MITSUBISHI ELECTRIC

< C band internally matched power GaAs FET >

MGFC47A7785

7.7 – 8.5 GHz BAND / 47W

DESCRIPTION

The MGFC47A7785 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.

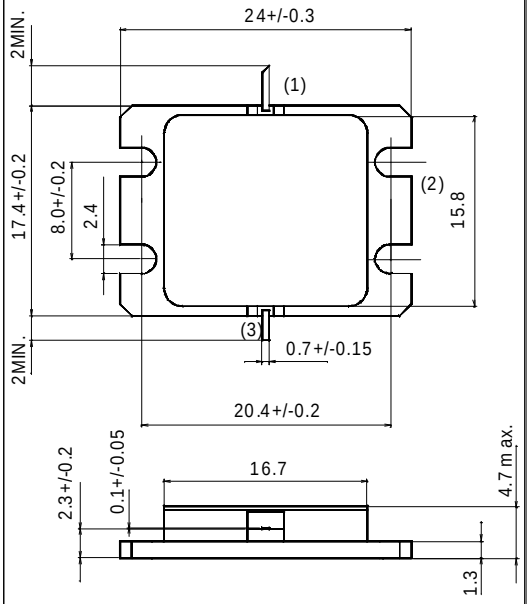
FEATURES

Class A operation
Internally matched to 50(ohm) system
- High output power
  P1dB=46.7dBm (TYP.) @f=7.7 – 8.5GHz
- High power gain
  GLP=5.7dB (TYP.) @f=7.7 – 8.5GHz
- High power added efficiency
  PAE=30% (TYP.) @f=7.7 – 8.5GHz

APPLICATION

- Solid-state power amplifier for satellite earth-station communication transmitter and VSAT

OUTLINE DRAWING Unit : millimeters



RECOMMENDED BIAS CONDITIONS

- VDS=10V - ID=9.8A - RG=10ohm

Absolute maximum ratings (Ta=25°C)

Symbol	Parameter	Ratings	Unit
VGDO	Gate to drain breakdown voltage	-20	V
VGSO	Gate to source breakdown voltage	-10	V
IGR	Reverse gate current	-130	mA
IGF	Forward gate current	168	mA
PT *1	Total power dissipation	168	W
Tch	Cannel temperature	175	°C
Tstg	Storage temperature	-65 to +175	°C

*1 : Tc=25°C

Keep Safety first in your circuit designs!

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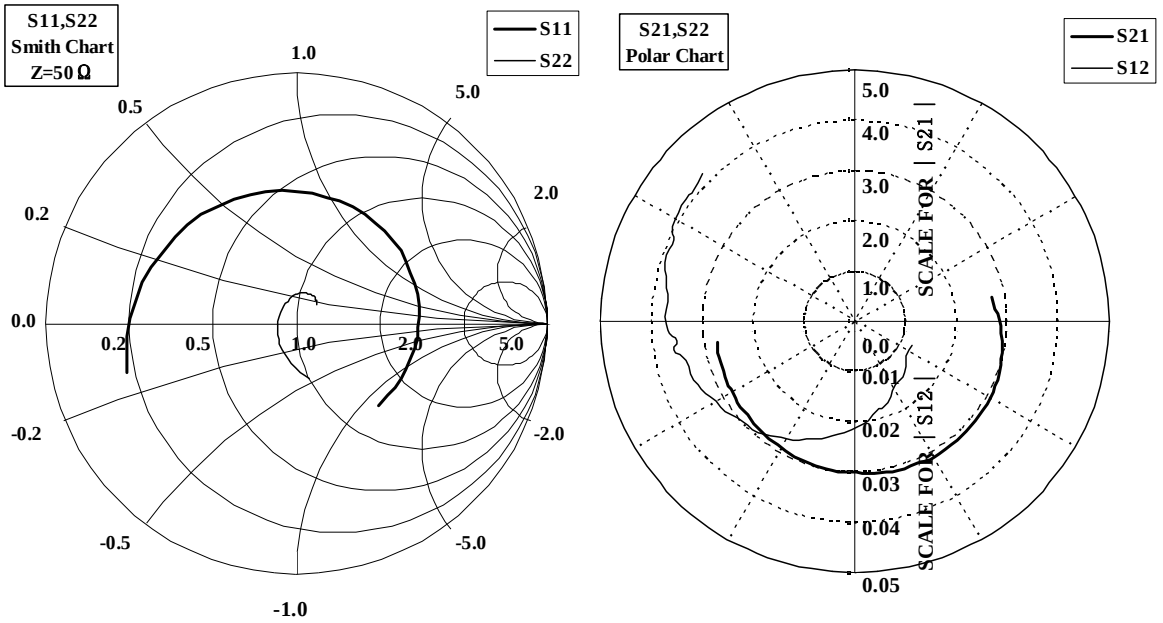
Electrical characteristics (Ta=25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
VGS(off)	Gate to source cut-off voltage	VDS=3V,ID=168mA	-1	-	-4	V
P1dB	Output power at 1dB gain compression	IDS=10V,ID(RF off)=9.8A	45.7	46.7	-	dBm
GLP	Linear Power Gain	f=7.7 – 8.5GHz	4.7	5.7	-	dB
ID	Drain current		-	11	-	A
PAE	Power added efficiency		-	30	-	%
IM3*2	3rd order IM distortion		-39	-42	-	dBc
Rth(ch-c) *3	Thermal resistance	delta Vf method	-	0.8	0.9	°C/W

