

< C band internally matched power GaAs FET >

MGFC40V7785

7.7 – 8.5 GHz BAND / 10W

DESCRIPTION

The MGFC40V7785 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=10W (TYP.) @f=7.7 – 8.5GHz
- High power gain
GLP=7dB (TYP.) @f=7.7 – 8.5GHz
- High power added efficiency
P.A.E.=32% (TYP.) @f=7.7 – 8.5GHz
- Low distortion [item -51]
IM3=-45dBc (TYP.) @Po=29dBm S.C.L

APPLICATION

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

QUALITY

- IG

RECOMMENDED BIAS CONDITIONS

- VDS=10V • ID=2.4A • RG=50ohm Refer to Bias Procedure

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	6	A
IGR	Reverse gate current	-20	mA
IGF	Forward gate current	42	mA
PT *1	Total power dissipation	42.8	W
Tch	Channel temperature	175	°C
Tstg	Storage temperature	-65 to +175	°C

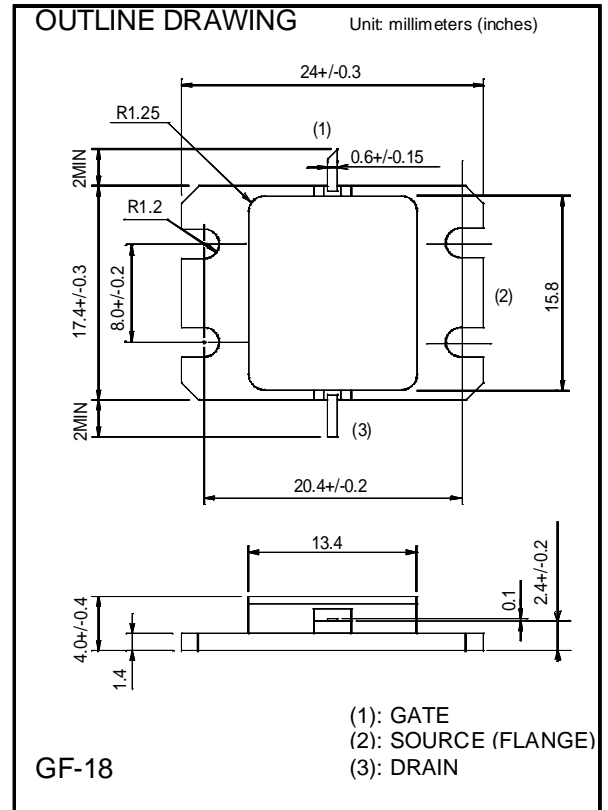
*1 : Tc=25°C

Electrical characteristics (Ta=25°C)

Symbol	Parameter	Test conditions	Limits			Unit	
			Min.	Typ.	Max.		
IDSS	Saturated drain current	VDS=3V, VGS=0V	-	4.5	6	A	
gm	Transconductance	VDS=3V, ID=2.2A	-	2	-	S	
VGS(off)	Gate to source cut-off voltage	VDS=3V, ID=40mA	-2	-3	-4	V	
P1dB	Output power at 1dB gain compression	VDS=10V, ID(RF off)=2.4A f=7.7 – 8.5GHz	39.0	40.0	-	dBm	
GLP	Linear Power Gain		6	7	-	dB	
ID	Drain current		-	2.4	-	A	
P.A.E.	Power added efficiency		-	32	-	%	
IM3 *2	3rd order IM distortion		-42	-45	-	dBc	
Rth(ch-c) *3	Thermal resistance		delta Vf method	-	-	3.5	°C/W

*2 : item -51 , 2 tone test, Po=29dBm Single Carrier Level , f=8.5GHz, delta f=10MHz

