

PRELIMINARY

Notice: This is not a final specification
Some parametric limits are subject to change.

MGFC36V7177A

7.1~7.7GHz BAND 4W INTERNALLY MATCHED GaAs FET

DESCRIPTION

The MGFC36V7177A is an internally impedance-matched GaAs power FET especially designed for use in 7.1~7.7GHz band amplifiers. The hermetically sealed metal-ceramic package guarantees high reliability.

FEATURES

- Class A operation
- Internally matched to 50Ω system
- High output power
 $P_{1dB} = 4W(TYP) @ 7.1 \sim 7.7GHz$
- High power gain
 $GLP = 9dB(TYP) @ 7.1 \sim 7.7GHz$
- High power added efficiency
 $\eta_{add} = 30\%(TYP) @ 7.1 \sim 7.7GHz$
- Hermetically sealed metal-ceramic package
- Low distortion [Item : - 51]
 $IM_3 = -45dBc(TYP) @ P_o = 25(dBm) S.C.L.$

APPLICATION

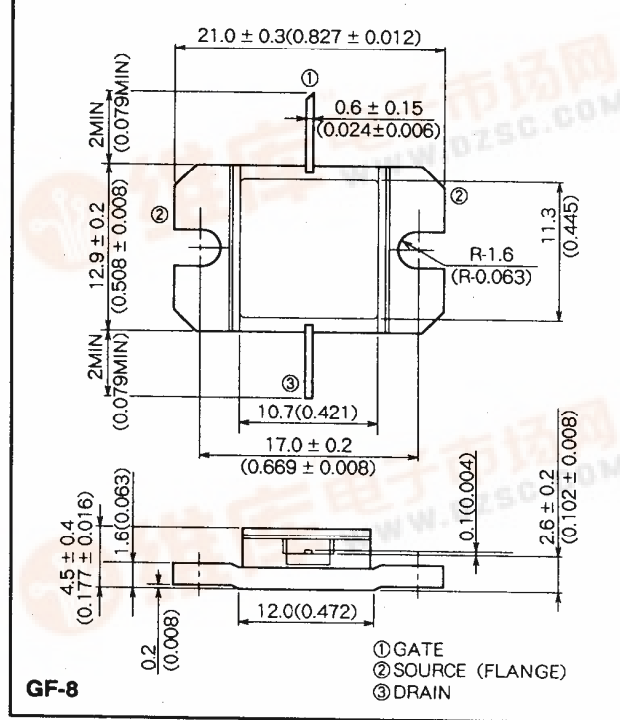
Item-01 : 7.1~7.7GHz band power amplifier
Item-51 : Digital radio communication

QUALITY GRADE

- IG

OUTLINE DRAWING

Unit : millimeters (inches)



RECOMMENDED BIAS CONDITIONS

- $V_{DS} = 10V$
- $I_D = 1.2A$
- $R_G = 100(\Omega)$
- Refer to Bias Procedure

ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

Symbol	Parameter	Ratings	Unit
V_{GDO}	Gate to drain voltage	- 15	V
V_{GSO}	Gate to source voltage	- 15	V
I_D	Drain current	3.75	A
I_{GR}	Reverse gate current	- 10	mA
I_{GF}	Forward gate current	21	mA
P_T	Total power dissipation * 1	25	W
T_{ch}	Channel temperature	175	°C
T_{stg}	Storage temperature	- 65 ~ + 175	°C

* 1 : $T_c = 25^\circ C$

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
I_{DSS}	Saturated drain current	$V_{DS} = 3V, V_{GS} = 0V$	-	-	3.75	A
g_m	Transconductance	$V_{DS} = 3V, I_D = 1.1A$	-	1	-	S
$V_{GS(off)}$	Gate to source cut-off voltage	$V_{DS} = 3V, I_D = 10mA$	-	-	- 4.5	V
P_{1dB}	Output power at 1dB gain compression	$V_{DS} = 10V, I_D = 1.2A, f = 7.1 \sim 7.7GHz$	35	36	-	dBm
GLP	Linear power gain		8	9	-	dB
I_D	Drain current		-	-	1.8	A
η_{add}	Power added efficiency		-	30	-	%
IM_3	3rd order IM distortion * 1		- 42	- 45	-	dBc
$R_{th(ch-c)}$	Thermal resistance * 2	ΔV_f method	-	5	6	°C/W