*2 : Item -51,2 tone test,Po=35dBm Single Carrier Level,f=8.5GHz,Delta f=10MHz
*3 : Channel-case

MGFC47A5864 S-parameters(Ta=25deg.C , VDS=10(V),IDS=8(A))



f	S Parameters(TYP.)							
	S11		S21		S12		S22	
(GHz)	MAG.	ANG(deg.)	[MAG]	[ANG]	[MAG]	[ANG]	[MAG]	[ANG]
5.60	0.702	-163.8	2.723	10.1	0.024	-23.0	0.225	-76.8
5.65	0.676	-175.6	2.836	0.3	0.027	-42.2	0.194	-86.4
5.70	0.646	171.6	2.932	-9.7	0.030	-57.8	0.164	-97.8
5.75	0.621	158.6	3.011	-19.8	0.036	-71.4	0.132	-111.2
5.80	0.595	144.8	3.072	-30.0	0.040	-82.1	0.106	-129.1
5.85	0.576	131.1	3.091	-40.0	0.044	-95.0	0.087	-148.9
5.90	0.556	116.8	3.108	-49.8	0.049	-105.8	0.077	-175.9
5.95	0.540	102.9	3.111	-59.5	0.053	-117.2	0.075	158.2
6.00	0.528	89.8	3.082	-69.1	0.056	-126.1	0.083	135.8
6.05	0.518	76.5	3.061	-78.5	0.059	-135.8	0.090	119.1
6.10	0.514	64.2	3.033	-87.4	0.062	-144.8	0.102	106.2
6.15	0.510	51.9	2.999	-96.3	0.066	-153.7	0.110	97.2
6.20	0.508	40.5	2.961	-104.9	0.068	-162.2	0.118	87.5
6.25	0.502	29.4	2.933	-113.6	0.072	-170.7	0.125	81.7
6.30	0.498	18.8	2.888	-121.8	0.074	-177.0	0.126	74.6
6.35	0.493	8.4	2.859	-130.1	0.074	174.0	0.128	68.4
6.40	0.486	-2.0	2.817	-138.4	0.076	166.5	0.130	62.4
6.45	0.483	-11.9	2.793	-146.5	0.078	158.4	0.129	57.7
6.50	0.473	-22.4	2.770	-154.6	0.081	152.1	0.126	52.8
6.55	0.471	-33.0	2.751	-163.1	0.082	144.0	0.120	48.6
6.60	0.463	-44.9	2.727	-171.4	0.084	135.6	0.111	44.0

This S-Parameter data show measurements performed on each single-ended FET

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Publication Date : Apr., 2011