# APPLICATION NOTE

MITSUBISHI
ELECTRIC SEMICONDUCTOR

Date : 20th Feb. 2007

**SUBJECT:**

## RF Characteristics of MGF0920A in 3.4 to 3.6 GHz-band

**SUMMARY:** This application note shows RF characteristics of MGF0920A

- Measurement conditions are as follows :
- Modulated signal; W - CDMA ( 3GPP TEST MODEL1 64ch's 1carrier )

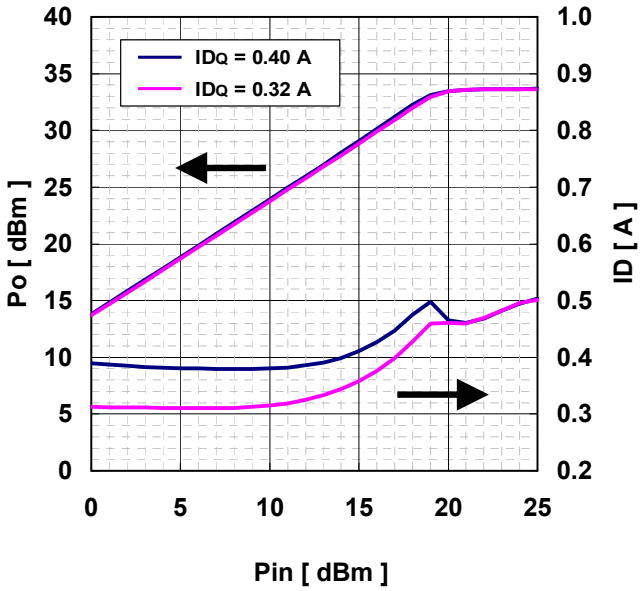
| CW Signal | | $ID_Q$ ( A ) 0.4 | $ID_Q$ ( A ) 0.32 | |
|---|---|---|---|---|
| VD ( V ) | 10 | ○ | ○ | Ta = 25 deg. C<br>Freq. = 3.5 GHz |
| | 9 | ○ | N/A | |

| Modulated Signal | | $ID_Q$ ( A ) 0.4 | $ID_Q$ ( A ) 0.32 | |
|---|---|---|---|---|
| VD ( V ) | 10 | ○ | ○ | Ta = 25 deg. C<br>Freq. = 3.5 GHz |
| | 9 | ○ | N/A | |

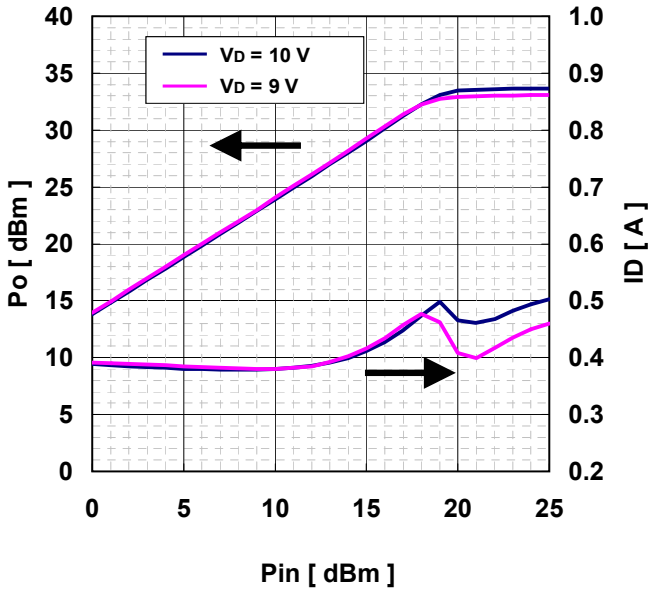
| Freq. ( GHz ) | Input Signal CW | Input Signal Modulated | |
|---|---|---|---|
| 3.4 | ○ | ○ | Ta = 25 deg. C<br>VD = 10V<br>$ID_Q$ = 0.4 A |
| 3.5 | ○ | ○ | |
| 3.6 | ○ | ○ | |

- Contents
  Page 2-3; the RF characteristics.
  Page 4; Equivalent circuit.

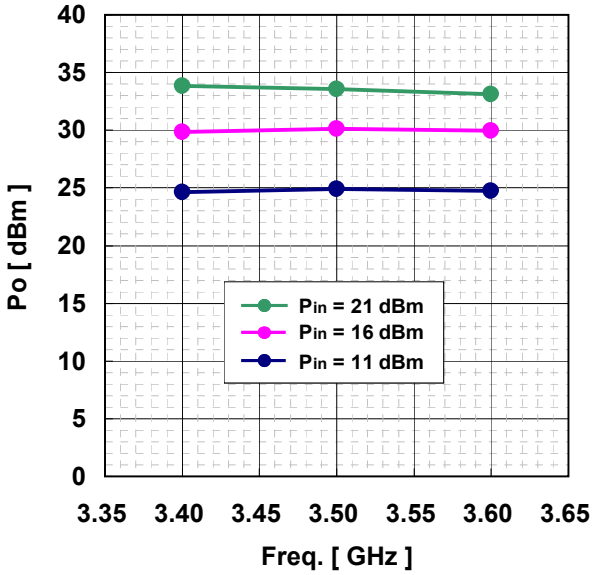
Po , ID v.s. Pin Freq. = 3.5 GHz ( CW )
VD = 10 V