*3 : Channel-case

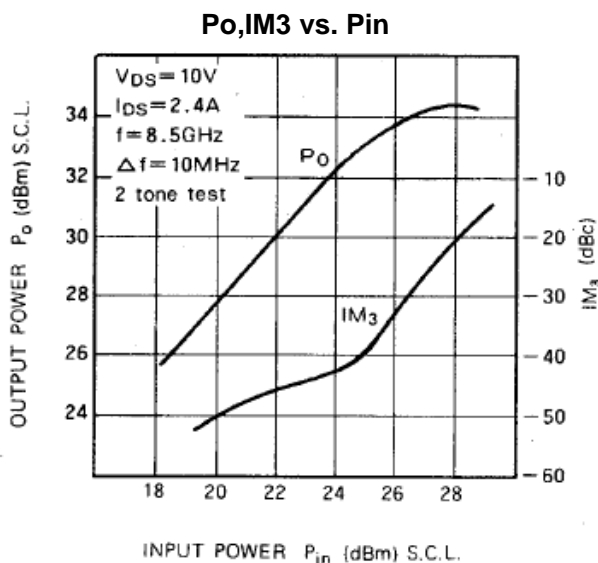
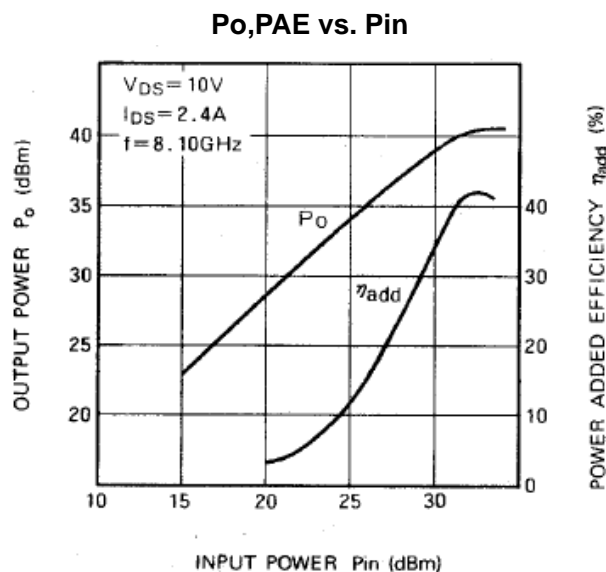
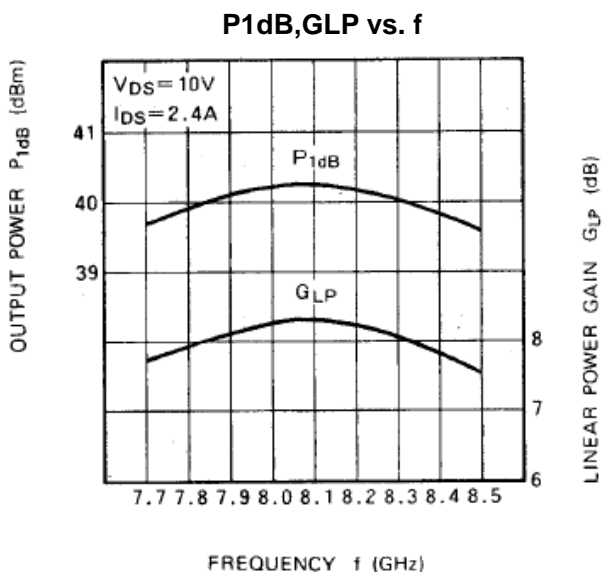


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MGFC40V7785 TYPICAL CHARACTERISTICS(Ta=25deg.C)



MGFC40V7785 S-parameters(Ta=25deg.C , VDS=10(V),IDS=2.4(A))

f (GHz)	S Parameters(Typ.)							
	S11		S21		S12		S22	
	Magn.	Angle(deg.)	Magn.	Angle(deg.)	Magn.	Angle(deg.)	Magn.	Angle(deg.)
7.7	0.50	40	2.13	154	0.072	105	0.42	-17
7.8	0.46	31	2.20	140	0.076	93	0.37	-27
7.9	0.41	19	2.25	127	0.082	78	0.30	-39
8.0	0.34	6	2.28	113	0.085	63	0.22	-52
8.1	0.25	-13	2.29	99	0.084	48	0.15	-73
8.2	0.17	-42	2.32	83	0.087	33	0.10	-116
8.3	0.12	-104	2.32	66	0.090	16	0.11	167
8.4	0.18	-162	2.25	49	0.089	0	0.15	124
8.5	0.31	168	2.20	31	0.085	-19	0.20	96

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