

< C band internally matched power GaAs FET >

# MGFC45V3642A

3.6 – 4.2 GHz BAND / 32W

## DESCRIPTION

The MGFC45V3642A 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=32W (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.=36% (TYP.) @f=3.6 – 4.2GHz
- Low distortion [item -51]  
IM3=-45dBc (TYP.) @Po=34.5dBm 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=8A • 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	25	A
IGR	Reverse gate current	-80	mA
IGF	Forward gate current	168	mA
PT *1	Total power dissipation	150	W
Tch	Channel temperature	175	°C
Tstg	Storage temperature	-65 to +175	°C

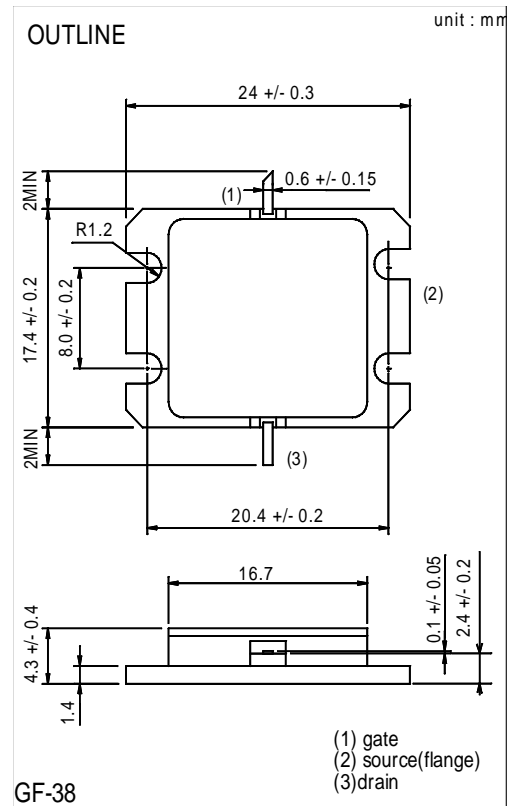
\*1 : Tc=25°C

## Electrical characteristics (Ta=25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
IDSS	Saturated drain current	VDS=3V, VGS=0V	-	24	-	A
gm	Transconductance	VDS=3V, ID=8A	-	8	-	S
VGS(off)	Gate to source cut-off voltage	VDS=3V, ID=160mA	-2	-	-5	V
P1dB	Output power at 1dB gain compression	VDS=10V, ID(RF off)=8A	44	45	-	dBm
GLP	Linear Power Gain	f=3.6 – 4.2GHz	10	11	-	dB
ID	Drain current		-	8	-	A
P.A.E.	Power added efficiency		-	36	-	%
IM3 *2	3rd order IM distortion		-42	-45	-	dBc
Rth(ch-c) *3	Thermal resistance	delta Vf method	-	0.8	1	°C/W

\*2 : item -51 , 2 tone test, Po=34.5dBm Single Carrier Level , f=3.6, 3.9, 4.2GHz, delta f=10MHz

