

# PRELIMINARY

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

MITSUBISHI SEMICONDUCTOR <GaAs MMIC>

# MGF7176C

3 Stage Amplifier with gain control UHF BAND GaAs POWER AMPLIFIER

## DESCRIPTION

The MGF7176C is a monolithic microwave integrated circuit for use in CDMA base handheld phone.

## FEATURES

- Low voltage operation :  $V_d=3.0V$
- High output power :  $P_o=28dBm$  typ. @ $f=1.75\sim 1.78GHz$
- Low distortion :  $ACP=-46dBc$  max.  
@ $P_o=28dBm, 1.25MHz$  off-set.
- High efficiency :  $I_d=560mA$  typ. @ $P_o=28dBm$
- Single voltage operation (NVG include)
- Enable to Gain control
- Surface mount package
- 3 Stage Amplifier with gain control
- External matching circuit is required

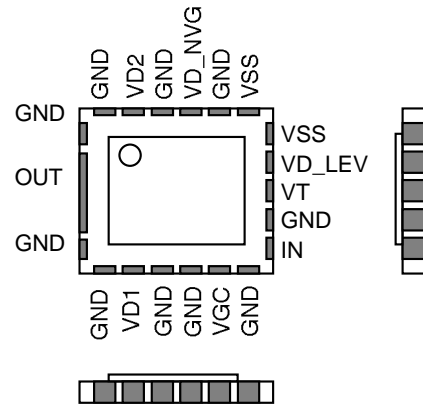
## APPLICATION

- 1.7GHz band handheld phone

## QUALITY GRADE

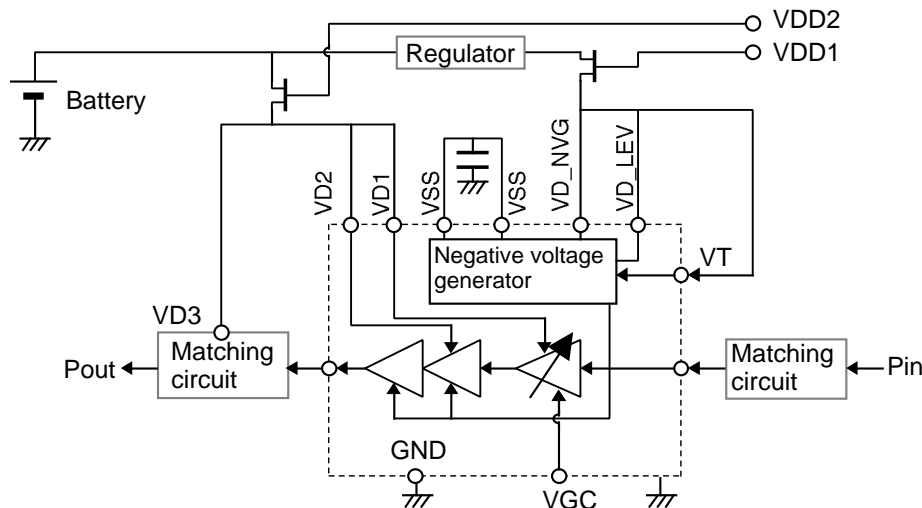
- GG

## PIN CONFIGURATION (TOP VIEW)



(7mmx6.1mmx1mm)  
pin pitch 1.0mm

## Block Diagram of this IC and Application Circuit Example.



\*Mitsubishi Electric Corporation puts the maximum effort into making semiconductor products better and reliable, but there is always the possibility that trouble may occur with them. Trouble with semiconductors may lead to personal injury, fire or property damage. Remember to give due consideration to safety when making your circuit designs, with appropriate measures such as (i) placement of substitutive, auxiliary, circuits, (ii) use of non-flammable material or (iii) prevention against any malfunction or mishap.

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## ABSOLUTE MAXIMUM RATINGS (Ta=25 deg.C)

Symbol	Parameter	Ratings	Unit
VD1,VD2,VD3	Supply voltage of HPA	5	V
VD_NVG	Supply voltage of NVG	5	V
VD_LEV,VT,VGC	Control voltage	4.5	V
Pin	Input power	5	dBm
Tc(op)	Operating case temperature	-30 ~ +85	deg.C
Tstg	Storage temperature	-30 ~ +100	deg.C

\*1.Each maximum rating is guaranteed independently.

## ELECTRICAL CHARACTERISTICS (Ta=25 deg.C)

\*Standard bias : VD1,VD2,VD3=3V  
VD\_NVG,VD\_LEV=3V

Symbol	Parameter	Test conditions	Limits			Unit
			MIN	TYP	MAX	
f	frequency		1750	—	1780	MHz
Idt	Total drain current	Standard bias*,VGC=VT=3.0V, Pout=28dBm ACP<-46dBc (1.25MHz off-set.)	—	560	—	mA
Ga	Gain	Standard bias*,VT=3.0V,VGC=3.0V,		28		dB
		Standard bias*,VT=3.0V,VGC=0.0V,		18		dB
Idle_Id	Idle current	Standard bias*,VGC=3V,VT=3V, for Po>10dBm	—	170	—	mA
		Standard bias*,VGC=3V,VT=2V, for Po<12dBm	—	50	—	
Pout	Output power	Standard bias*,VGC=VT=3V CDMA modulated signal based on IS-9 5 STD. (1.2288Mbps spreading,OQPSK)	—	28	—	dBm
Ig	Gate current		—	5	—	mA
2sp	2nd harmonics		—	—	-30	dBc
rin	input VSWR		—	—	3	—
ACP	Adjacent channel leakage	Po=28dBm,1.2288MHz Spreading @1.25MHz offset	—	—	-46	dBc
Psp	Spurious level	Standard bias*,VGC=VT=3.0V	—	—	-57	dBm
Pnoise	Noise power in 1.84~1.87GHz band	Standard bias*,VGC=VT=3.0V, Resolution band width = 1MHz	—	—	-70	dBm
—	Damage with-standing Note	Standard bias*,VGC=VT=3.0V, Pin=0dBm, Load VSWR=10, All phase, Time=10 sec	No damage			
—	Stability Note	Standard bias*,VGC=VT=3.0V, Pin=0dBm, Load VSWR=3:1, All phase	No oscillation Spurious level -60dBc			

\*CDMA is code division multiple access. OQPSK is modulation method, off-set quadrature phase shift keying.  
Electrical characteristics are changed by the external matching circuit.  
Limits are guaranteed by using MITSUBISHI test fixture.

Note : Sampling inspection