

< C band internally matched power GaAs FET >

# MGFC44V3642

3.6 – 4.2 GHz BAND / 24W

## DESCRIPTION

The MGFC44V3642 is an internally impedance-matched GaAs power FET especially designed for use in 3.6 – 4.2 GHz band amplifiers. The hermetically sealed metal-ceramic package guarantees high reliability.

## FEATURES

Class A operation

Internally matched to 50(ohm) system

- High output power  
P1dB=24W (TYP.) @f=3.6 – 4.2GHz
- High power gain  
GLP=11.0dB (TYP.) @f=3.6 – 4.2GHz
- High power added efficiency  
P.A.E.=35% (TYP.) @f=3.6 – 4.2GHz
- Low distortion [item -51]  
IM3=-42dBc (TYP.) @Po=33.5dBm S.C.L

## APPLICATION

- item 01 : 3.6 – 4.2 GHz band power amplifier
- item 51 : 3.6 – 4.2 GHz band digital radio communication

## QUALITY

- IG

## RECOMMENDED BIAS CONDITIONS

- VDS=10V • ID=6.4A • RG=25ohm

## Absolute maximum ratings (Ta=25°C)

Symbol	Parameter	Ratings	Unit
VGDO	Gate to drain breakdown voltage	-15	V
VGSO	Gate to source breakdown voltage	-15	V
ID	Drain current	20	A
IGR	Reverse gate current	-60	mA
IGF	Forward gate current	126	mA
PT *1	Total power dissipation	93	W
Tch	Channel temperature	175	°C
Tstg	Storage temperature	-65 to +175	°C

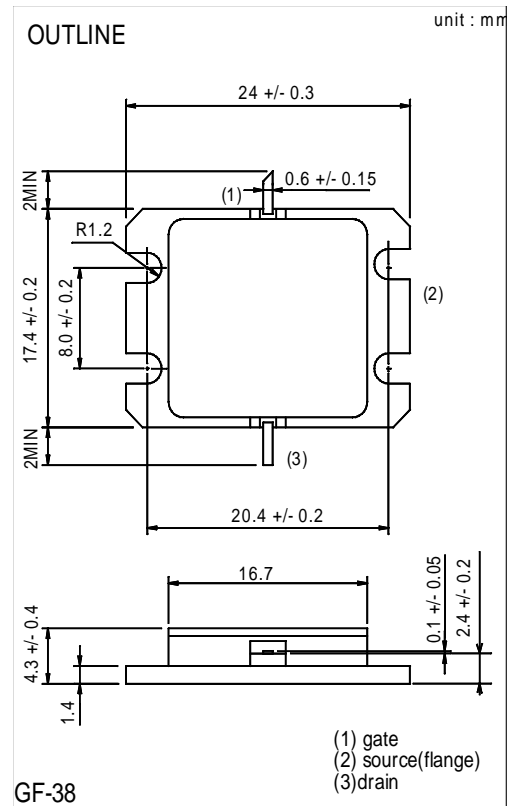
\*1 : Tc=25°C

## Electrical characteristics (Ta=25°C)

Symbol	Parameter	Test conditions	Limits			Unit	
			Min.	Typ.	Max.		
IDSS	Saturated drain current	VDS=3V, VGS=0V	-	18	-	A	
gm	Transconductance	VDS=3V, ID=6.4A	-	6.5	-	S	
VGS(off)	Gate to source cut-off voltage	VDS=3V, ID=120mA	-2	-	-5	V	
P1dB	Output power at 1dB gain compression	VDS=10V, ID(RF off)=6.4A f=3.6 – 4.2GHz	43	44	-	dBm	
GLP	Linear Power Gain		10	11	-	dB	
P.A.E.	Power added efficiency		-	35	-	%	
IM3 *2	3rd order IM distortion		-42	-45	-	dBc	
Rth(ch-c) *3	Thermal resistance		delta Vf method	-	-	1.6	°C/W

\*2 : item -51 , 2 tone test, Po=33.5dBm Single Carrier Level , f=4.2GHz, delta f=10MHz

