

OPERATION TEST REPORT ON TDK CERAMIC RESONATOR

(CCR8.0MXC8)

IC R5F212L4SNFP-HIGH  
(Renesas Technology)

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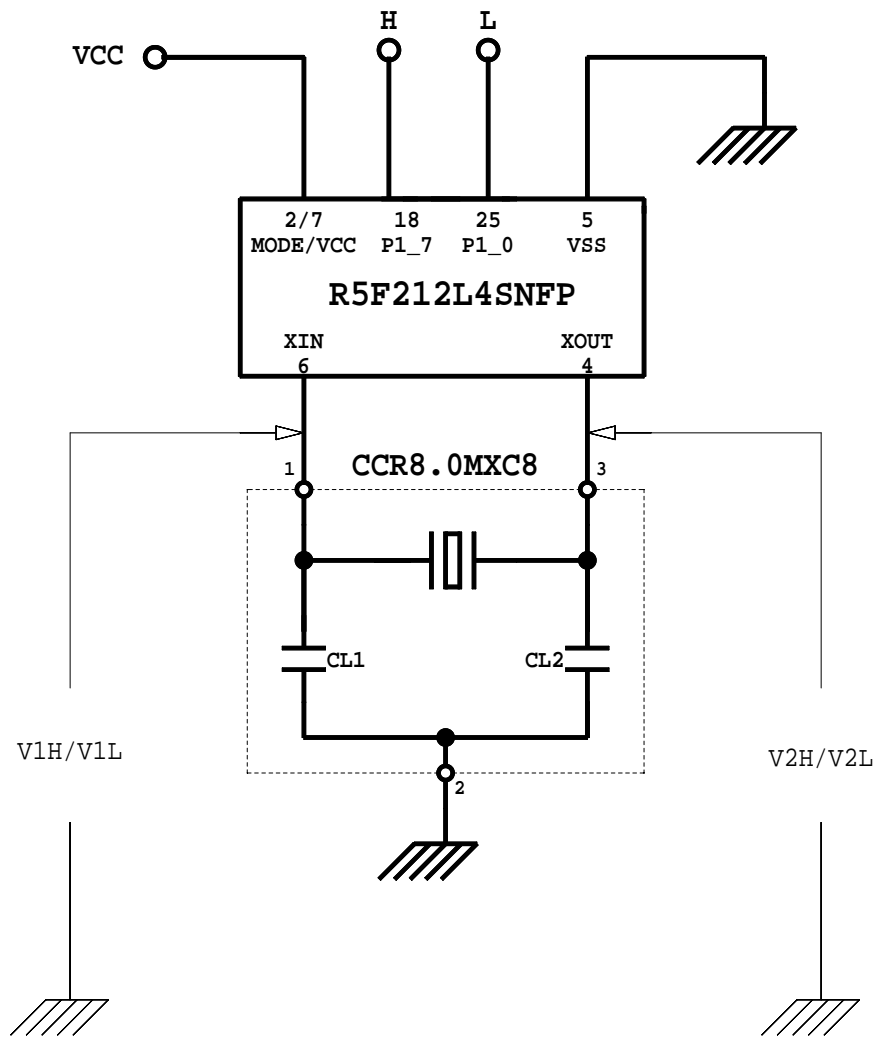
## 2.Test Conditions

IC	:	R5F212L4SNFP-HIGH (Renesas Technology)
Ceramic Resonator	:	CCR8.0MXC8 (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 [18(pF)]
Damping resistance(Rd)	:	short (0ohm)
Feedback resistance(Rf)	:	Built-in(IC side)



