

< C band internally matched power GaAs FET >

MGFC47A4450

4.4 – 5.0 GHz BAND / 50W

DESCRIPTION

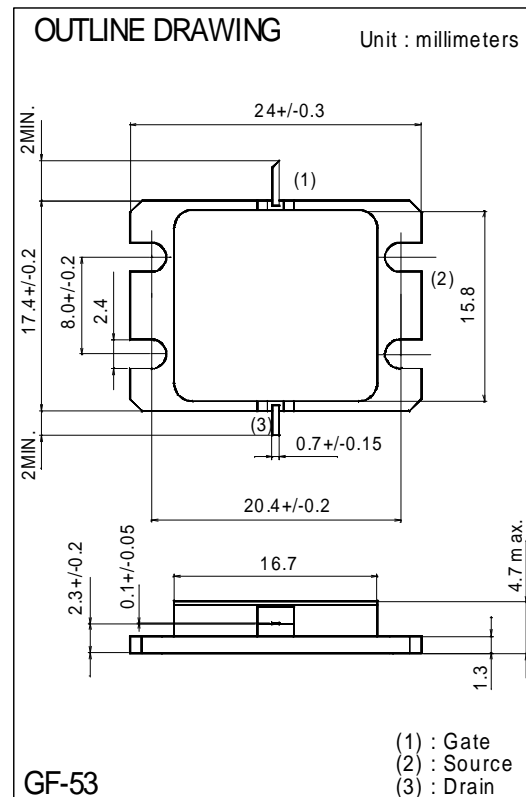
The MGFC47A4450 is an internally impedance-matched GaAs power FET especially designed for use in 4.4 – 5.0 GHz band amplifiers. The hermetically sealed metal-ceramic package guarantees high reliability.

FEATURES

- Class AB operation
- Internally matched to 50(ohm) system
- High output power
P1dB=50W (TYP.) @f=4.4 – 5.0GHz
- High power gain
GLP=10.5dB (TYP.) @f=4.4 – 5.0GHz
- High power added efficiency
PAE=40% (TYP.) @f=4.4 – 5.0GHz

APPLICATION

- Radio Link



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	166	W
Tch	Channel 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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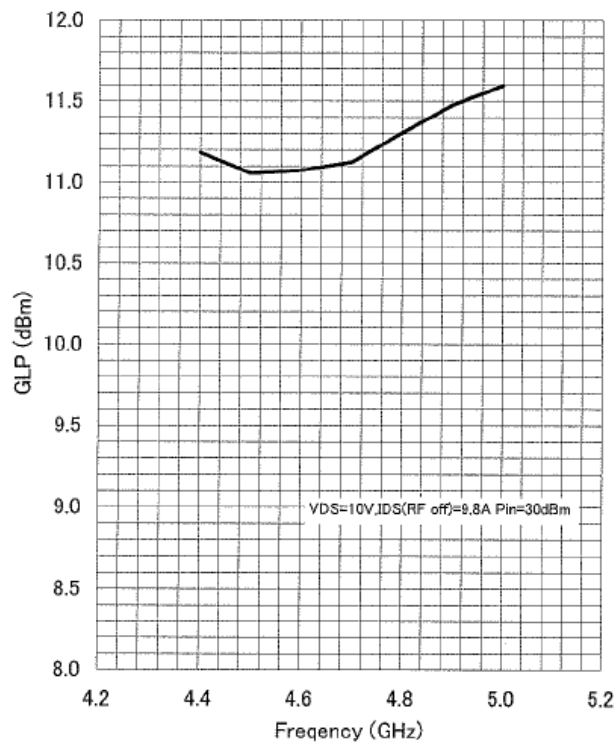
Electrical characteristics (Ta=25°C)

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	VDS=10V, ID(RF off)=9.8A	46	47	-	dBm
GLP	Linear Power Gain	f=4.4 – 5.0GHz	9.5	10.5	-	dB
ID	Drain current		-	11	-	A
PAE	Power added efficiency		-	40	-	%
Rth(ch-c) *2	Thermal resistance	delta Vf method	-	0.8	0.9	°C/W

