

# GaAs Schottky Diode

## **MGF3000**

Microwave Diode

4V / 50mA

# DATASHEET

OEM –Mitsubishi

Source: Mitsubishi Databook 1989

**MITSUBISHI SEMICONDUCTOR <GaAs FET>**  
**MGF3000**  
**FOR MICROWAVE LOW-NOISE MIXERS**  
**SCHOTTKY BARRIER DIODE**

**DESCRIPTION**

The MGF3000 is designed for use in S to Ku band mixers. The hermetically sealed metal-ceramic package assures minimum parasitic losses, and configuration suitable for microstrip circuits.

**FEATURES**

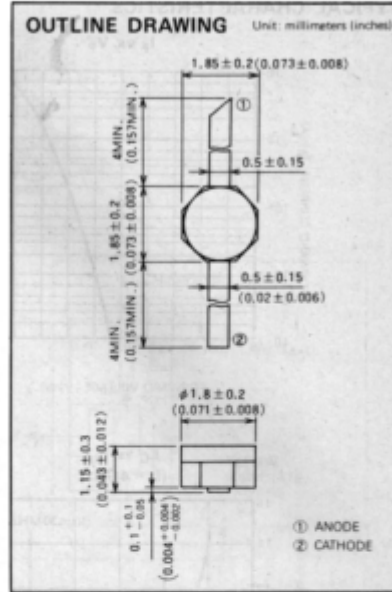
- Low conversion loss  
 $L_C = 6\text{dB (MAX.) @ 4GHz}$   
 $L_C = 10\text{dB (MAX.) @ 12GHz}$
- High reliability

**APPLICATION**

S to Ku band mixers.

**QUALITY GRADE**

- GG



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

Symbol	Parameter	Rating	Unit
$V_R$	Reverse voltage	-4.0	V
$I_F$	Forward current	50	mA
$T_j$	Junction temperature	150	$^\circ\text{C}$
$T_{stg}$	Storage temperature	-55 ~ +150	$^\circ\text{C}$

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

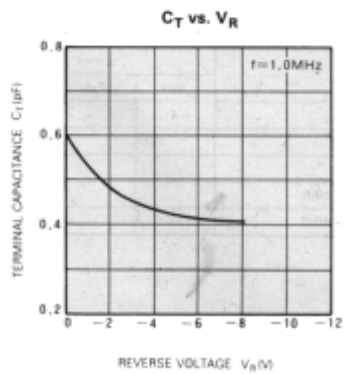
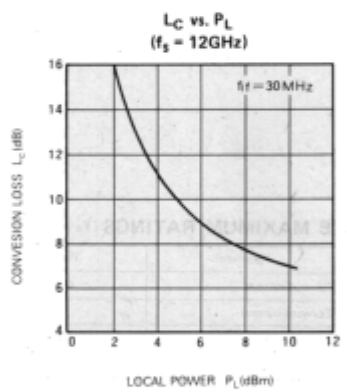
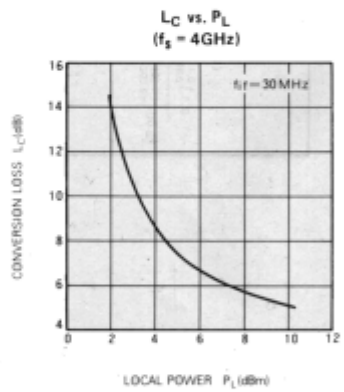
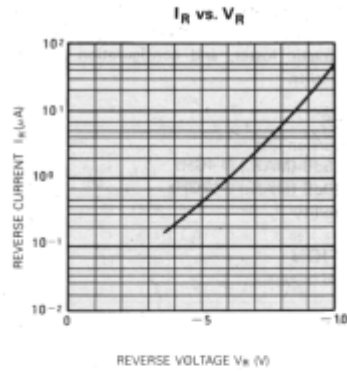
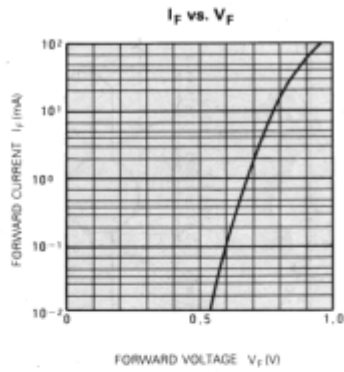
Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
$V_R$	Reverse voltage	$I_R = 10\mu\text{A}$	-4			V
$V_F$	Forward voltage	$I_F = 10\text{mA}$			1.0	V
$C_T$	Terminal capacitance	$V_R = 0\text{V}, f = 1.0\text{MHz}$			0.6	pF
$L_C$	Conversion loss*	$f_S = 4\text{GHz}, f_{IF} = 30\text{MHz}, P_L = 10\text{dBm}$			6	dB
$L_C$	Conversion loss*	$f_S = 12\text{GHz}, f_{IF} = 30\text{MHz}, P_L = 10\text{dBm}$			10	dB