\*BUILT-IN LOADING CAPACITOR  
 CL1/CL2=18/18pF +/-20%

Oscillating circuit for evaluation

IC dependence of oscillating characteristics

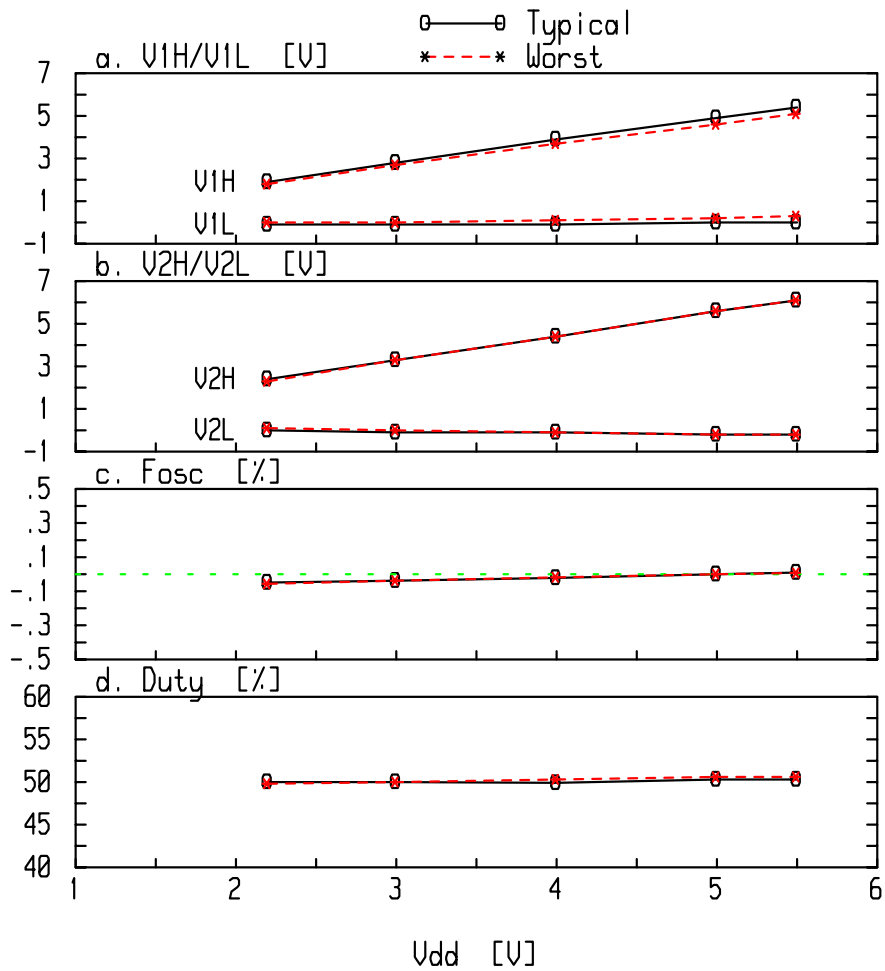
R5F212L4SNFP  
CCR8.0MXC8 - S

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

item IC NO	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 -0.1	5.6 -0.2	8.02178	13	50.1	1.47	1.22
LH	4.8 0	5.6 -0.2	8.02124	13	50.8	1.59	1.31
TYP	4.9 0	5.6 -0.2	8.02127	13	50.2	1.61	1.32
HL	4.8 -0.1	5.6 -0.2	8.02126	14	49.5	1.61	1.35
HH	4.9 -0.1	5.6 -0.2	8.0211	15	50.2	1.74	1.41

R5F212L4SNFP - TYP(HIGH)

CCR8.0MXC8  
 $T_a = 25$  [deg]



