MITSUBISHI SEMICONDUCTOR <GaAs FET>

MGFC41V5964

5.9 - 6.4GHz BAND 12W INTERNALLY MATCHED GaAs FET

DESCRIPTION

The MGFC41V5964 is an internally impedence matched GaAs power FET especially designed for use in 5.9 - 6.4 GHz band amplifiers. The hermetically sealed metal-ceramic package guarantees high raliability.

FEATURES

Internally matched to 50ohm system
High output power
P1dB = 12W (TIP.) @ f=5.9 - 6.4 Hz
High power gain
GLP = 9.5 dB (TYP.) @ f=5.9 - 6.4 GHz
High power added efficiency
Eadd = 33 % (TYP.) @ f=5.9 - 6.4 GHz
Low Distortion[Item-51]
IM3=-45 dBc(TYP.)@Po=30dBm S.C.L.

APPLICATION

5.9 - 6.4GHz band amplifiers

QUALITY GRADE

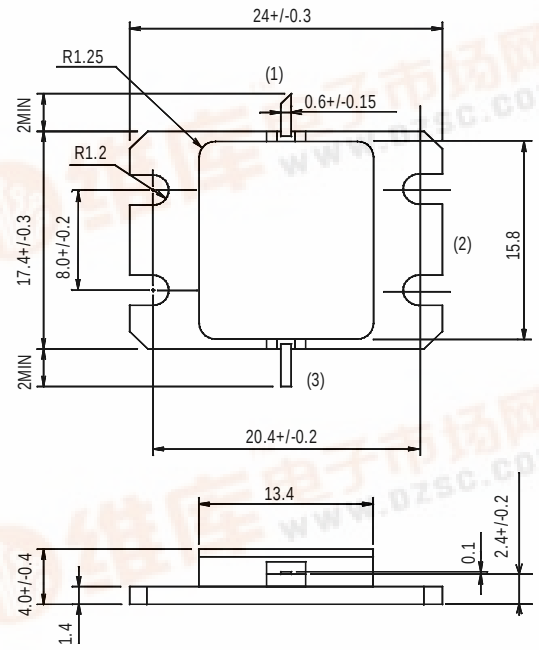
IG

RECOMMENDED BIAS CONDITIONS

VDS = 10V
ID = 3.4 A
Rg = 50(ohm) Refer to Bias Procedure

OUTLINE DRAWING

Unit: millimeters (inches)



(1): GATE
(2): SOURCE (FLANGE)
(3): DRAIN

GF-18

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Ratings	Unit
V_{GDO}	Gate to drain voltage	-15	V
V_{GSO}	Gate to source voltage	-15	V
I_D	Drain current	12	A
I_{GR}	Reverse gate current	-30	mA
I_{GF}	Forward gate current	63	mA
P_T	Total power dissipation *1	53.6	W
Tch	Channel temperature	175	DegreesC
Tstg	Storage temperature	-65 to +175	DegreesC

*1 : Tc=25 DegreesC

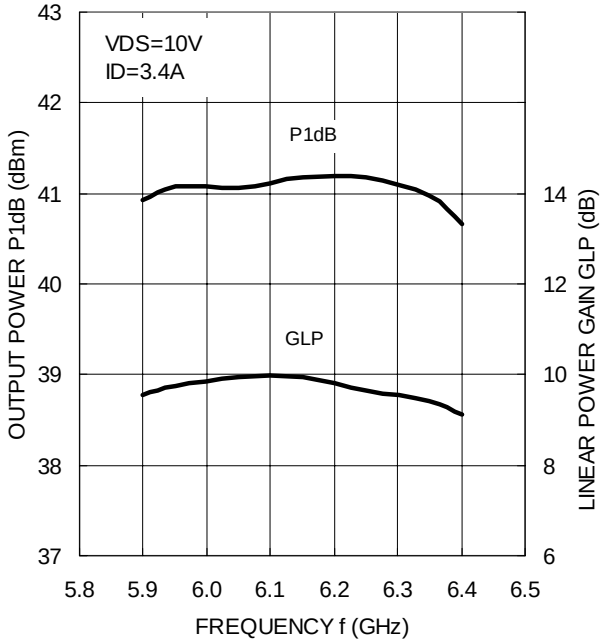
ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
IDSS	Saturated drain current	VDS = 3V , VGS = 0V	-	-	12	A
gm	Transconductance	VDS = 3V , ID = 3.0A	-	3	-	S
VGS(off)	Gate to source cut-off voltage	VDS = 3V , ID = 30mA	-	-	-5	V
P1dB	Output power at 1dB gain compression	VDS = 10V , ID = 3.4A , f = 5.9 - 6.4 GHz	40	41	-	dBm
GLP	Linear power gain		8.5	9.5	-	dB
Eadd	Power added efficiency		-	33	-	%
IM3 *2	3rd order IM distortion		-42	-45	-	dBc
Rth(ch-c)	Thermal resistance *1	Delta Vf method	-	-	2.8	C/W