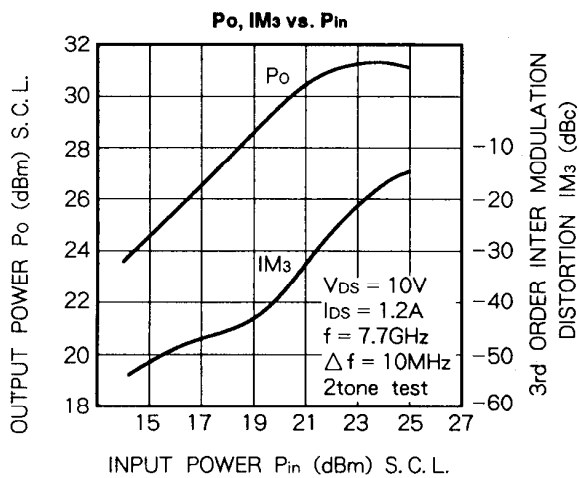
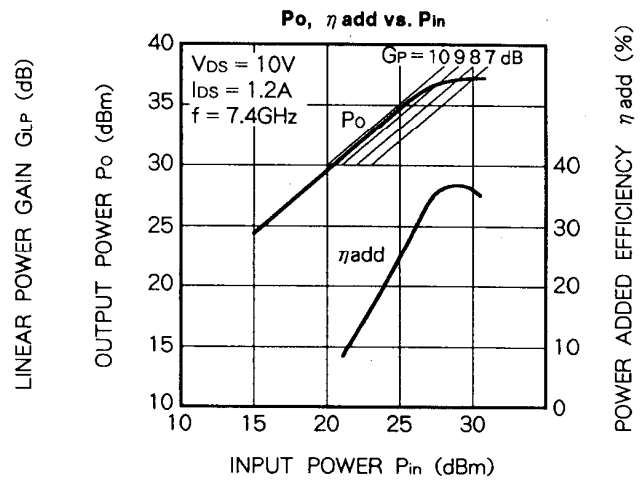
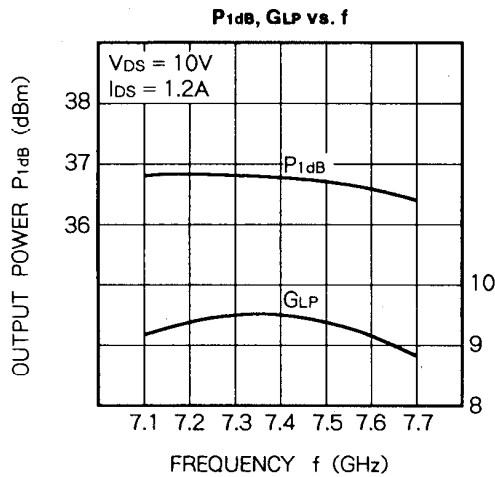
* 1 : Item-51, 2-tone test $P_o = 25dBm$ Single Carrier Level $f = 7.7GHz \Delta f = 10MHz$ * 2 : Channel to case

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TYPICAL CHARACTERISTICS



S PARAMETERS (T_a = 25°C, V_{DS} = 10V, I_{DS} = 1.2A)

f (GHz)	S parameters							
	S ₁₁		S ₁₂		S ₂₁		S ₂₂	
	Magn.	Angle(deg.)	Magn.	Angle(deg.)	Magn.	Angle(deg.)	Magn.	Angle(deg.)
7.1	0.41	172	0.077	-157	2.85	-109	0.25	15
7.2	0.35	160	0.082	-171	2.92	-124	0.24	0
7.3	0.29	148	0.087	174	2.97	-139	0.23	-18
7.4	0.22	134	0.091	160	2.98	-154	0.21	-39
7.5	0.14	123	0.096	144	2.93	-169	0.20	-65
7.6	0.10	132	0.098	129	2.88	174	0.19	-93
7.7	0.18	130	0.099	113	2.79	158	0.21	-121