e.  $V_{start}$  [V]  
Typical = 1.61  
Worst = 1.68

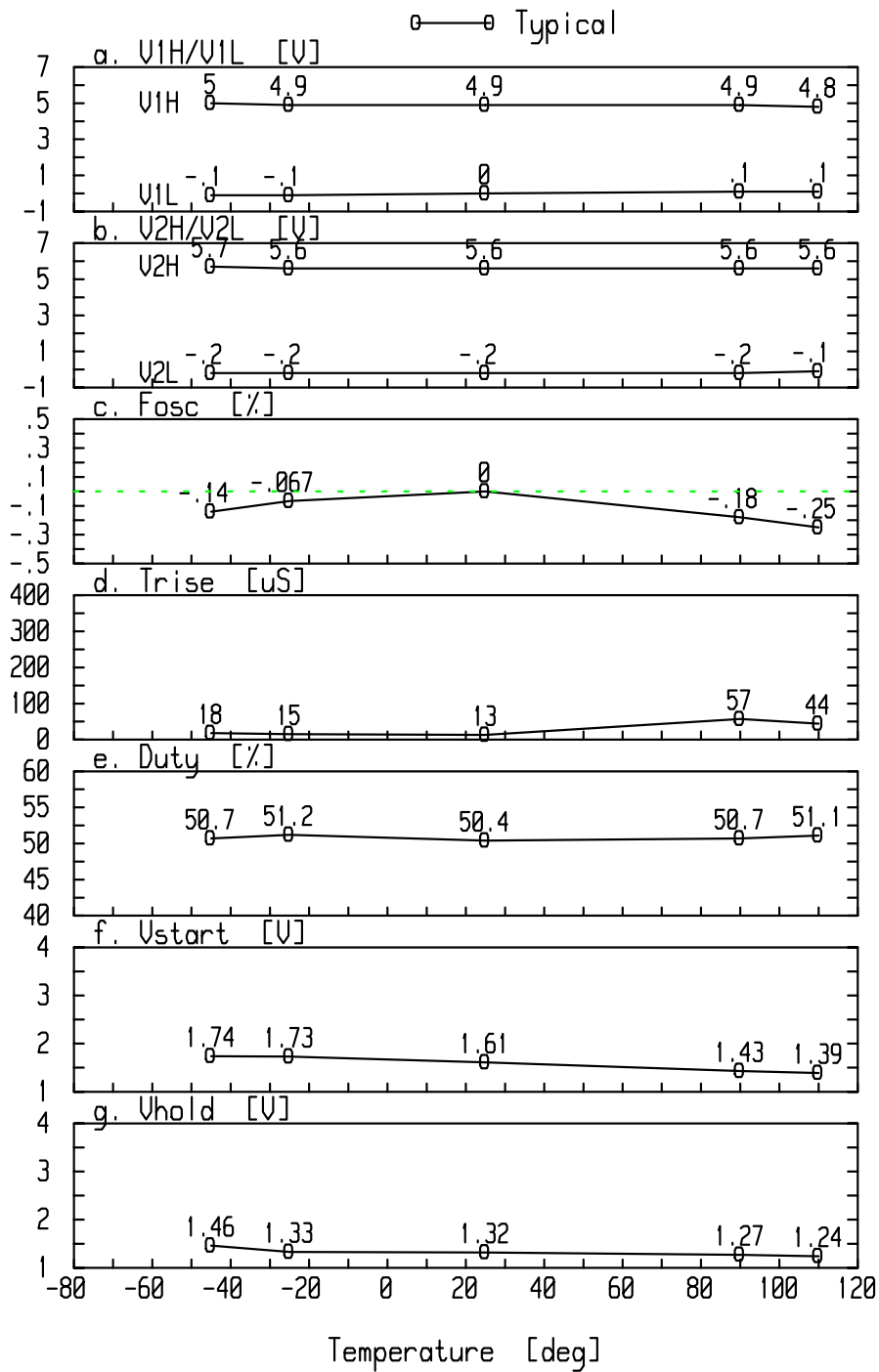
f.  $V_{hold}$  [V]  
Typical = 1.32  
Worst = 1.45

Power supply voltage dependence of oscillating characteristics

R5F212L4SNFP - TYP(HIGH)

CCR8.0MXC8

V<sub>dd</sub>= 5 [V] (Fig.a~e)