\*3 : Channel-case



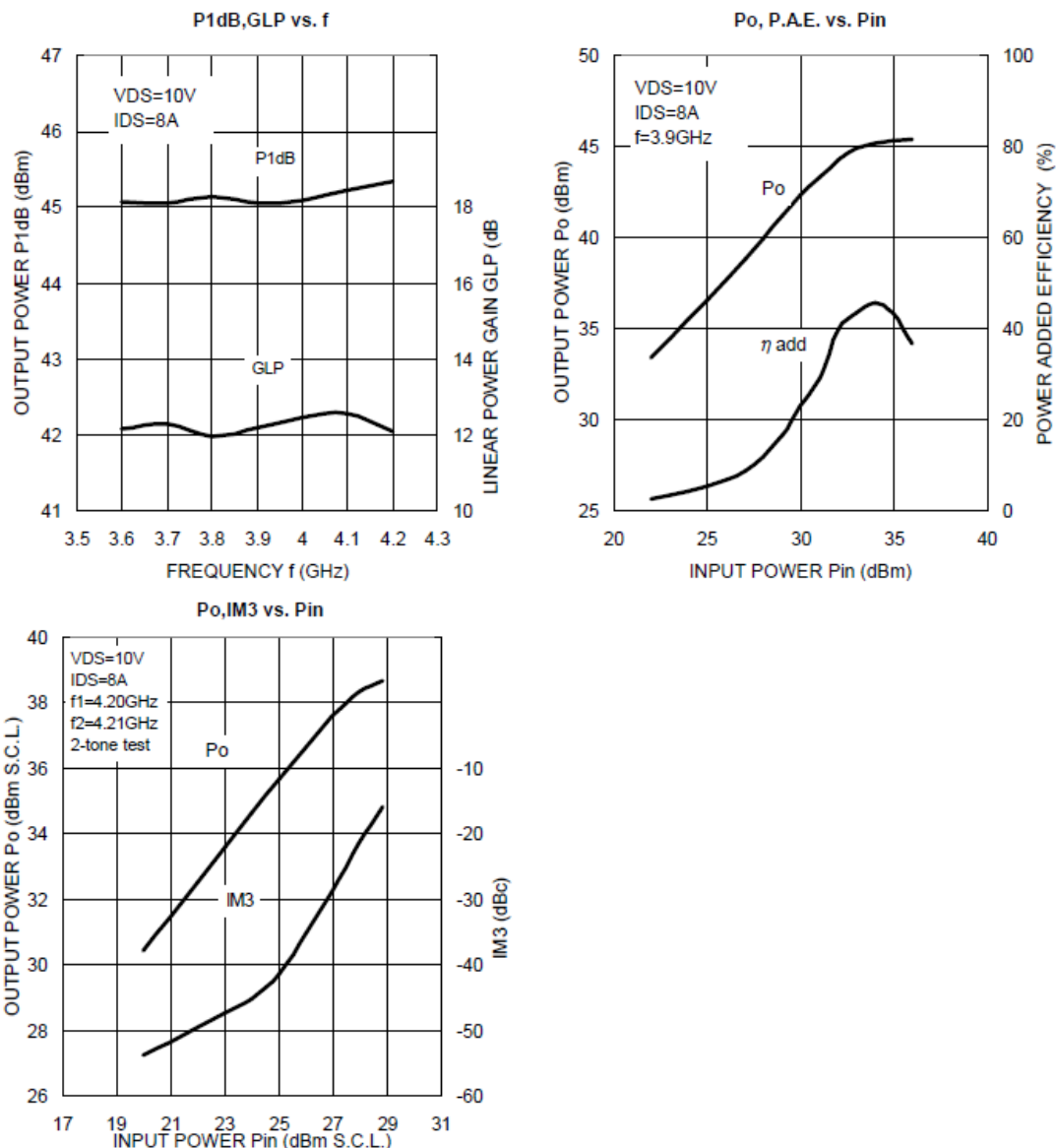
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## MGFC45V3642A TYPICAL CHARACTERISTICS( Ta=25deg.C )



## MGFC45V3642A S-parameters( Ta=25deg.C , VDS=10(V),IDS=8.0(A) )

f (GHz)	S Parameters(Typ.)							
	S11		S21		S12		S22	
	Magn.	Angle(deg.)	Magn.	Angle(deg.)	Magn.	Angle(deg.)	Magn.	Angle(deg.)
3.5	0.51	165	3.71	42	0.05	-21	0.39	-29
3.6	0.55	125	3.82	14	0.06	-52	0.29	-56
3.7	0.56	93	3.84	-15	0.07	-80	0.22	-94
3.8	0.54	67	3.81	-41	0.07	-107	0.21	-142
3.9	0.47	40	3.86	-68	0.08	-134	0.23	-177
4.0	0.37	5	3.87	-97	0.09	-162	0.26	149
4.1	0.27	-42	3.83	-125	0.09	169	0.26	122
4.2	0.26	-117	3.64	-156	0.09	141	0.21	93
4.3	0.40	-174	3.25	174	0.09	108	0.09	63

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