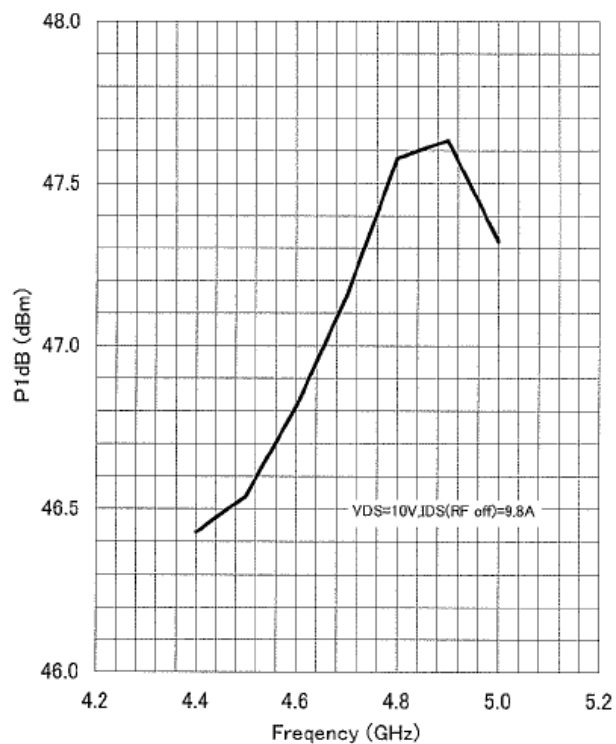
*2 : Channel-case

MGFC47A4450 TYPICAL CHARACTERISTICS

GLP vs. f

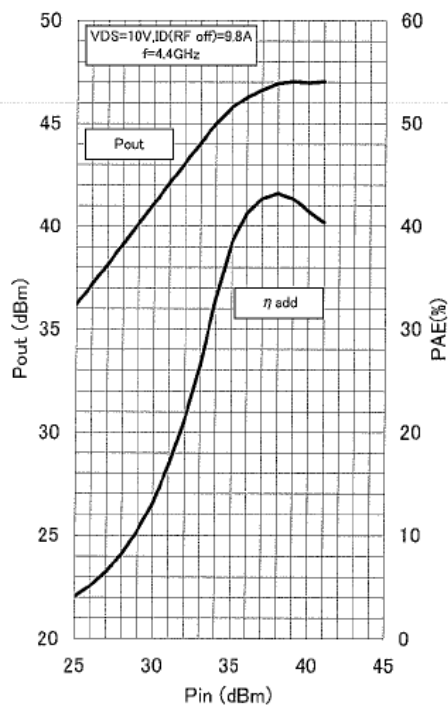


P1dB vs. f

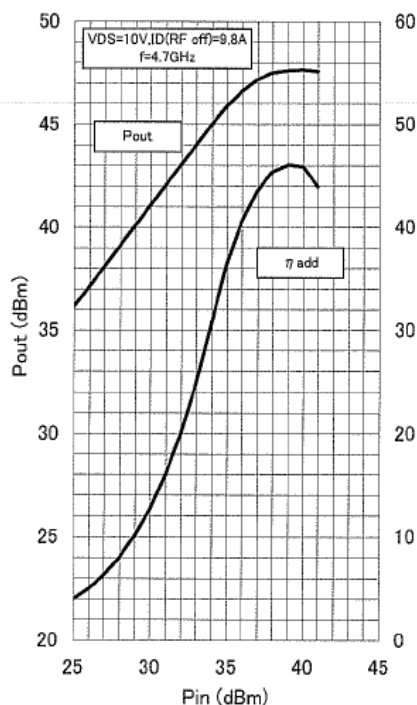


Pout , PAE vs. Pin

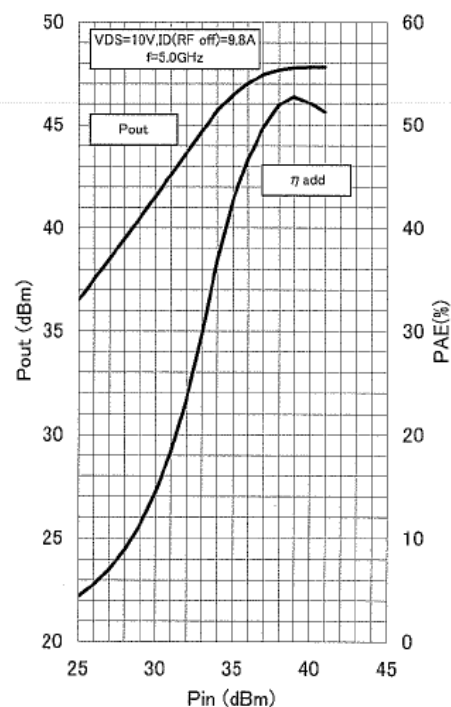
f = 4.4GHz



f = 4.7GHz



f = 5.0GHz



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4.4 – 5.0 GHz BAND / 50W

MGFC47A4450 S-parameters(Ta=25deg.C , VDS=10(V),IDS=8(A))

f (GHz)	S Parameters(TYP.)							
	S11		S21		S12		S22	
	MAG.	ANG(deg.)	[MAG]	[ANG]	[MAG]	[ANG]	[MAG]	[ANG]
4.20	0.776	24.3	2.862	177.9	0.034	126.1	0.269	57.6
4.25	0.745	14.8	3.067	168.4	0.039	113.5	0.234	47.0
4.30	0.707	3.9	3.276	158.5	0.044	102.5	0.199	36.2
4.35	0.663	-7.9	3.475	148.0	0.049	90.3	0.166	21.3
4.40	0.615	-21.0	3.654	137.2	0.055	78.5	0.130	3.7
4.45	0.567	-35.2	3.836	126.1	0.060	66.1	0.103	-20.4
4.50	0.513	-51.0	3.971	114.6	0.065	54.5	0.086	-49.2
4.55	0.465	-68.2	4.092	102.9	0.070	42.4	0.080	-83.3
4.60	0.421	-87.1	4.162	91.1	0.074	30.3	0.086	-114.7
4.65	0.381	-107.9	4.190	79.1	0.077	18.1	0.099	-143.6
4.70	0.354	-130.1	4.178	67.2	0.081	6.9	0.117	-166.6
4.75	0.334	-153.4	4.126	55.5	0.082	-4.8	0.136	172.9
4.80	0.327	-176.8	4.033	43.7	0.084	-15.6	0.156	155.5
4.85	0.331	160.4	3.921	32.5	0.085	-26.5	0.178	138.1
4.90	0.341	139.1	3.784	21.4	0.086	-37.4	0.204	122.1
4.95	0.360	120.3	3.643	10.7	0.086	-48.3	0.231	107.3
5.00	0.394	103.0	3.514	0.2	0.086	-58.6	0.262	93.9
5.05	0.436	86.8	3.366	-10.6	0.085	-68.9	0.295	80.8
5.10	0.482	71.3	3.204	-21.4	0.083	-79.5	0.333	68.9
5.15	0.526	56.9	3.026	-32.0	0.080	-89.8	0.369	57.6
5.20	0.571	43.7	2.844	-42.4	0.078	-99.9	0.412	47.2

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

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