Po , ID v.s. Pin Freq. = 3.5 GHz ( CW )
$ID_Q$ = 0.4 A

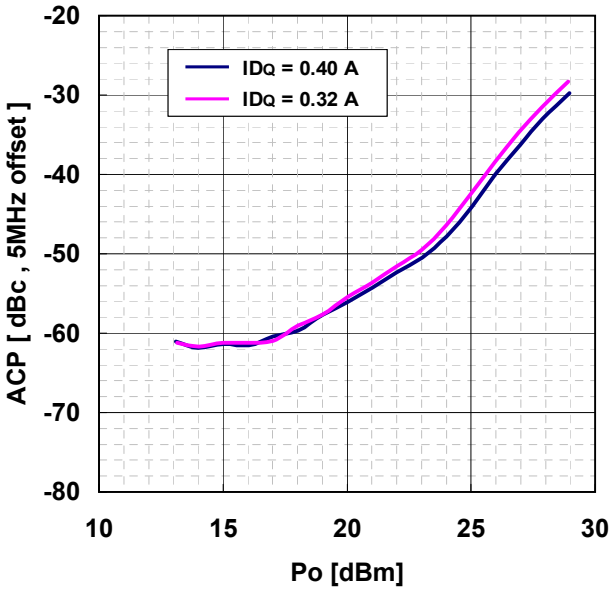



Po v.s. Freq. ( CW ) VD = 10 V , $ID_Q$ = 0.4 A

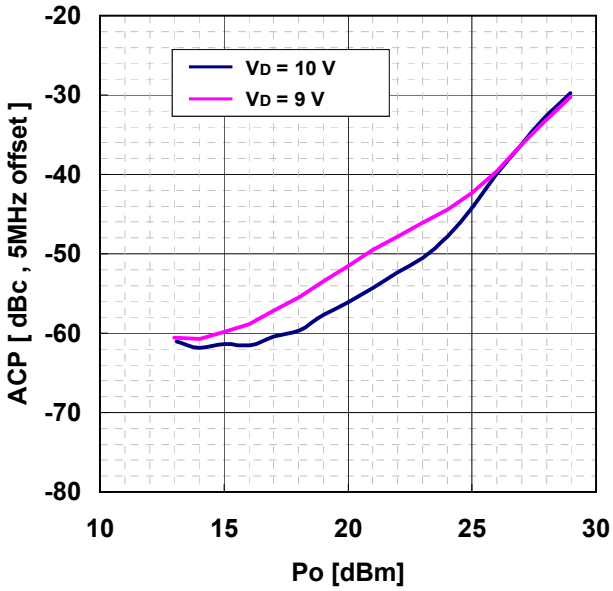


Input signal; W - CDMA ( 3GPP TEST MODEL1 64ch's 1carrier )

