

Renesas Technology Corp.

REPORT NO. Q2007Y-196

OPERATION TEST REPORT ON TDK CERAMIC RESONATOR

(CCR4.0MUC8)

IC R5F212L4SNFP-HIGH
(Renesas Technology)

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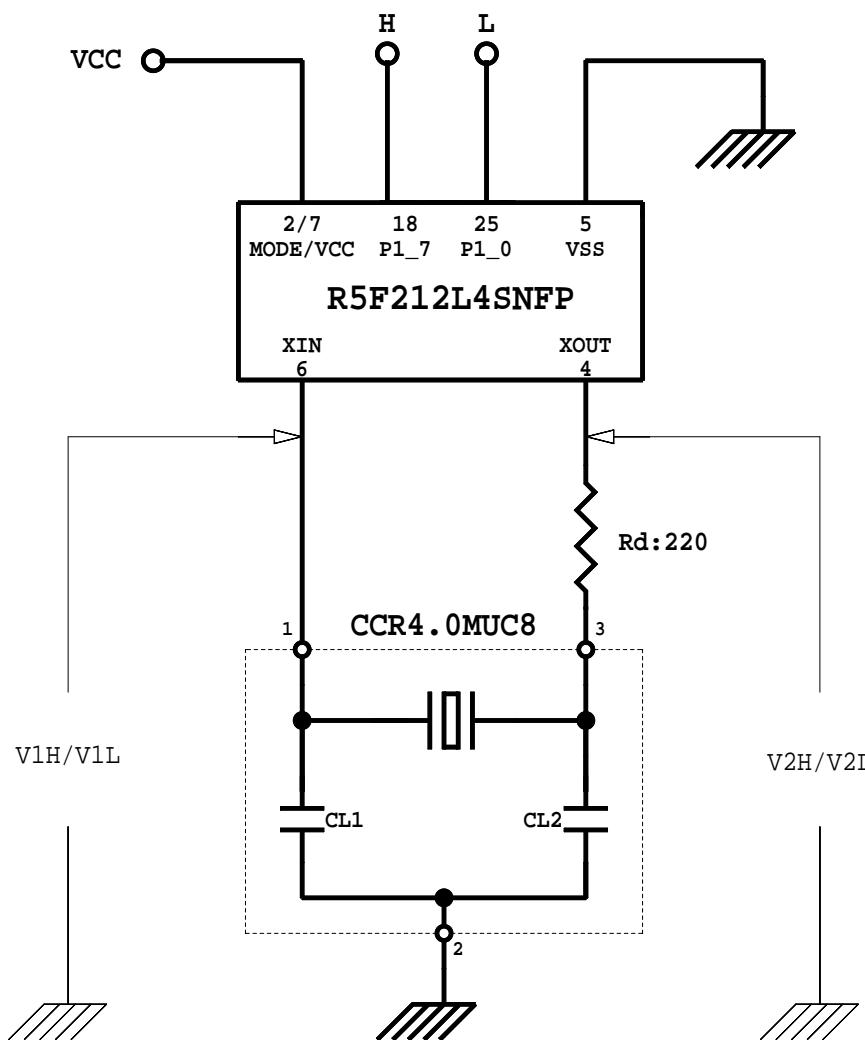
2. Test Conditions

IC	:	R5F212L4SNFP-HIGH (Renesas Technology)
Ceramic Resonator	:	CCR4.0MUC8 (Typical and worst sample are tested)
Power Supply Voltage range	:	2.2 to 5.5(V)
Temperature Range	:	-45 to +110(degC)

3. Conclusions and recommendable circuit constant

We could confirm the operation satisfactory under
the following test conditions.

