

PRELIMINARY

Notice : This is not a final specification.
Some parametric limits are subject to change.

27-March'98
MITSUBISHI SEMICONDUCTOR <GaAs FET>

MGFC45V5964A

5.9 - 6.4GHz BAND 32W INTERNALLY MATCHED GaAs FET

DESCRIPTION

The MGFC45V5964A 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

Internally matched to 50 ohm system

High output power

P1dB = 32W (TYP.) @ f=5.9 - 6.4 GHz

High power gain

GLP =9.0 dB (TYP.) @ f=5.9 - 6.4 GHz

High power added efficiency

P.A.E. = 33 % (TYP.) @ f=5.9 - 6.4 GHz

Low Distortion[Item-51]

IM3=-42 dBc(MIN.)@Po=34.5dBm S.C.L.

APPLICATION

5.9 - 6.4 GHz band amplifiers

QUALITY GRADE

IG

RECOMMENDED BIAS CONDITIONS

$V_{DS} = 10V$

$I_D = 8 A$

$R_g = 25 \text{ ohm}$ Refer to Bias Procedure

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Ratings	Unit
VGDO	Gate to drain voltage	-15	V
VGSO	Gate to source voltage	-15	V
ID	Drain current	30	A
IGR	Reverse gate current	-60	mA
IGF	Forward gate current	126	mA
PT	Total power dissipation	125	W
Tch	Channel temperature	175	deg.C
Tstg	Storage temperature	-65/+175	deg.C

*1 : Tc=25 Deg.C

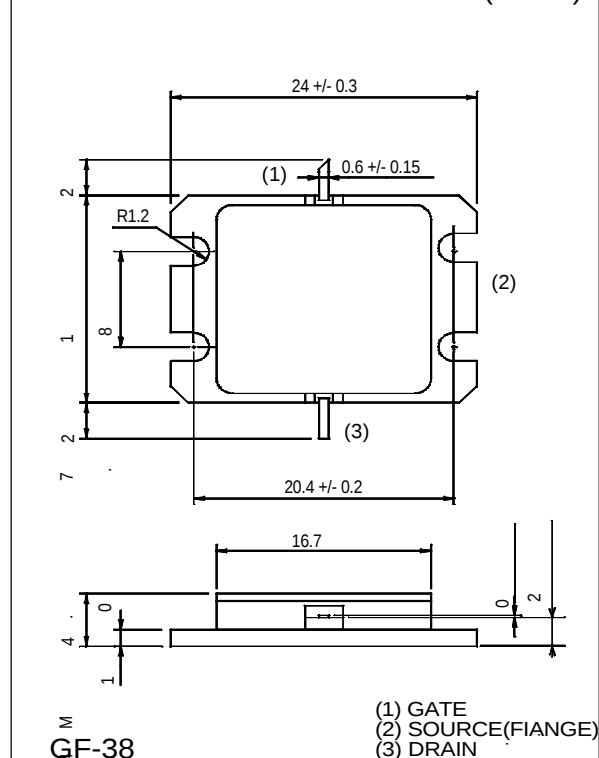
ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
IDSS	Saturated drain current	$V_{DS} = 3V$, $V_{GS} = 0V$	-	24	-	A
Gm	Transconductance	$V_{DS} = 3V$, $I_D = 8A$	-	8	-	S
VGS(off)	Gate to source cut-off voltage	$V_{DS} = 3V$, $I_D = 160mA$	-	-	-5	V
P1dB	Output power at 1dB gain compression	$V_{DS} = 10V$, $I_D = 8A$, $f = 5.9 - 6.4 \text{ GHz}$	44.5	45	-	dBm
GLP	Linear power gain		8	9	-	dB
PAE	Power added efficiency		-	33	-	%
IM3	3rd order IM distortion		-42	-45	-	dBc
Rth(ch-c)	Thermal resistance *1	Delta Vf method	-	-	1.0	Deg.C/W

*1 : Channel to case

*2 : Item-51, 2tone test, $P_o = 34.5 \text{ dBm}$ Single Carrier Level, $f = 6.4 \text{ GHz}$, $\Delta f = 10 \text{ MHz}$

OUTLINE DRAWING Unit: millimeters (inches)

