

MGF2148F

**FOR MICROWAVE POWER AMPLIFIERS
 CHIP-CARRIER TYPE**

6249829 MITSUBISHI (DISCRETE SC)

91D 10103 DT-39-07

DESCRIPTION

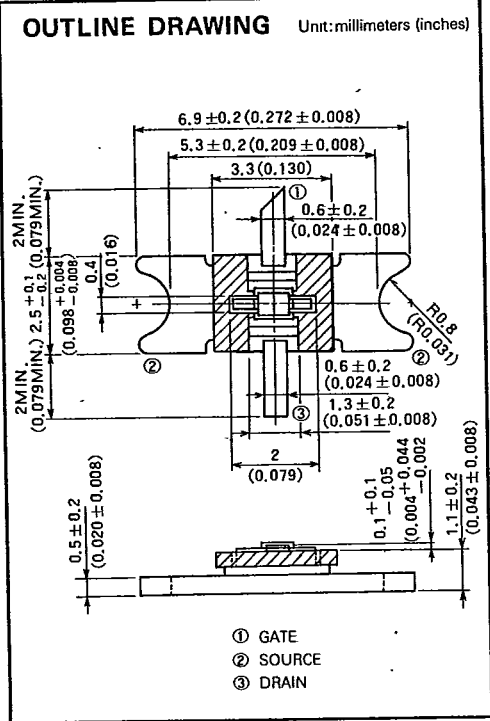
The MGF2148F combines the advantages of the least parasitics of a chip device and the easy assembly of a package device. The device gives excellent performance even in Ku-band.

FEATURES

- Chip-carrier type 2.5 mm Width
- Flip-chip mounted
- High output power
 $P_{1dB} = 1.2 \text{ W (TYP.) @ } f = 14 \text{ GHz}$
- High linear power gain
 $G_{LP} = 4.7 \text{ dB (TYP.) @ } f = 14 \text{ GHz}$
- High power added efficiency
 $\eta_{add} = 14\% \text{ (TYP.) @ } f = 14 \text{ GHz, } P_{1dB}$

QUALITY GRADE

- IG



ABSOLUTE MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

Symbol	Parameter	Rating	Unit
V_{GD0}	Gate to drain voltage	-11	V
V_{GS0}	Gate to source voltage	-11	V
I_D	Drain current	1600	mA
I_{GR}	Reverse gate current	-4.0	mA
I_{GF}	Forward gate current	9.0	mA
P_T	Total power dissipation	10	W
T_{ch}	Channel temperature	175	$^\circ\text{C}$
T_{stg}	Storage temperature	-55 ~ +175	$^\circ\text{C}$
$R_{th(ch-o)}$	Thermal resistance	15	$^\circ\text{C/W}$

ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

Symbol	Parameter	Conditions	Limits			Unit
			Min	Typ	Max	
I_{DSS}	Saturated drain current	$V_{DS}=3\text{V}, V_{GS}=0\text{V}$	900	1300	1600	mA
$V_{GS(off)}$	Gate to source cut-off voltage	$V_{DS}=3\text{V}, I_D=1\text{mA}$	-2		-7	V
g_m	Transconductance	$V_{DS}=3\text{V}, I_D=600\text{mA}$	360	500		mS
P_{1dB}	Output power at 1 dB gain compression	$V_{DS}=8\text{V}, I_D=600\text{mA}$	f=12GHz	1.2	1.6	W
			f=14GHz		1.2	
G_{LP}	Linear power gain		f=12GHz	4.7	5.2	dB
			f=14GHz		4.7	
η_{add}	Power added efficiency		f=12GHz		20	%
			f=14GHz		14	

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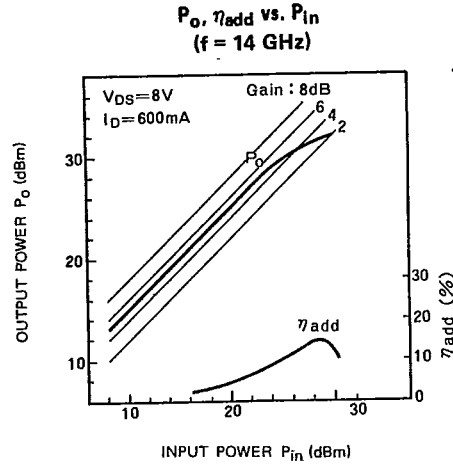
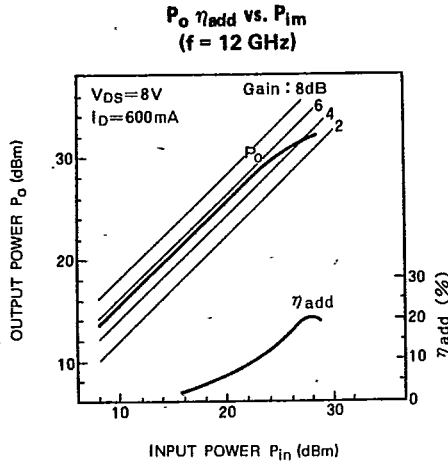
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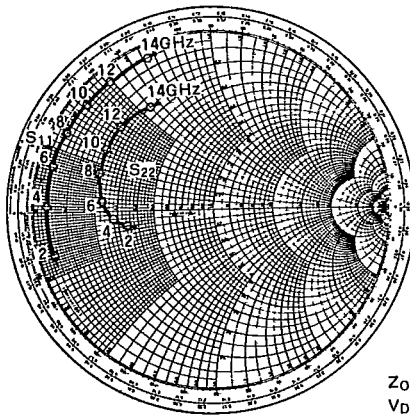
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TYPICAL CHARACTERISTICS (T_a=25°C)

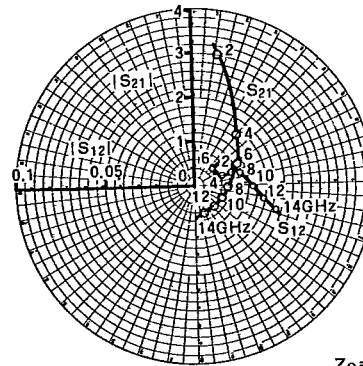


S₁₁, S₂₂ vs. f



Z₀=50 Ω
 V_{DS}=8V
 I_D=600mA

S₁₂, S₂₁ vs. f



Z₀=50 Ω
 V_{DS}=8V
 I_D=600mA

S PARAMETERS (T_a=25°C, V_{DS}=8V, I_D=600mA)

f (GHz)	S Parameters (TYP.)							
	S ₁₁		S ₁₂		S ₂₁		S ₂₂	
	Magn.	Angle (deg.)	Magn.	Angle (deg.)	Magn.	Angle (deg.)	Magn.	Angle (deg.)
2	0.908	-164.8	0.022	18.5	3.06	78.1	0.482	-170.7
4	0.901	177.3	0.017	13.6	1.51	49.9	0.556	-175.4
6	0.902	164.1	0.013	43.0	1.07	26.2	0.617	175.5
8	0.907	150.0	0.027	11.8	0.81	-3.5	0.661	161.2
10	0.920	138.5	0.033	-0.9	0.72	-23.8	0.678	148.9
12	0.922	127.2	0.040	-10.2	0.67	-42.7	0.701	136.4
14	0.920	112.3	0.047	-17.3	0.65	-68.1	0.683	118.8