Power Supply Voltage range	:	2.2 to 5.5(V)
Temperature Range	:	-45 to +110(degC)
Load capacitance(CL1/CL2)	:	Built-in [27(pF)]
Damping resistance(Rd)	:	220(ohm)
Feedback resistance(Rf)	:	Built-in(IC side)



*BUILT-IN LOADING CAPACITOR
 $CL1/CL2 = 27/27\text{pF} \pm 20\%$

Oscillating circuit for evaluation

IC dependence of oscillating characteristics

R5F212L4SNFP
CCR4.0MUC8 - S

Room Temp.
Vdd [V] 5 (item a~e)
Rd [ohm] 220

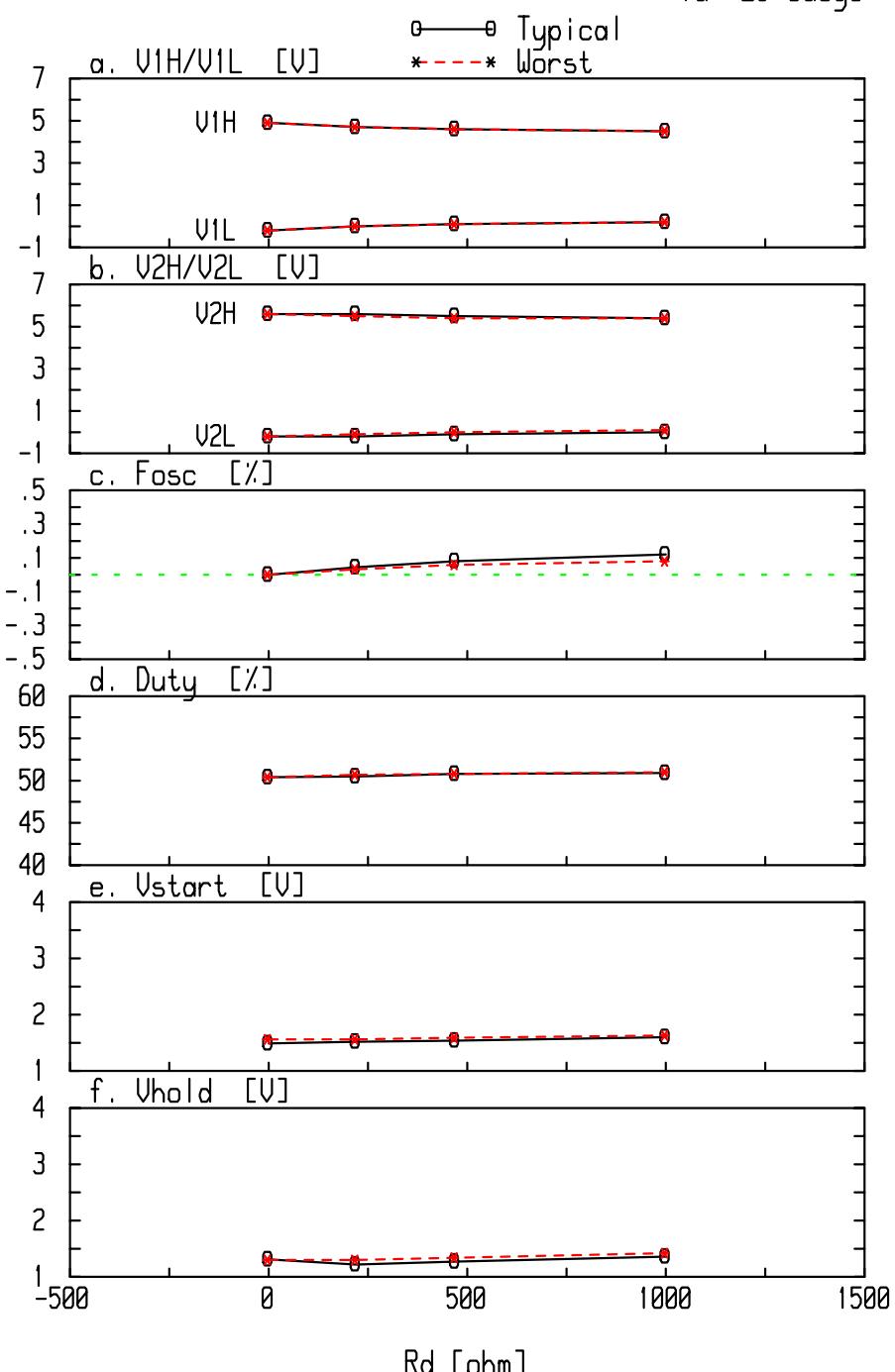
IC NO \ item	a. [V] V1H/V1L	b. [V] V2H/V2L	c. [MHz] Fosc	d. [uS] Trise	e. [%] Duty	f. [V] Vstart	g. [V] Vhold
LL	4.9 -.1	5.6 -.2	4.01176	17	50.5	1.42	1.13
LH	4.9 0	5.6 -.2	4.01163	18	51	1.52	1.21
TYP	4.8 0	5.6 -.2	4.01155	18	50.3	1.56	1.23
HL	4.8 -.1	5.6 -.2	4.01154	19	49.9	1.56	1.26
HH	4.9 -.1	5.6 -.2	4.01129	18	50.4	1.68	1.31