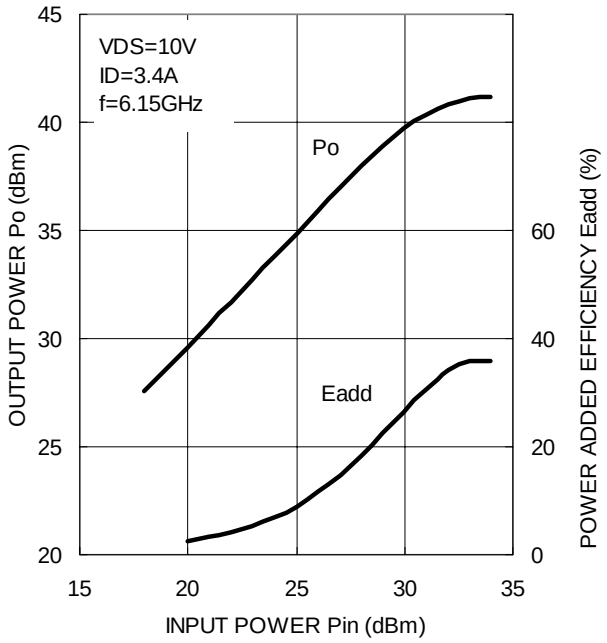
*1 : Channel to case
*2 : Item-51,2tone test,Po=30dBm Single Carrier Level,f=6.4GHz,Delta f=10MHz

TYPICAL CHARACTERISTICS (Ta=25 DegreesC)

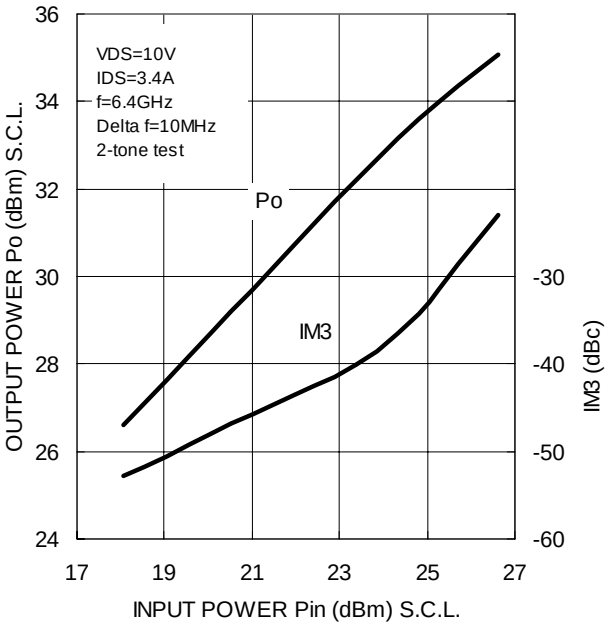
P1dB,GLP vs. f



Po,Eadd vs. Pin



Po,IM3 vs. Pin



S P A)

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.)
5.9	0.37	124	2.98	-81	0.051	-131	0.31	111
6.0	0.35	105	2.94	-96	0.053	-145	0.31	102
6.1	0.32	84	2.91	-112	0.058	-163	0.30	94
6.2	0.29	64	2.88	-128	0.060	-177	0.29	87
6.3	0.25	38	2.86	-144	0.064	167	0.26	82
6.4	0.23	8	2.83	-161	0.066	152	0.22	81