

Integrated Circuit

MGF7201

microwave low noise amplifier IC

10V / 800mW

DATASHEET

OEM –Mitsubishi

Source: Mitsubishi Databook 1989

MITSUBISHI SEMICONDUCTOR <GaAs MMIC>
MGF7201
GaAs MONOLITHIC MICROWAVE IC

DESCRIPTION

The MGF7201 is a monolithic microwave integrated circuit for use in 14.0 ~ 14.5 GHz-band amplifiers.

FEATURES

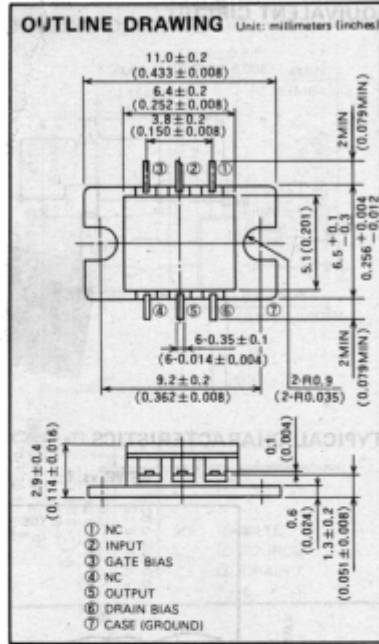
- High output power
 $P_{1dB} = 40 \text{ mW (TYP.) @ } f = 14 \sim 14.5 \text{ GHz}$
- High linear power gain
 $G_p = 19 \text{ dB (TYP.) @ } f = 14 \sim 14.5 \text{ GHz}$

APPLICATION

14 GHz-band amplifiers

QUALITY GRADE

- IG



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

Symbol	Parameter	Rating	Unit
V_{GD0}	Gate to drain voltage	-10	V
V_{GS0}	Gate to source voltage	-10	V
I_D	Drain current	260	mA
P_T	Total power dissipation	800	mW
T_{Ch}	Channel temperature	150	$^\circ\text{C}$
T_{stg}	Storage temperature	-55 ~ +150	$^\circ\text{C}$

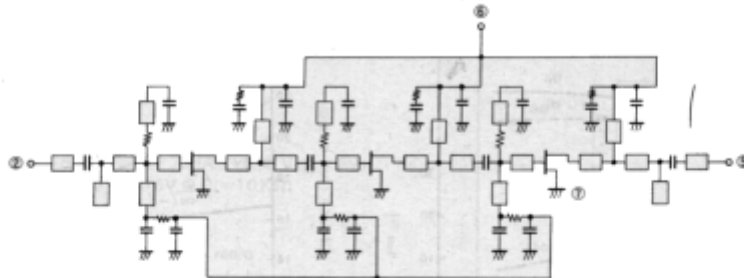
ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

Symbol	Parameter	Test conditions	Limits		Unit	
			Min	Typ		Max
I_D	Drain operating current	$V_{DS} = 3\text{V}, V_{GS} = 0\text{V}$	100	180	260	mA
$V_{GS}(\text{off})$	Gate cut-off voltage	$V_{DS} = 3\text{V}, I_D = 1\text{mA}$	-0.5		-4	V
G_p	Power gain	$V_{DS} = 5\text{V}$ $I_D = 90\text{mA}$ $Z_0 = 50 \Omega$ $Z_L = 50 \Omega$ $f = 14.0 \sim 14.5\text{GHz}$	17	19		dB
P_{1dB}	Output power at 1dB gain compression		30	40		mW
P_{in}	input VSWR			2.0	3.0	
P_{out}	Output VSWR			1.5	2.5	
η_{add}	Power added efficiency			10		

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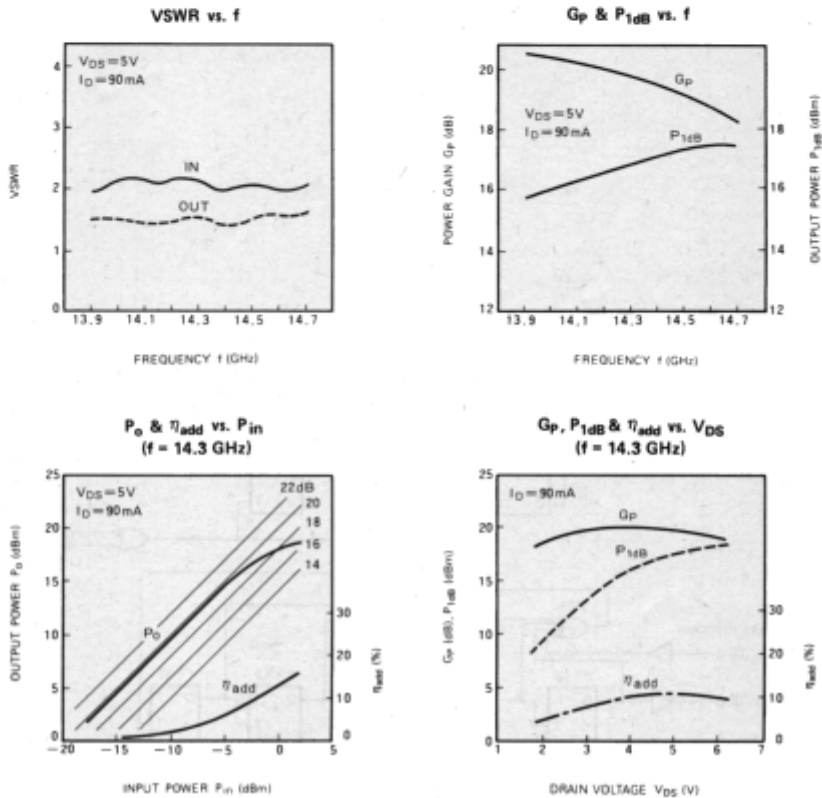
EQUIVALENT CIRCUIT