\* Conversion loss is determined by lot sampling.

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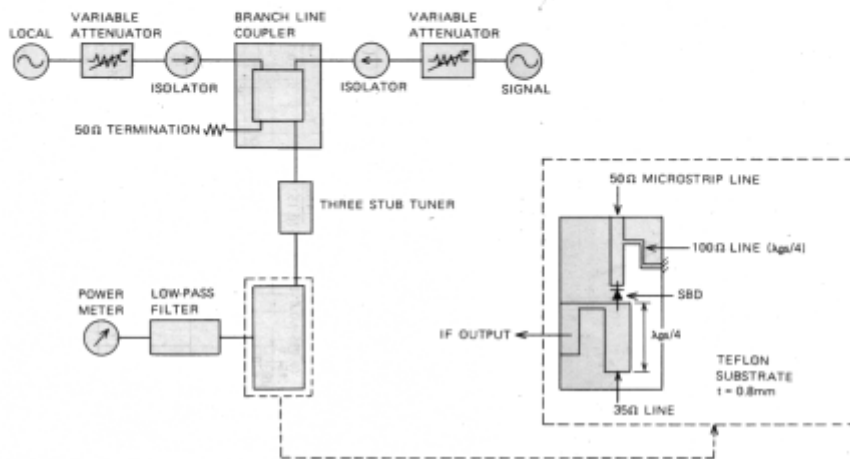
**TYPICAL CHARACTERISTICS**



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**MGF3000**

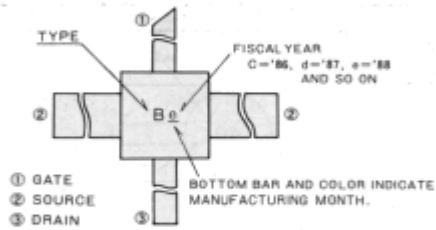
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**L<sub>c</sub> TEST BLOCK DIAGRAM**



**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				
MGF1412	C				
MGF1403	D				
MGF1404	E				
MGF1405	F				
MGF1423	G				
MGF1425	H	GD-5	Low Noise Dual Gate FET (Mold)		
MGF1501	I				
MGF1502	A			GD-6	Low Noise FET (Mold)
MGF1902	B			GD-7	Low Noise FET (Tape-Carrier)
MGF1903	C				
MGF4301A	R	GD-4	Low Noise HEMT		
MGF4302A	S				
MGF4303A	M				
MGF4304A	N				
MGF4305A	P				
MGF4401A	J	GD-9	Low Noise HEMT (Tape-Carrier)		
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**

