

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]
 $IM_3 = -42dBc(MIN) @ Po = 33.5(dBm) S.C.L.$

APPLICATION

Item -01: 5.9 ~ 6.4 GHz band power amplifier

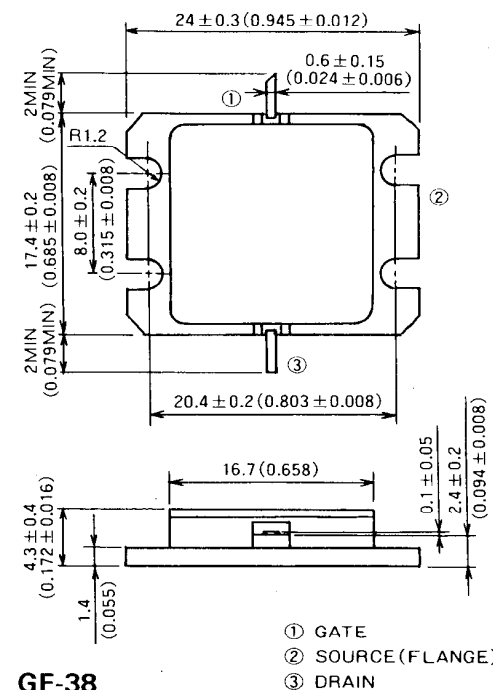
Item -51: Digital radio communication

QUALITY GRADE

- IG

OUTLINE DRAWING Unit: millimeters (inches)

Unit: millimeters (inches)



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: $T_c = 25^\circ\text{C}$

RECOMMENDED BIAS CONDITIONS

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

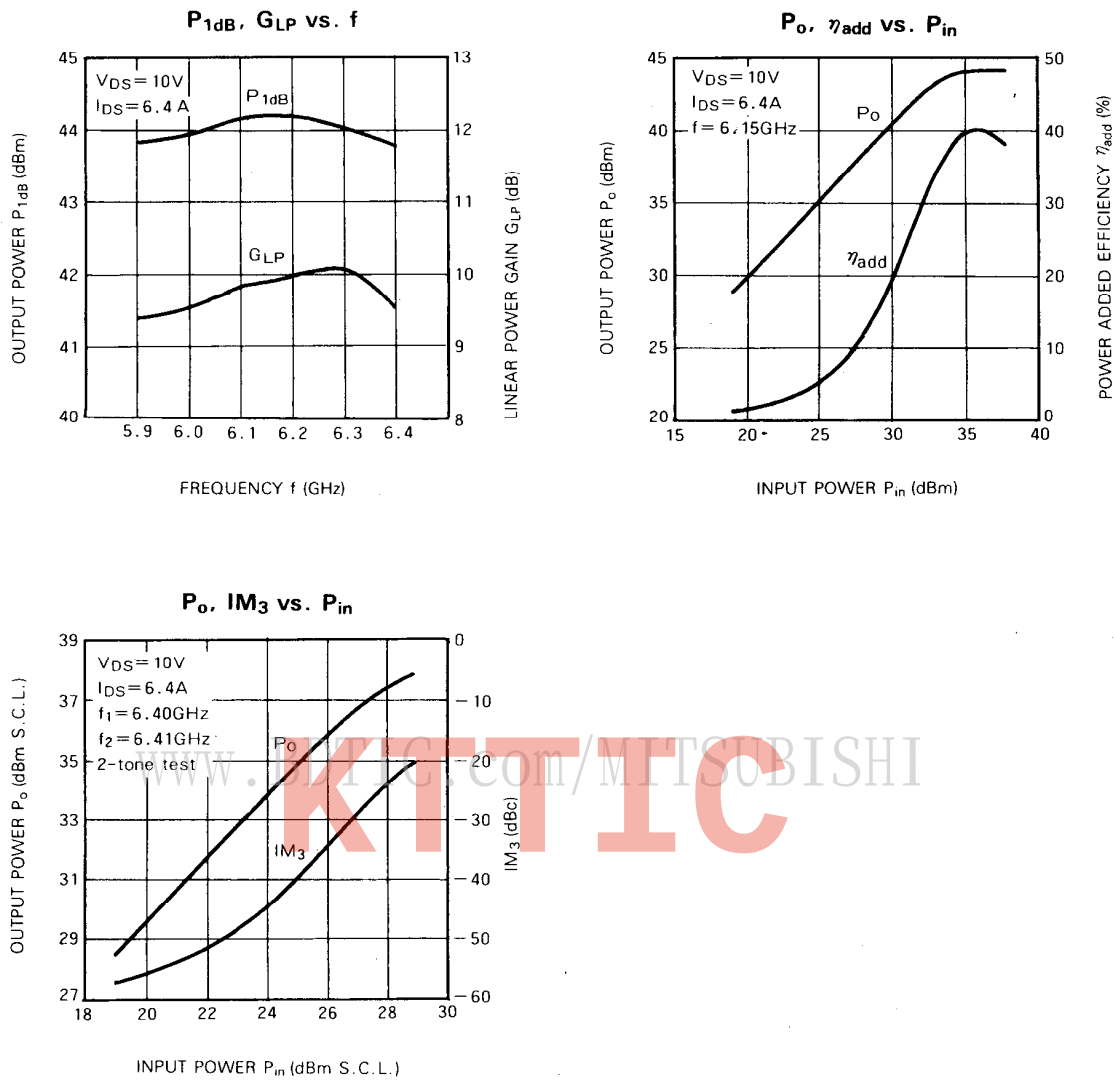
ELECTRICAL CHARACTERISTICS (T_a=25°C)

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	$V_{DS}=10V, I_D=6.4A, f=5.9\sim6.4GHz$	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_f method	—	—	1.6	$^{\circ}C/W$

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

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TYPICAL CHARACTERISTICS (Ta=25℃)



S PARAMETERS (Ta=25℃, VDS=10V, IDS=6.4A)

f (GHz)	S Parameter (TYP.)							
	S11		S21		S12		S22	
	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

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