*1: T_c = 25°C

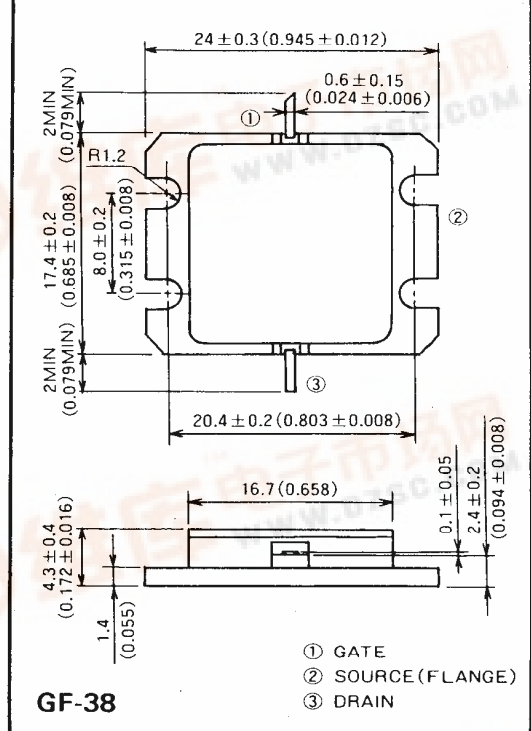
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
I _{DSS}	Saturated drain current	V _{DS} = 3V, V _{GS} = 0V	—	18	—	A
g _m	Transconductance	V _{DS} = 3V, I _D = 6.4A	—	6.5	—	S
V _{GS(off)}	Gate to source cut-off voltage	V _{DS} = 3V, I _D = 120mA	-2	—	-5	V
P _{1dB}	Output power at 1dB gain compression	V _{DS} = 10V, I _D = 6.4A, f = 5.9 ~ 6.4GHz	43	44	—	dBm
G _{LP}	Linear power gain		8	9	—	dB
η _{add}	Power added efficiency		—	33	—	%
IM ₃	3rd order IM distortion *1		-42	—	—	dBc
R _{th(ch-c)}	Thermal resistance *2		ΔV _t method	—	—	1.6

*1: Item-51, 2-tone test P_o = 33.5 dBm Single Carrier Level f = 6.4 GHz Δf = 10 MHz. *2: Channel to case

OUTLINE DRAWING

Unit: millimeters (inches)



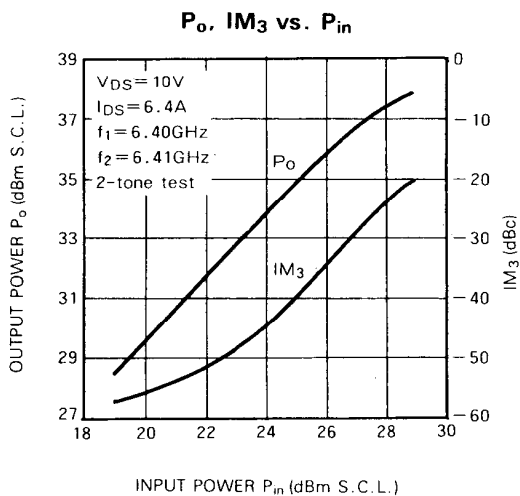
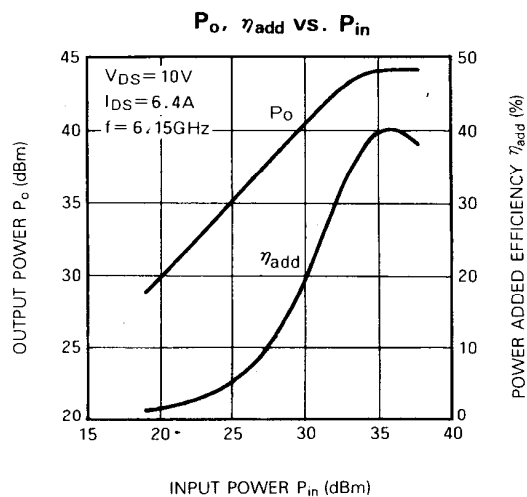
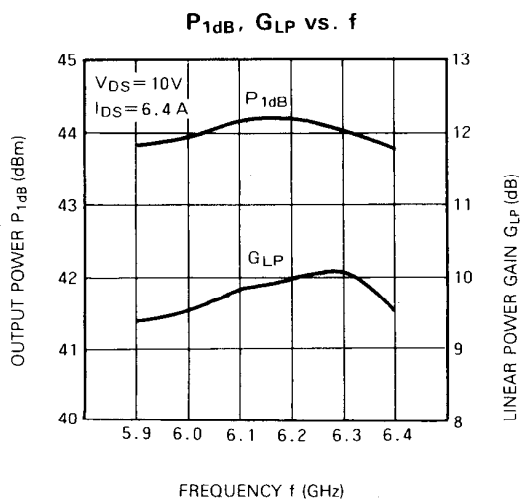
RECOMMENDED BIAS CONDITIONS

- V_{DS} = 10V
- I_D = 6.4A
- R_g = 25 Ω
- Refer to Bias Procedure



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TYPICAL CHARACTERISTICS (Ta=25°C)



S PARAMETERS (Ta=25°C, V_{DS}=10V, I_{DS}=6.4A)

f (GHz)	S Parameter (TYP.)							
	S ₁₁		S ₂₁		S ₁₂		S ₂₂	
	Magn.	Angle (deg.)	Magn.	Angle (deg.)	Magn.	Angle (deg.)	Magn.	Angle (deg.)
5.9	0.48	117	2.79	-61	0.033	-114	0.32	164
6.0	0.43	98	2.81	-79	0.046	-141	0.35	145
6.1	0.36	78	2.84	-97	0.052	-152	0.37	127
6.2	0.28	54	2.81	-115	0.062	-174	0.38	108
6.3	0.21	27	2.79	-132	0.070	167	0.39	96
6.4	0.13	-9	2.77	-150	0.078	149	0.40	80