PRECAUTION

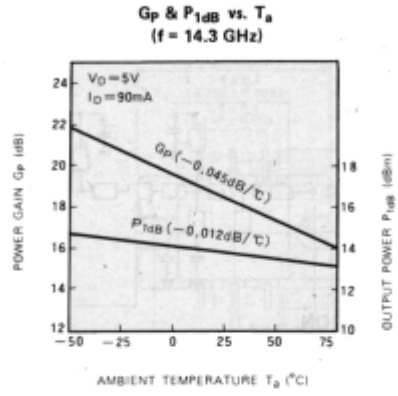
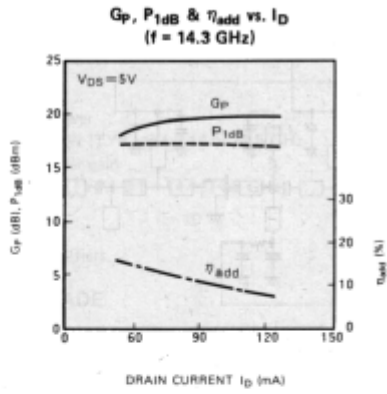
It is recommended to connect DC block capacitors to input and output terminal (2 and 5) in order to prevent the failure due to surge.

TYPICAL CHARACTERISTICS (T_a = 25°C)



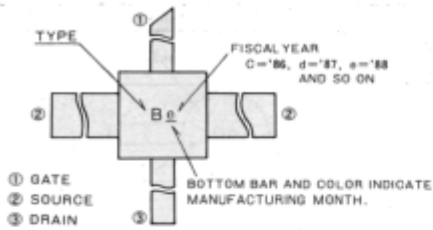
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**MITSUBISHI SEMICONDUCTOR <GaAs FET>
SYMBOL ON PACKAGE**

EXAMPLE OF SYMBOL ON MICRO DISK PACKAGE



	Without bottom bar	with bottom bar
Blue	Apr.	Oct.
Orange	May	Nov.
Black	June	Dec.
Red	July	Jan.
Green	Aug.	Feb.
Brown	Sep.	Mar.

* Left side character indicates the type number.
* Right side character, bottom bar and the color indicate manufacturing year and month.

**SYMBOL ON PACKAGE
Low Noise GaAs FET & HEMT**

Type	Symbol	Outline	Classification	
MGF1100	D	GD-1	Low Noise Dual Gate	
MGF1102	E	GD-2		
MGF1202	B	GD-3		
MGF1302	A	GD-4	Low Noise FET	
MGF1303	B			
MGF1304A	E			
MGF1305	D			
MGF1402	B	GD-9		
MGF1412	C			
MGF1403	D			
MGF1404	E			
MGF1405	F			
MGF1423	G			
MGF1425	H	GD-5	Low Noise Dual Gate FET (Mold)	
MGF1501	I		GD-6	Low Noise FET (Mold)
MGF1902	A		GD-7	Low Noise FET (Tape-Carrier)
MGF1903	B			
MGF1904	C	GD-4	Low Noise HEMT	
MGF4301A	R			
MGF4302A	S			
MGF4303A	M			
MGF4304A	N			
MGF4305A	P			
MGF4401A	J	GD-9		
MGF4402A	K			
MGF4403A	L			
MGF4404A	N			
MGF4405A	P			
MGF4901A	D	GD-7	Low Noise HEMT (Tape-Carrier)	
MGF4902A	E			
MGF4903A	F			
MGF3000	A	GD-8	S.B.D.	

