

MGFC42V7785A

7.7-8.5GHz BAND 16W INTERNALLY MATCHED GaAs FET

DESCRIPTION

The MGFC42V7785A is an internally impedance-matched GaAs power FET especially designed for use in 7.7-8.5 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 = 16W (TYP.) @ f=7.7-8.5 GHz
- High power gain
 - GLP = 6 dB (TYP.) @ f=7.7-8.5GHz
- High power added efficiency
 - PAE = 28 % (TYP.) @ f=7.7-8.5GHz
- Low distortion [item -51]
 - IM3=-42dBc(min.) @ Po=32dBm S.C.L.

Thermal Resistance
Rth(ch-c)=1.6 deg.C/W(MAX.)

APPLICATION

- item 01 : 7.7-8.5 GHz band power amplifier
- item 51 : 7.7-8.5 GHz band digital ratio communication

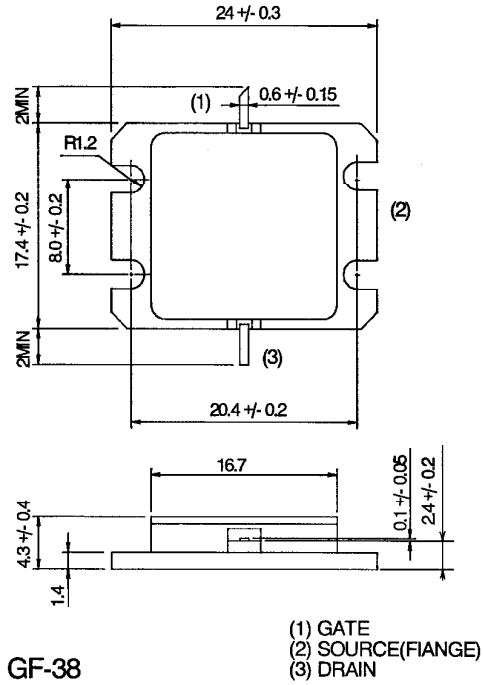
QUALITY GRADE

IG

RECOMMENDED BIAS CONDITIONS

- VDS = 10V
- ID = 4.5 A
- RG=25 ohm

OUTLINE DRAWING Unit:millimeters (inches)



ABSOLUTE MAXIMUM RATINGS

(Ta=25 deg.C)

Symbol	Parameter	Ratings	Unit
VGDO	Gate to drain voltage	-15	V
VGSO	Gate to source voltage	-15	V
ID	Drain current	12	A
IGR	Reverse gate current	-40	mA
IGF	Forward gate current	84	mA
PT	Total power dissipation	93.7	W
Tch	Channel temperature	175	deg.C
Tstg	Storage temperature	-65/+175	deg.C

*1 : Tc=25 deg.C

ELECTRICAL CHARACTERISTICS

(Ta=25 deg.C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
IDSS	Saturated drain current	VDS = 3V , VGS = 0V	-	9	12	A
Gm	Transconductance	VDS = 3V , ID = 4.4A	-	4	-	S
VGS(off)	Saturated drain current	VDS = 3V , ID = 80mA	-2	-	-4	V
P1dB	Output power at 1dB gain compression	VDS=10V, ID(RF off)=4.5A, f=7.7-8.5GHz	41	42	-	dBm
GLP	Linear power gain		6	6.5	-	dB
ID	Drain current		-	4	-	A
PAE	Power added efficiency		-	28	-	%
IM3 *2	3rd order IM distortion *1		-42	-45	-	dBc
Rth(ch-c)	Thermal resistance *2	Delta Vf method	-	-	1.6	deg.C/W