\*3 : Channel-case



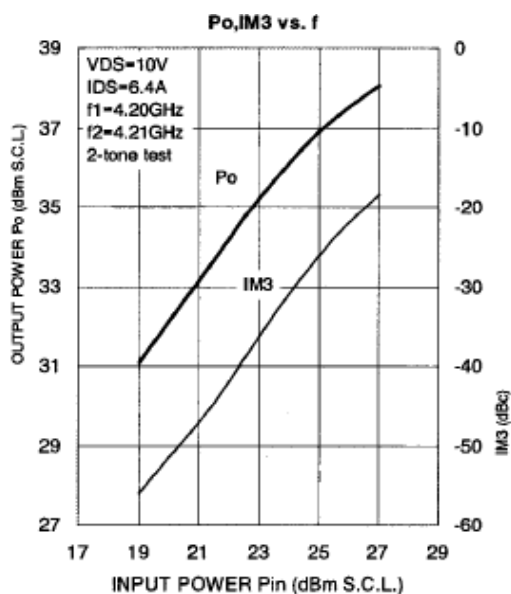
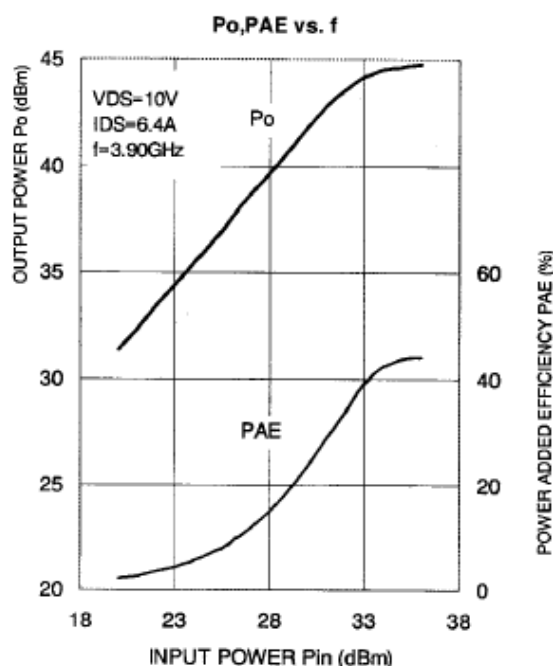
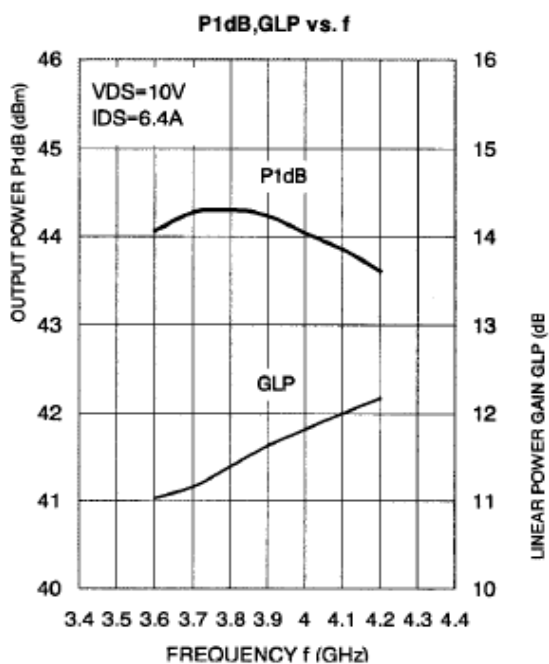
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## MGFC44V3642 TYPICAL CHARACTERISTICS( Ta=25deg.C )



## MGFC44V3642 S-parameters( Ta=25deg.C , VDS=10(V),IDS=6.4(A) )

f (GHz)	S Parameters(Typ.)							
	S11		S21		S12		S22	
	Magn.	Angle(deg.)	Magn.	Angle(deg.)	Magn.	Angle(deg.)	Magn.	Angle(deg.)
3.6	0.75	-23	2.91	-54	0.035	-102	-0.45	-16
3.7	0.72	-44	3.09	-77	0.038	-133	0.38	-40
3.8	0.70	-69	3.37	-102	0.049	-169	0.28	-75
3.9	0.61	-95	3.51	-129	0.052	176	0.23	-113
4.0	0.53	-122	3.65	-155	0.059	147	0.25	-153
4.1	0.42	-149	3.85	177	0.063	122	0.29	178
4.2	0.27	173	3.91	147	0.069	92	0.32	154

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