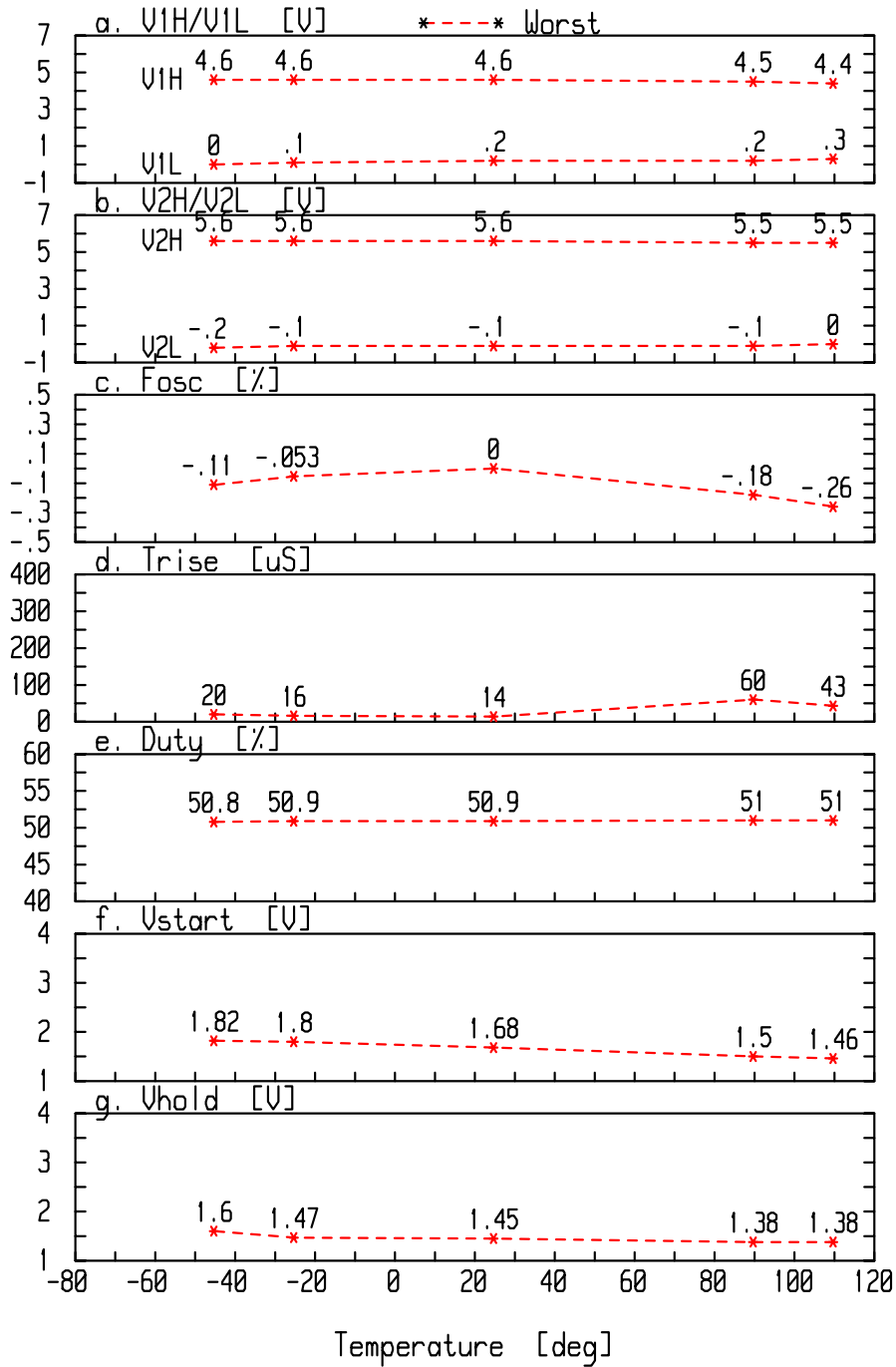


Temperature dependence of oscillating characteristics

R5F212L4SNFP - TYP(HIGH)

