

# < 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	Α			
IGR	Reverse gate current -20		mA			
IGF	Forward gate current	42	mA			
PT *1	Total power dissipation	42.8	W			
Tch	Cannel temperature	175	°C			
Tstg	Storage temperature	-65 to +175	°C			
*1 · Tc=25°C						

# **OUTLINE DRAWING** Unit: millimeters (inches) 24+/-0.3 R1.25 R1.2 (2) (3) 20.4+/-0.2 13.4 (1): GATE (2): SOURCE (FLANGE) **GF-18** (3): DRAIN

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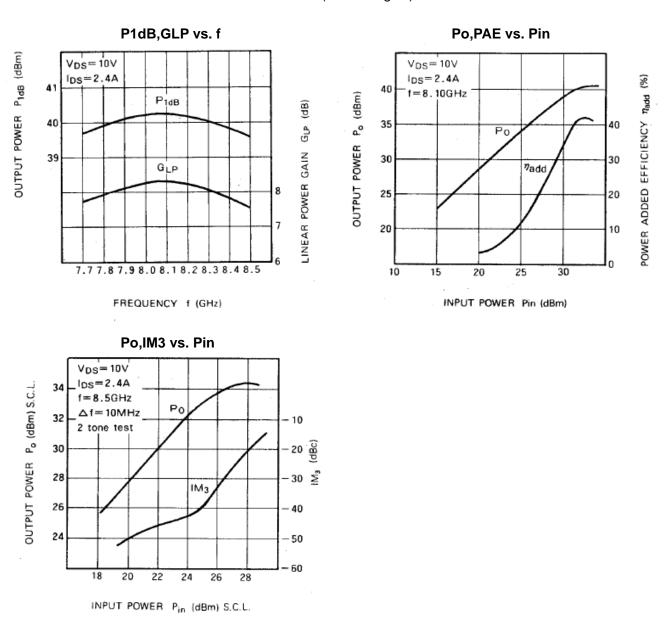
## Electrical characteristics

Symbol	Parameter	Test conditions	Limits		Unit	
			Min.	Тур.	Max.	
IDSS	Saturated drain current	VDS=3V,VGS=0V	-	4.5	6	Α
gm	Transconductance	VDS=3V,ID=2.2A	-	2	i	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	39.0	40.0	i	dBm
GLP	Linear Power Gain	f=7.7 – 8.5GHz	6	7	-	dB
ID	Drain current		-	2.4	-	Α
P.A.E.	Power added efficiency		-	32	-	%
IM3 *2	3rd order IM distortion		-42	-45	ı	dBc
Rth(ch-c) *3	Thermal resistance	delta Vf method	-	-	3.5	°C/W

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

<sup>\*3:</sup> Channel-case

## MGFC40V7785 TYPICAL CHARACTERISTICS (Ta=25deg.C)



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

	S Parameters(Typ.)							
(GHz)	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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