*1 : item -51,2 tone test,Po=32dBm Single Carrier Level,f=8.5GHz,Delta f=10MHz

*2 : Channel-case

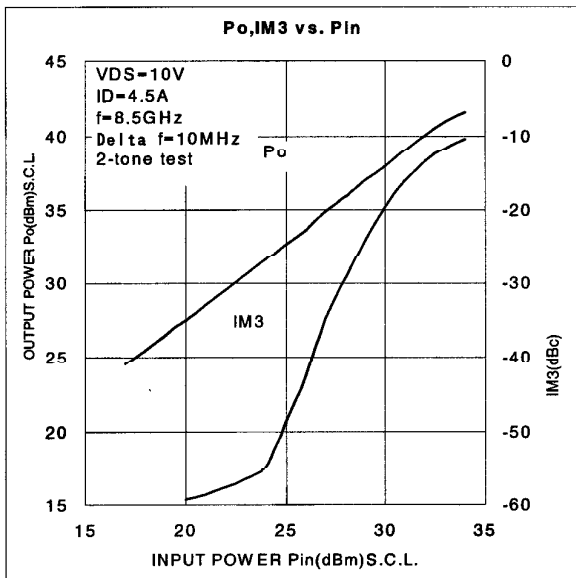
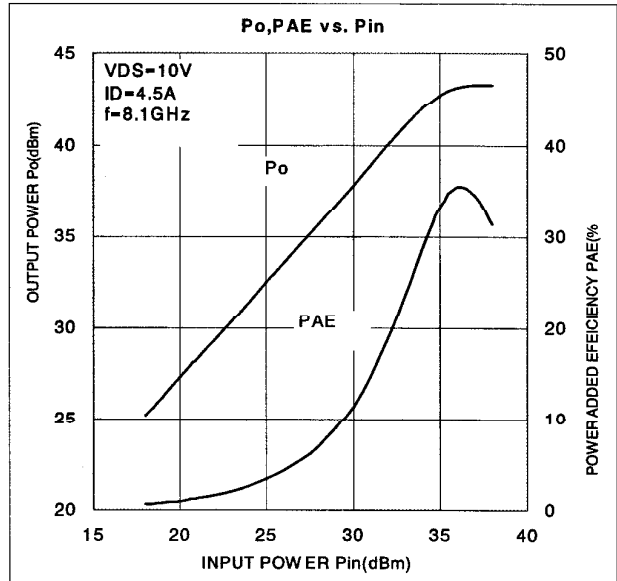
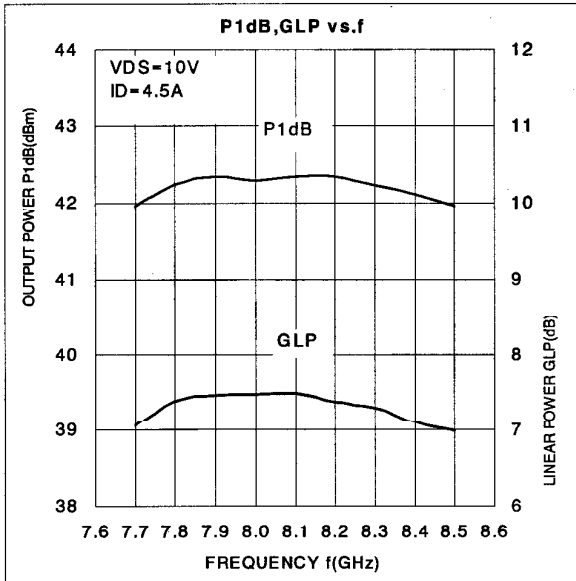


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TYPICAL CHARACTERISTICS (Ta=25deg.C)



S PARAMETERS (Ta=25deg.C, VDS=10V, ID=4.5A)

f (GHz)	S PARAMETERS (TYP.)							
	S11		S21		S12		S22	
	Magn.	Angle(deg.)	Magn.	Angle(deg.)	Magn.	Angle(deg.)	Magn.	Angle(deg.)
7.7	0.42	-124	2.33	75	0.087	33	0.31	-7
7.8	0.36	-140	2.38	63	0.089	23	0.29	-17
7.9	0.27	179	2.46	39	0.093	-1	0.23	-37
8.0	0.25	161	2.47	31	0.093	-9	0.21	-44
8.1	0.23	116	2.47	10	0.096	-29	0.16	-61
8.2	0.24	93	2.45	-2	0.094	-39	0.13	-74
8.3	0.27	53	2.40	-24	0.093	-61	0.07	-109
8.4	0.28	40	2.38	-33	0.094	-70	0.05	-135
8.5	0.30	11	2.32	-52	0.095	-89	0.06	151