R5F212L4SNFP - TYP(HIGH)

CCR4.0MUC8

Vdd= 5 [V] (Fig.a~d)

T_a= 25 [deg]



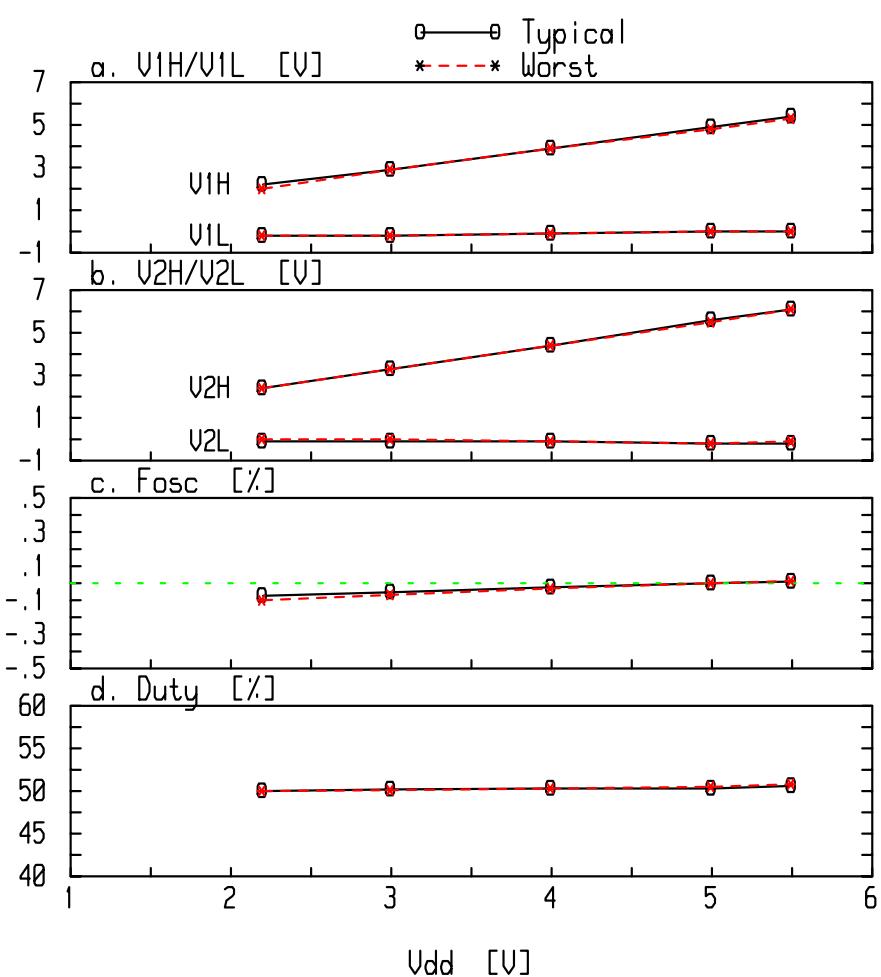
Damping resistance(R_d) dependence of oscillating characteristics

R5F212L4SNFP - TYP(HIGH)