MITSUBISHI SEMICONDUCTOR <GaAs FET>
SYMBOL ON PACKAGE

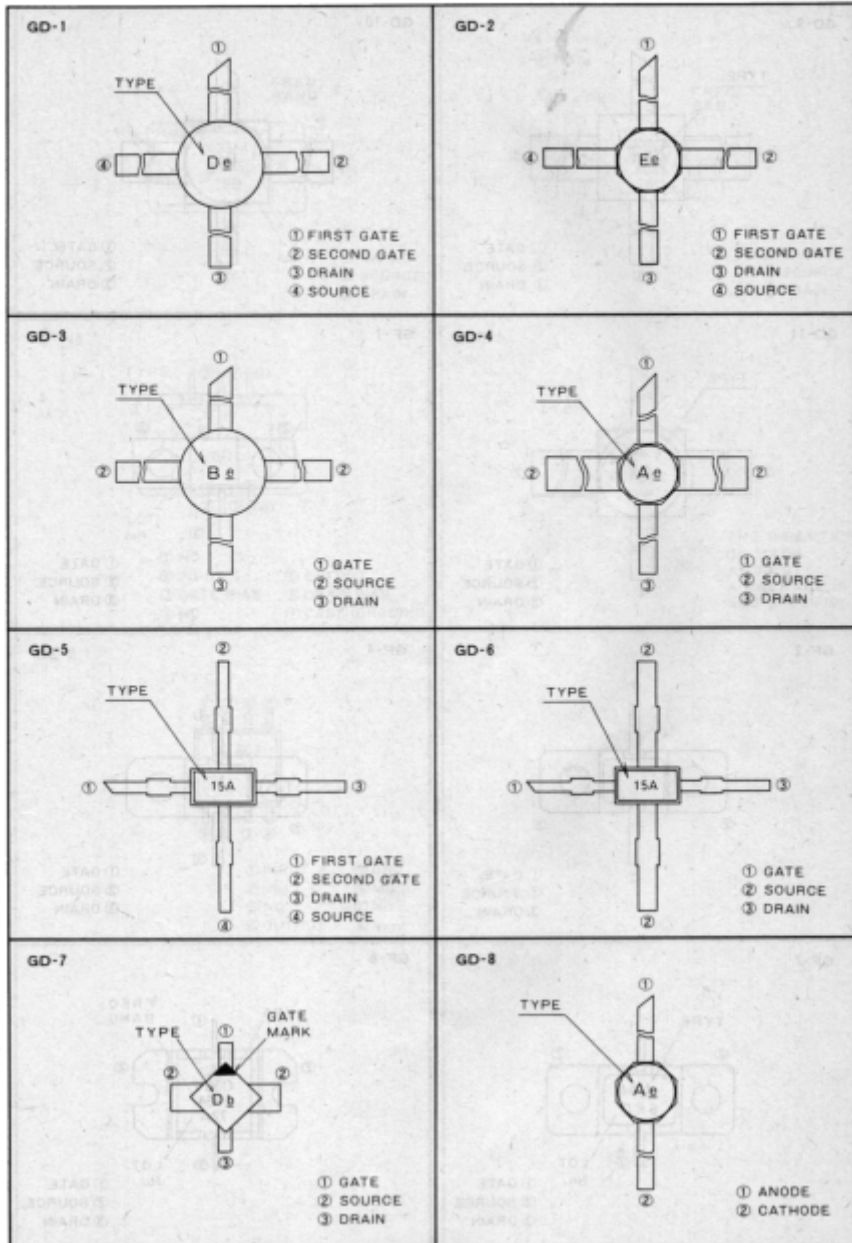
Power GaAs FET

Type	Symbol	Outline	Classification
MGF1601	B	GD-10	Power FET (Micro Disk)
MGF1601	A	GD-11	
MGF1602		GF-1	Power FET (Frangle Type)
MGF2116		GF-2	
MGF2117		GF-1	
MGF2124		GF-4	
MGF2148			
MGF2172			
MGF2407		GF-1	
MGF2415			
MGF2430			
MGF2445		GF-4	
MGF0904	94	GF-7	Power FET (Internally Matched)
MGF0905	95		
MGFC36V SERIES	C36V	GF-8	
MGFC39V SERIES	C39V		
MGFX35V9095	X35V	GF-14	
MGFX38V9095	X38V		
MGFK25M4045	K25M	GF-11	
MGFK30M4045	K30M		
MGFK33M4045	K33M		
MGFK35M4045	K35M	GF-14	
MGFK35V4045	K35V		
MGFK37V4045	K37V		