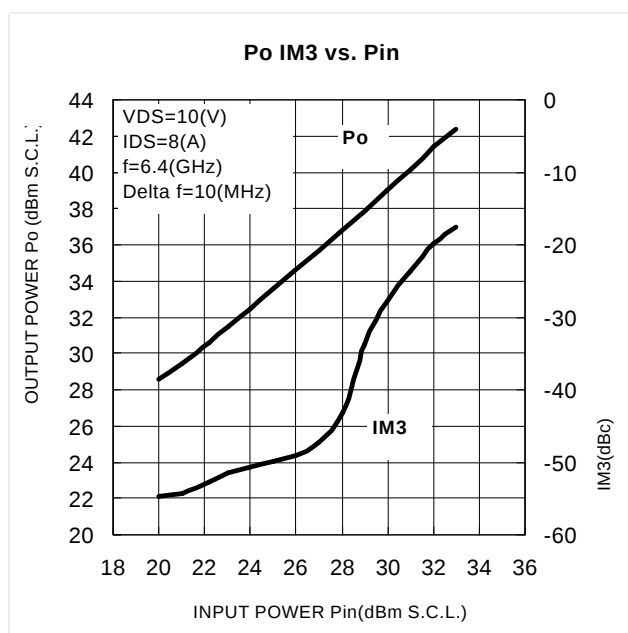
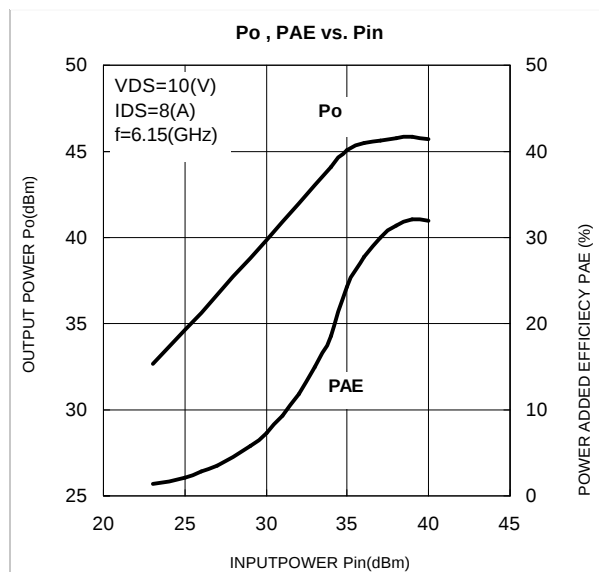
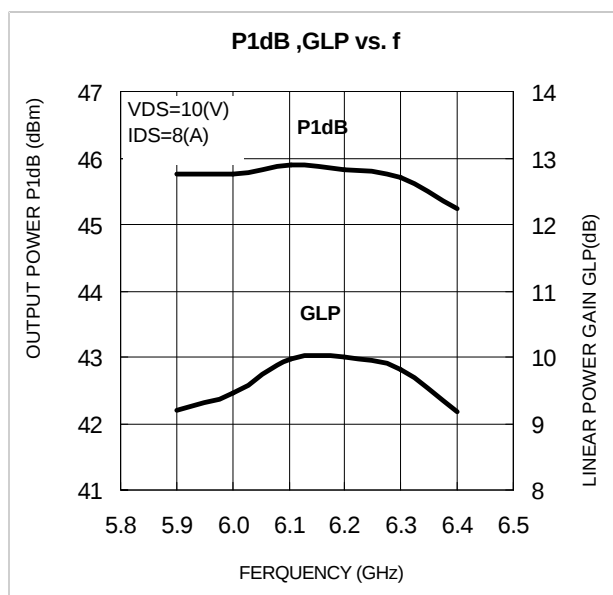


MITSUBISHI
ELECTRIC

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MITSUBISHI SEMICONDUCTOR <GaAs FET>

MGFC45V5964A**5.9 - 6.4 GHz BAND 32W INTERNALLY MATCHED GaAs FET****TYPICAL CHARACTERISTICS** (Ta=25 Deg.C)**S PARAMETERS** (Ta=25 Deg.C , VDS=10V , IDS=8A)

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.)
5.90	0.61	159	2.957	-44	0.04	-117	0.21	160
6.00	0.55	138	3.071	-62	0.05	-134	0.22	134
6.10	0.48	115	3.119	-81	0.06	-152	0.25	112
6.20	0.41	92	3.148	-100	0.07	-167	0.26	91
6.30	0.34	65	3.143	-118	0.08	175	0.26	73
6.40	0.28	36	3.122	-137	0.09	160	0.25	55