Rd [ohm] 220

CCR4.0MUC8

T_a= 25 [deg]



e. V_{start} [V]
Typical = 1.56
Worst = 1.61

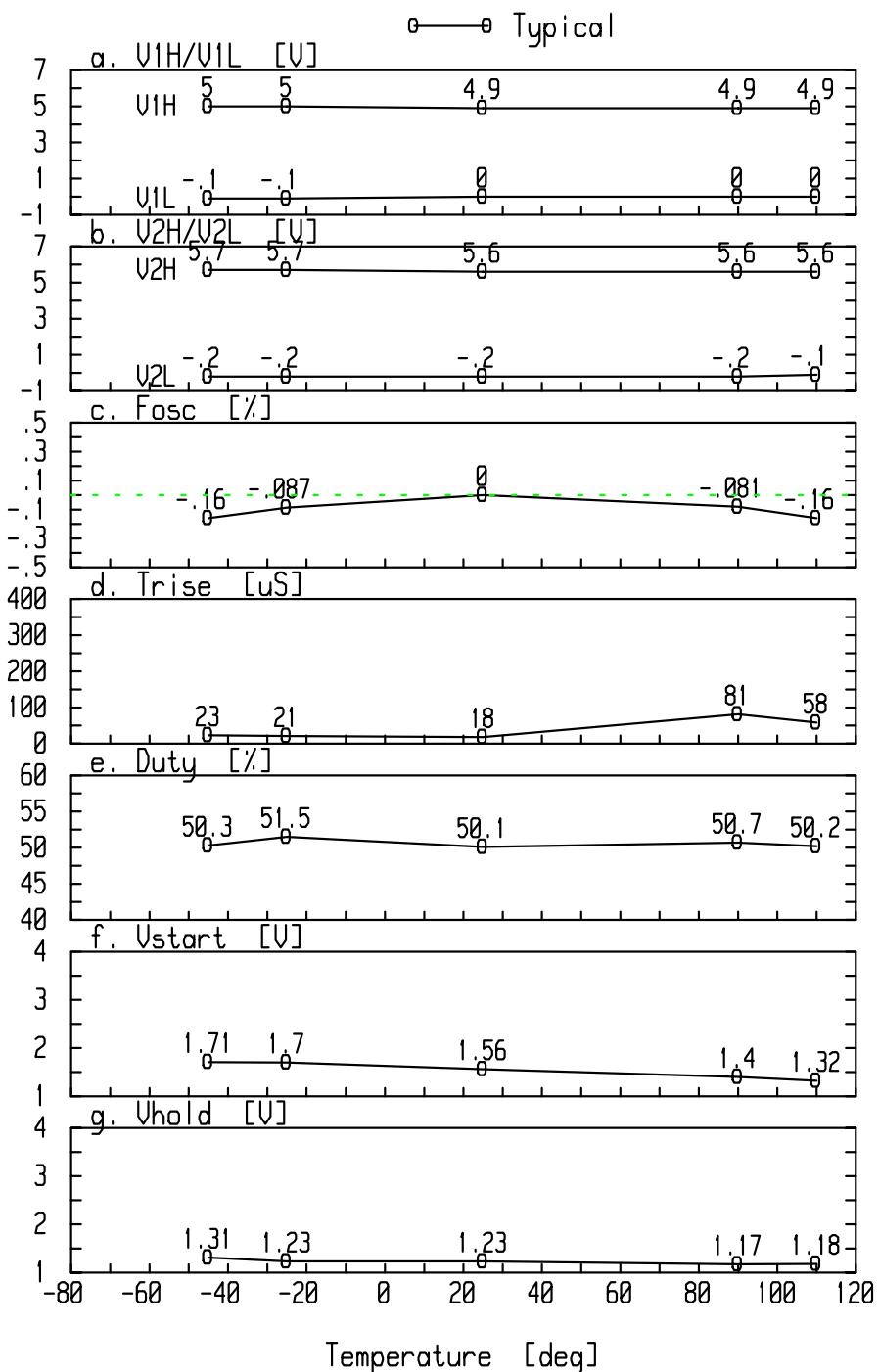
f. V_{hold} [V]
Typical = 1.23
Worst = 1.31

Power supply voltage dependence of oscillating characteristics

R5F212L4SNFP - TYP(HIGH)

Rd [ohm] 220

CCR4.0MUC8
Vdd= 5 [V] (Fig.a~e)