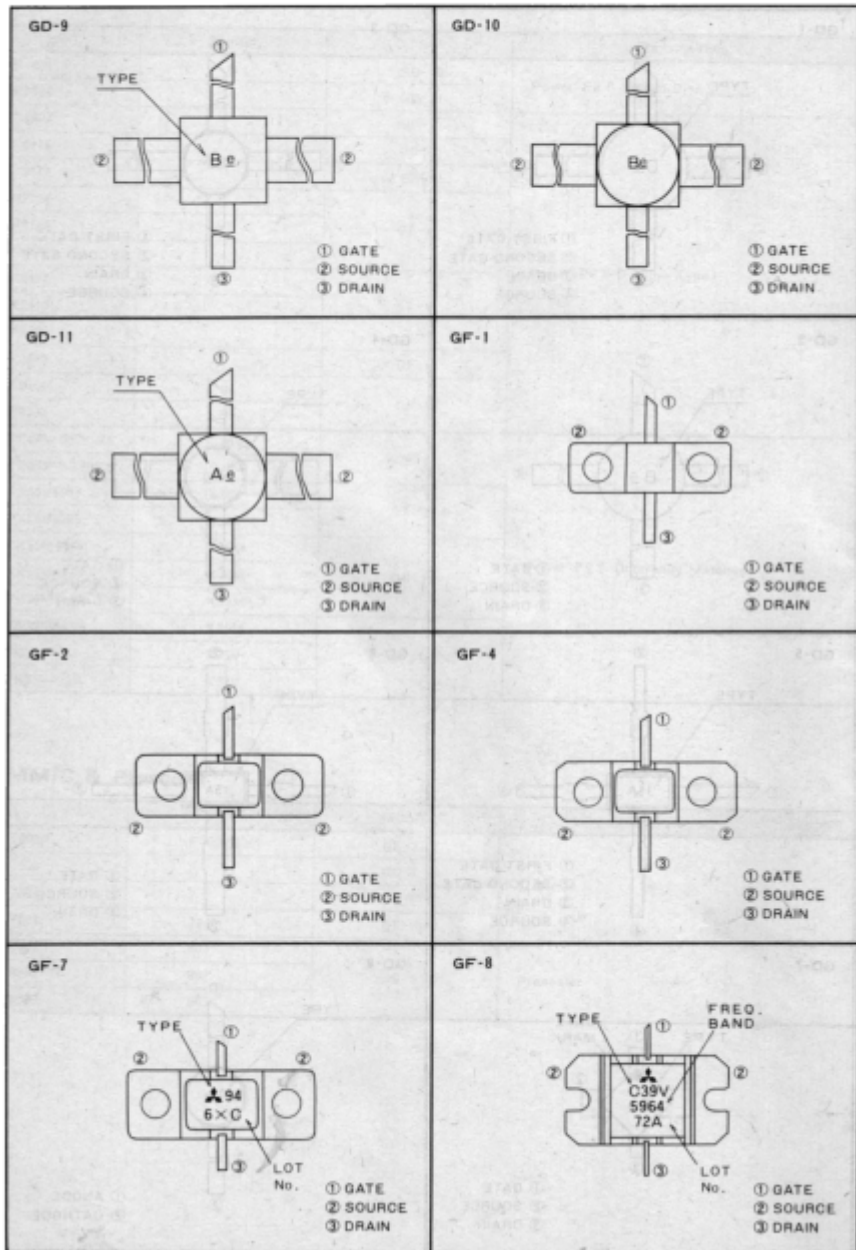
GaAs MMIC & Prescaler

Type	Symbol	Outline	Classification
MGF7002A	F7002A	GE-1	MMIC
MGF7003	F	GD-4	
MGF7004	2	GD-6	
MGF7201	721	GF-15	
MGF8001	801	GE-2	Prescaler
MGF8002	802		
MGF8003	803		

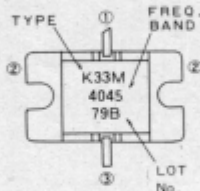
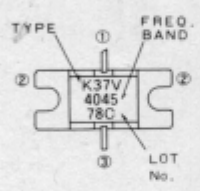
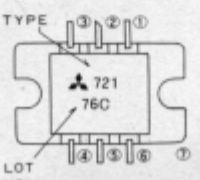
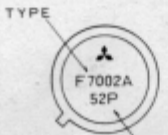
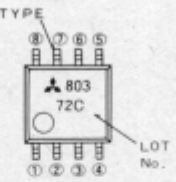
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SYMBOL ON PACKAGE**



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<p>GF-11</p>  <p>① GATE ② SOURCE ③ DRAIN</p>	<p>GF-14</p>  <p>① GATE ② SOURCE ③ DRAIN</p>
<p>GF-15</p>  <p>① NC ⑤ OUTPUT ② INPUT ⑥ DRAIN BIAS ③ GATE BIAS ⑦ CASE (GROUND) ④ NC</p>	<p>GE-1</p>  <p>THE DIRECTION OF MARK AGAINST A PACKAGE IS NOT SPECIFIED</p>
<p>GE-2</p>  <p>① INPUT ⑤ GND ② V_{DD} ⑥ MOD ③ NC ⑦ NC ④ OUTPUT ⑧ V_{REF}</p>	