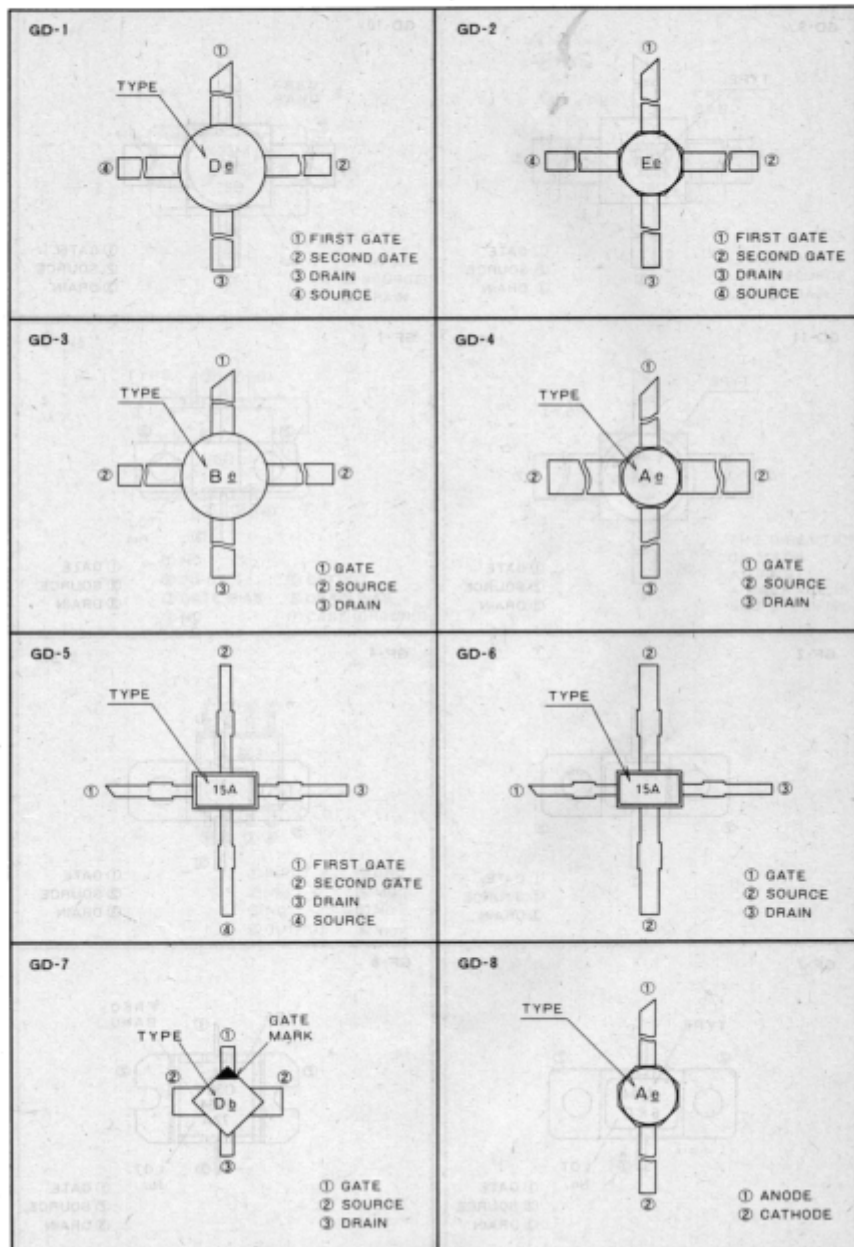
**Power GaAs FET**

Type	Symbol	Outline	Classification
MGF1801	B	GD-10	Power FET (Micro Disk)
MGF1801	A	GD-11	
MGF1802		GF-1	Power FET (Frangle Type)
MGF2116		GF-2	
MGF2117		GF-1	
MGF2124			
MGF2148		GF-4	
MGF2172			
MGF2407			
MGF2415		GF-1	
MGF2430			
MGF2445		GF-4	
MGF0904	94	GF-7	
MGF0905	95		
MGFC36V SERIES	C36V	GF-8	
MGFC39V SERIES	C39V		
MGFX35V9095	X35V	GF-14	
MGFX38V9095	X38V		
MGFK25M4045	K25M	GF-11	Power FET (Internally Matched)
MGFK30M4045	K30M		
MGFK33M4045	K33M		
MGFK35M4045	K35M	GF-14	
MGFK35V4045	K35V		
MGFK37V4045	K37V		