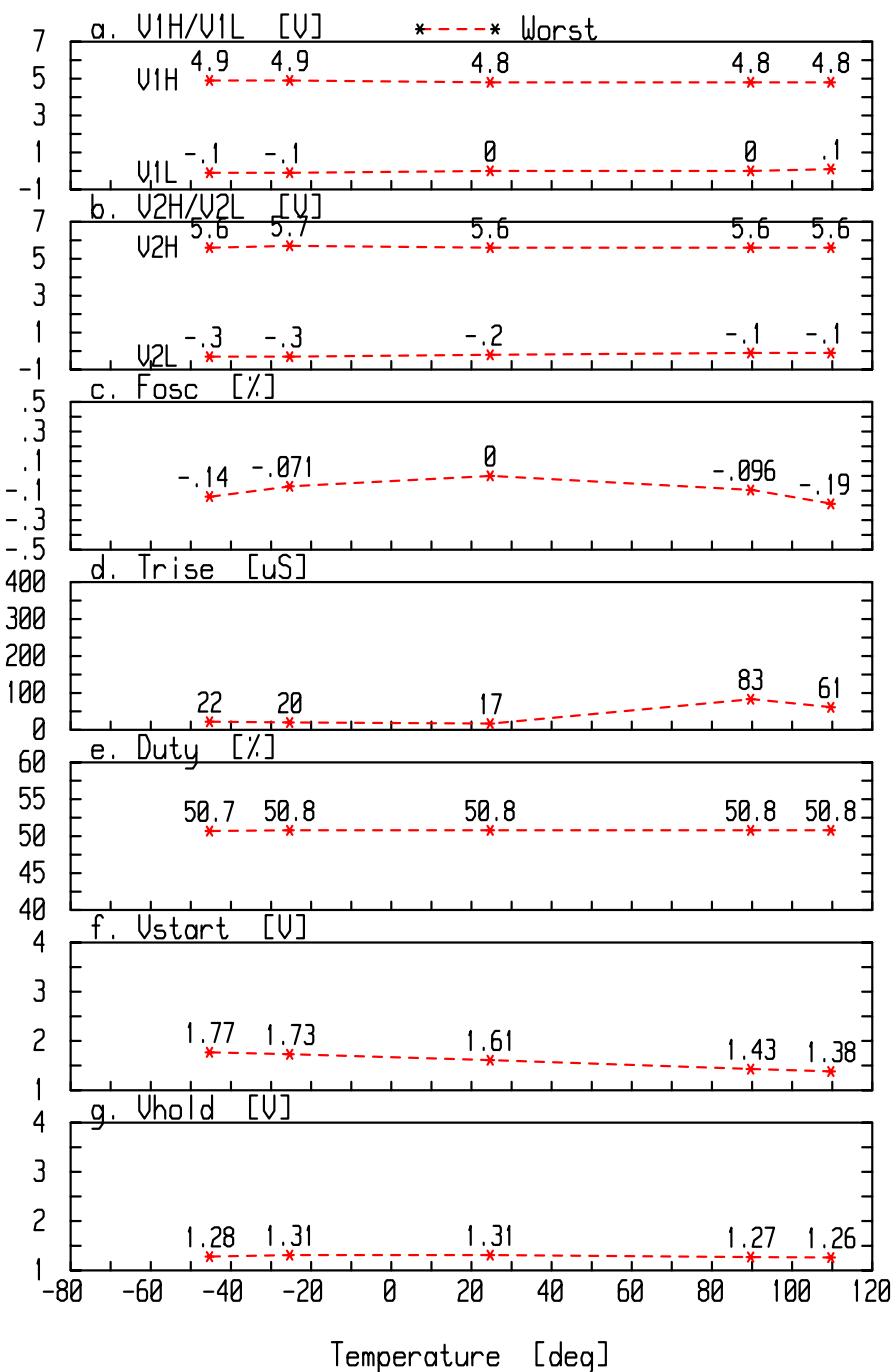


Temperature dependence of oscillating characteristics

R5F212L4SNFP - TYP(HIGH)

Rd [ohm] 220

CCR4.0MUC8
Vdd= 5 [V] (Fig.a~e)



Temperature dependence of oscillating characteristics

R5F212L4SNFP - TYP(HIGH)