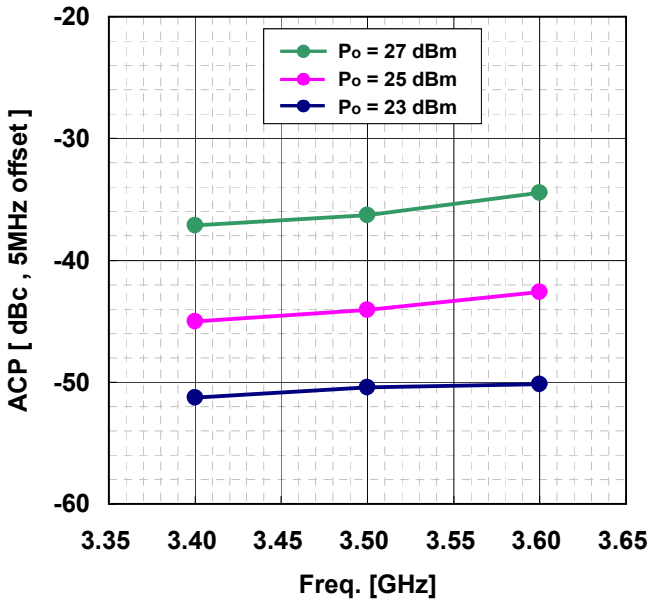
ACP v.s. Po $ID_Q$ = 0.4A



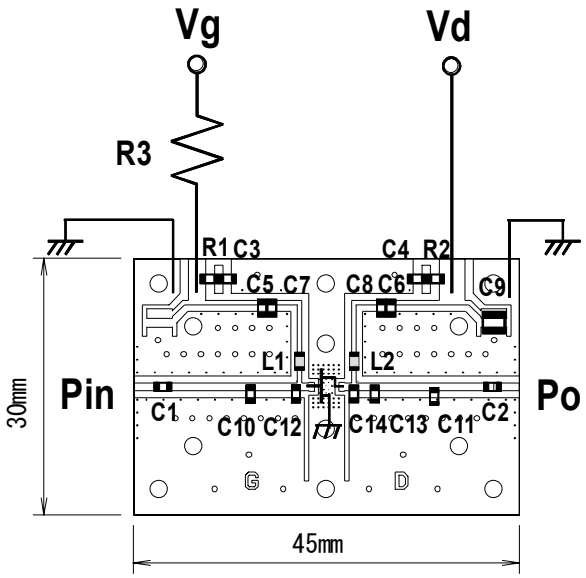

ACP v.s. Po VD = 10 V



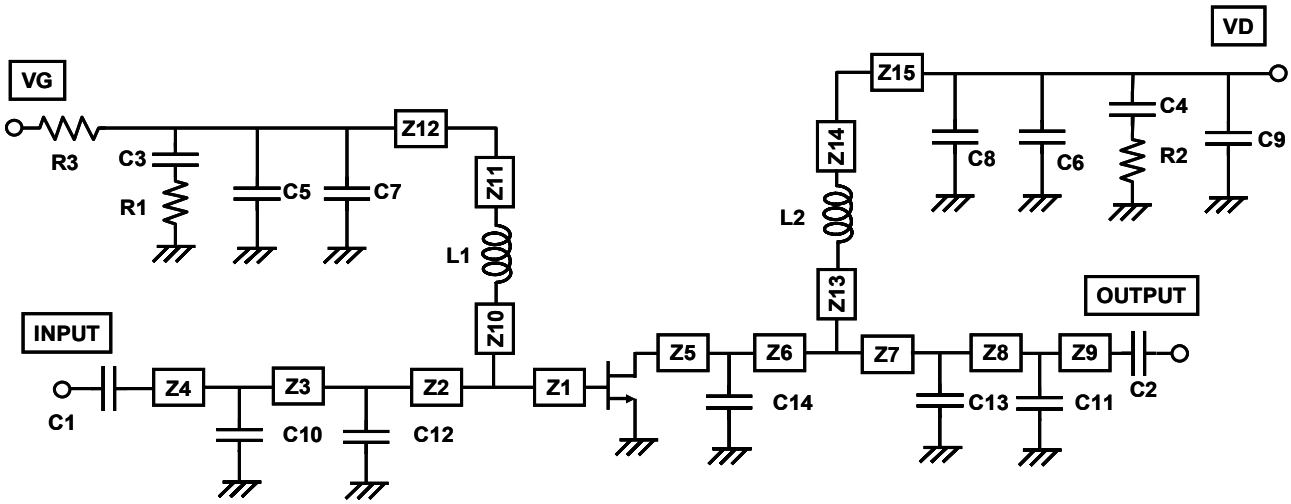

ACP v.s. Freq.



# MGF0920A TEST FIXTURE f = 3.5 GHz




C1 , C2 : 22 pF Chip Capacitor
C3 , C4 : 1000 pF Chip Capacitor
C5 , C6 : 10 pF Chip Capacitor
C7 , C8 : 5 pF Chip Capacitor
C9 : 4.7 uF Chip Capacitor
C10 : 0.7 pF Chip Capacitor
C12 : 1.8 pF Chip Capacitor
C13 : 1.4 pF Chip Capacitor
C11 , C14 : 0.5 pF Chip Capacitor
L1 , L2 : 12 nH Chip Inductor
R1 , R2 : 51 ohm Chip Resistor
R3 : 200 ohm




Z1 : W = 0.9 mm , L = 1.05 mm
Z2 : W = 0.9 mm , L = 0.25 mm
Z3 : W = 0.9 mm , L = 3.9 mm
Z4 : W = 0.9 mm , L = 11.4 mm
Z5 : W = 0.9 mm , L = 0.8 mm
Z6 : W = 0.9 mm , L = 0.25 mm
Z7 : W = 0.9 mm , L = 2 mm
Z8 : W = 0.9 mm , L = 6.6 mm
Z9 : W = 0.9 mm , L = 6.95 mm
Z10 : W = 0.5 mm , L = 1.75 mm
Z11 : W = 0.5 mm , L = 6.5 mm
Z12 : W = 0.5 mm , L = 1.95 mm
Z13 : W = 0.5 mm , L = 1.75 mm
Z14 : W = 0.5 mm , L = 6.5 mm
Z15 : W = 0.5 mm , L = 1.95 mm

Substrate :
Mitsubishi Gas Chemical Company
CCL-870HL TypeM
$\varepsilon_r$ = 3.4, t = 0.4 mm