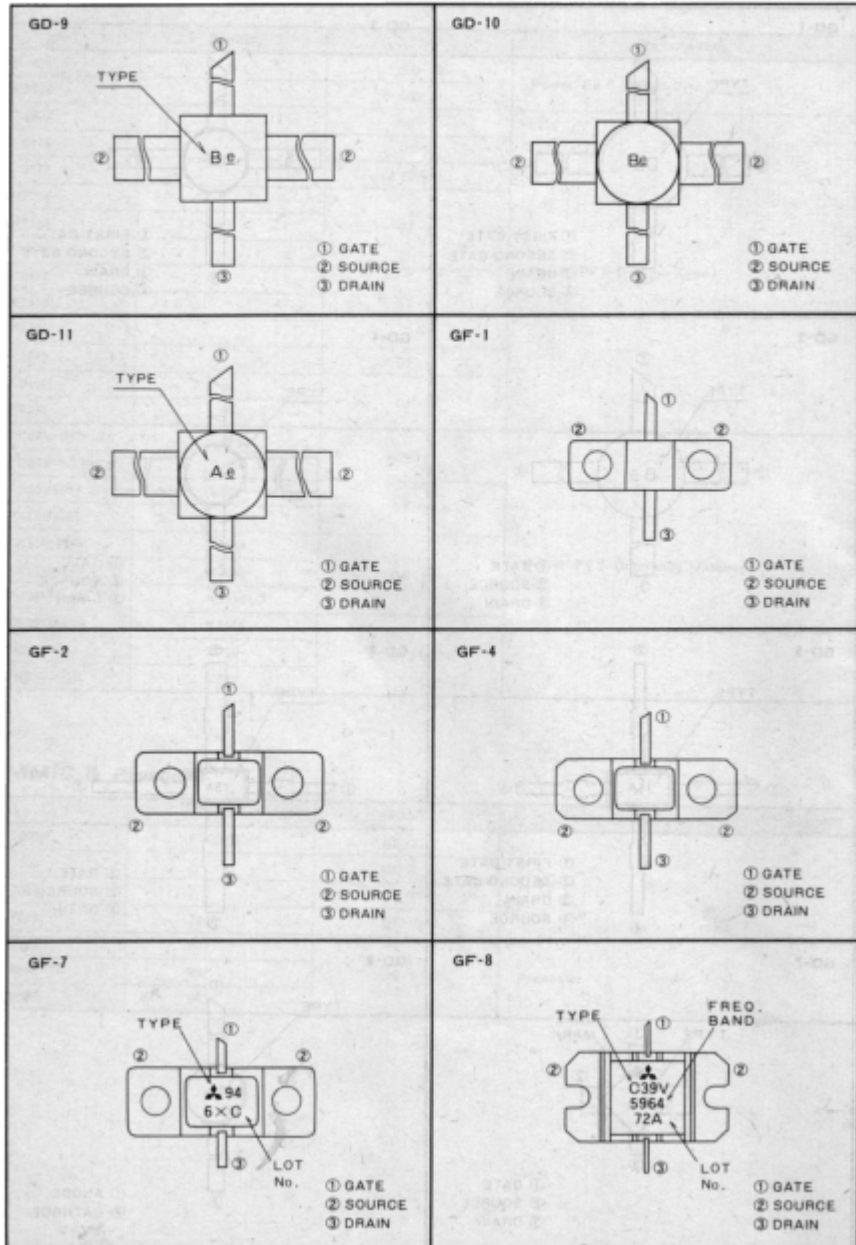
**GaAs MMIC & Prescaler**

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**

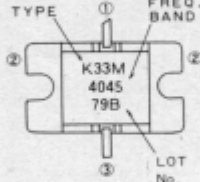
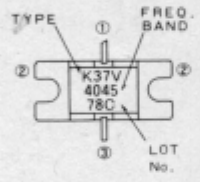
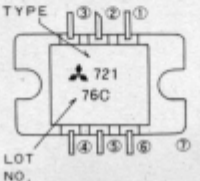
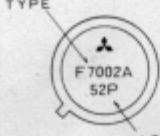
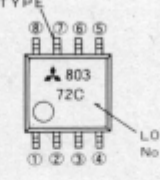


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SYMBOL ON PACKAGE**





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