CCR4.0MUC8 - Typical

Vdd [V] 5

Rd [Ω] 220

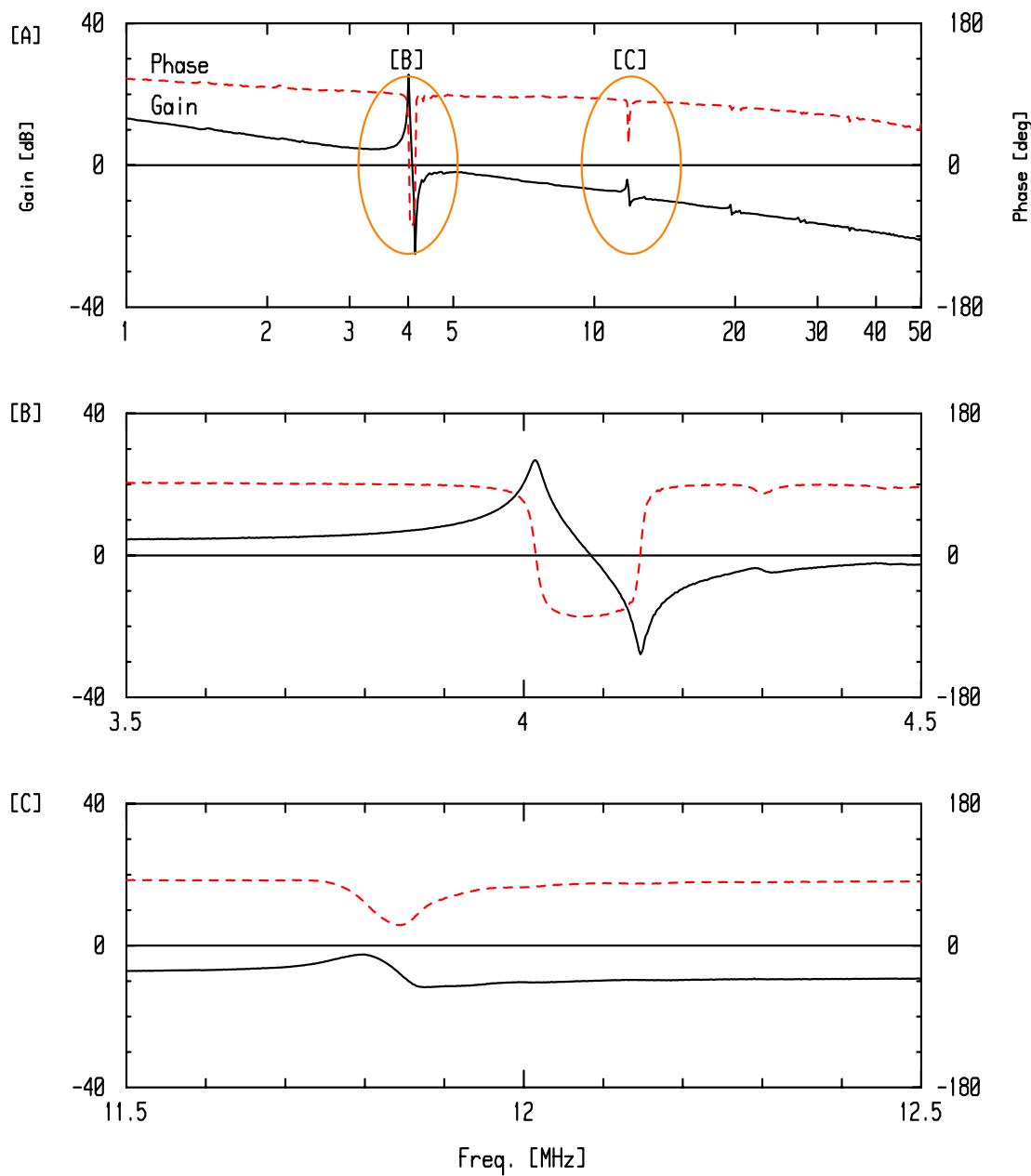
[B] [C]

Gmax [dB] 26.8 -2.5

LGM [dB] 26.4 0

FLGM [MHz] 4.016 0

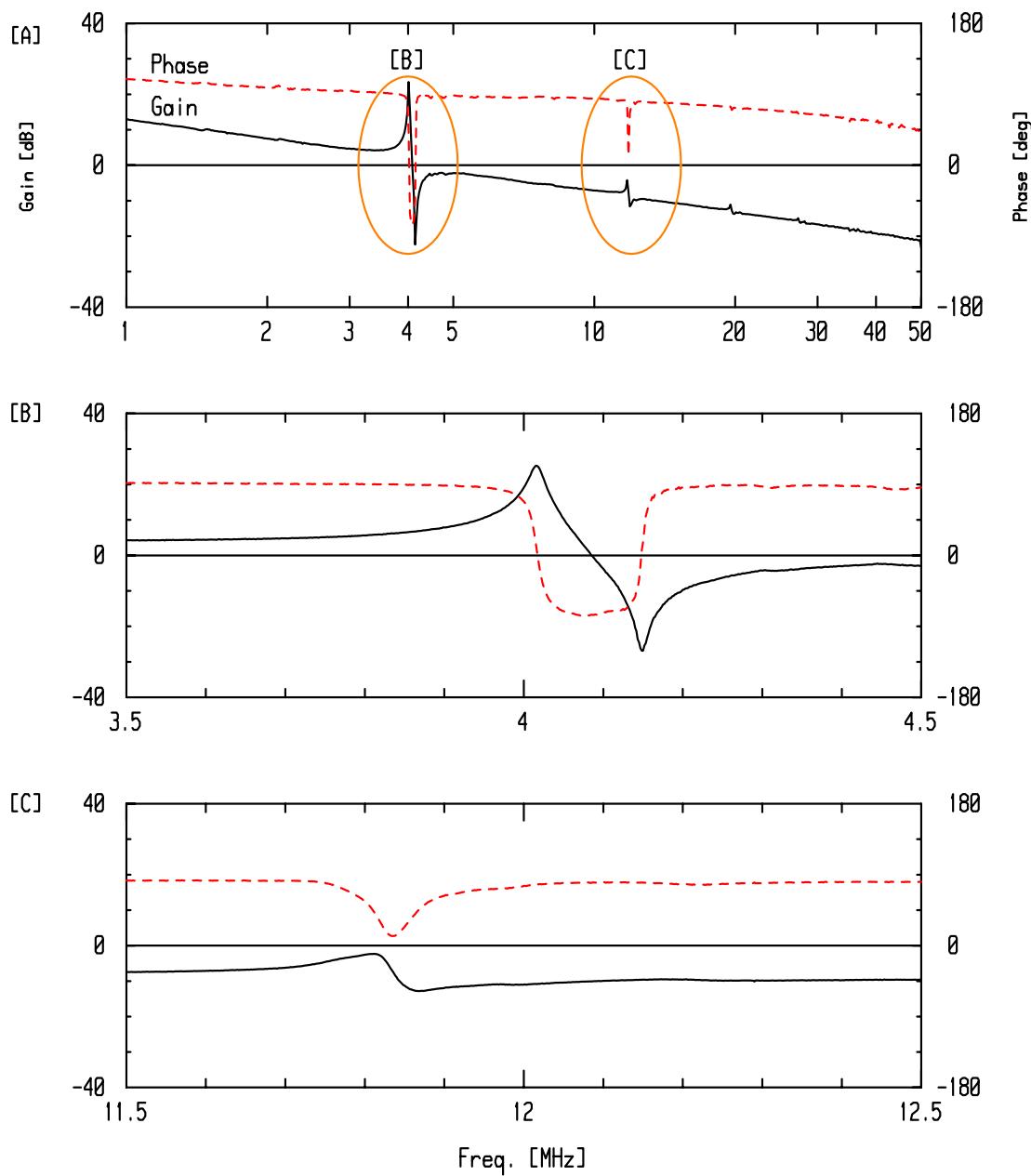
LPM [deg] -77.1 74.9



Open loop characteristics (Typical Sample)

R5F212L4SNFP - TYP(HIGH)
 CCR4.0MUC8 - Worst
 Vdd [V] 5
 Rd [Ω] 220

[B]	[C]	
Gmax [dB]	25.3	-2.3
LGM [dB]	25.1	0
FLGM [MHz]	4.0181	0
LPM [deg]	-75.3	77.6



Open loop characteristics (Worst Sample)