CCR8.0MXC8

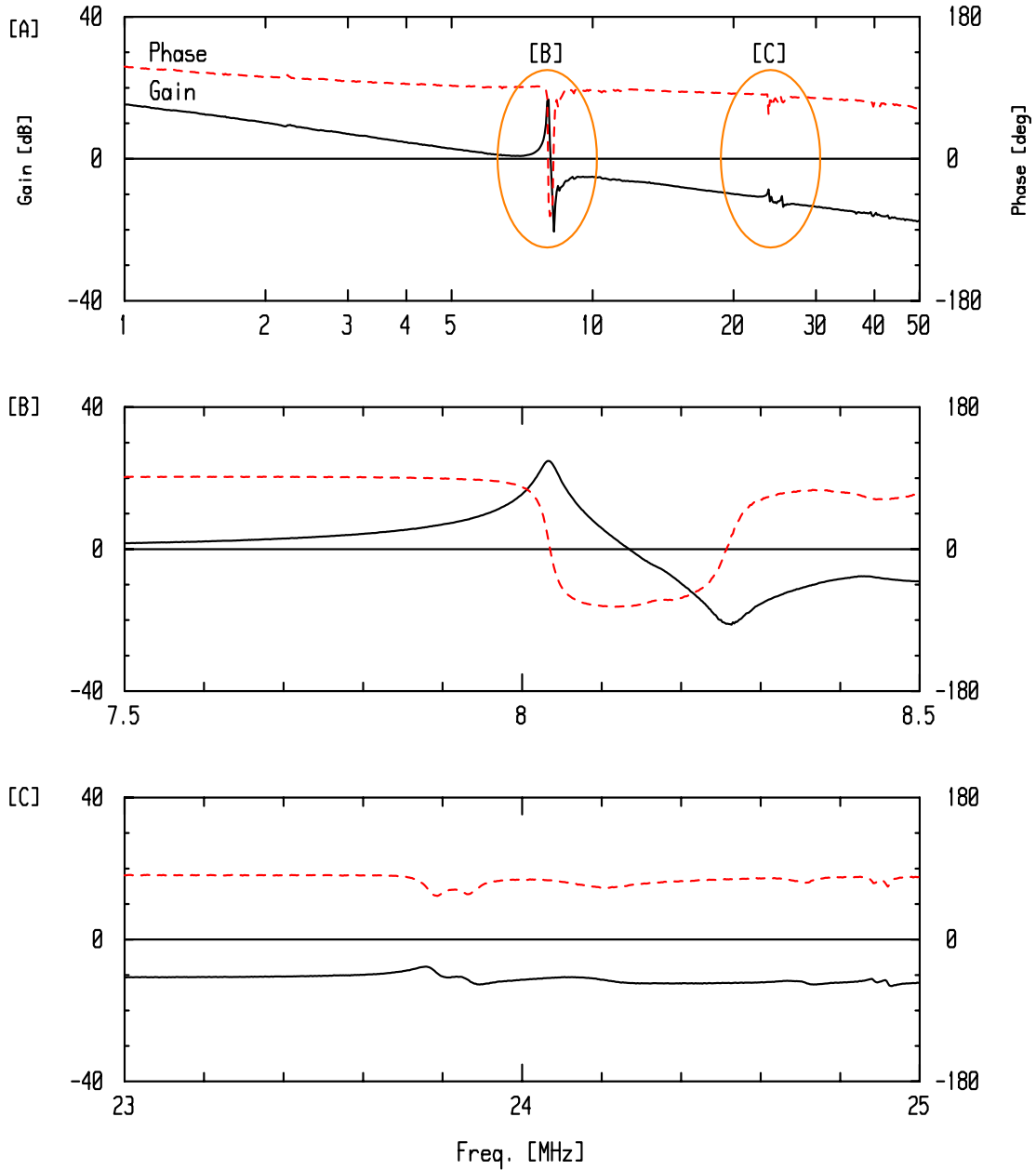
V<sub>dd</sub>= 5 [V] (Fig.a~e)



Temperature dependence of oscillating characteristics

R5F212L4SNFP - TYP(HIGH)  
 CCR8.0MXC8 - Typical  
 Vdd [V] 5

	[B]	[C]
Gmax [dB]	24.9	-7.6
LGM [dB]	24.4	0
FLGM [MHz]	8.036	0
LPM [deg]	-72.3	65.6

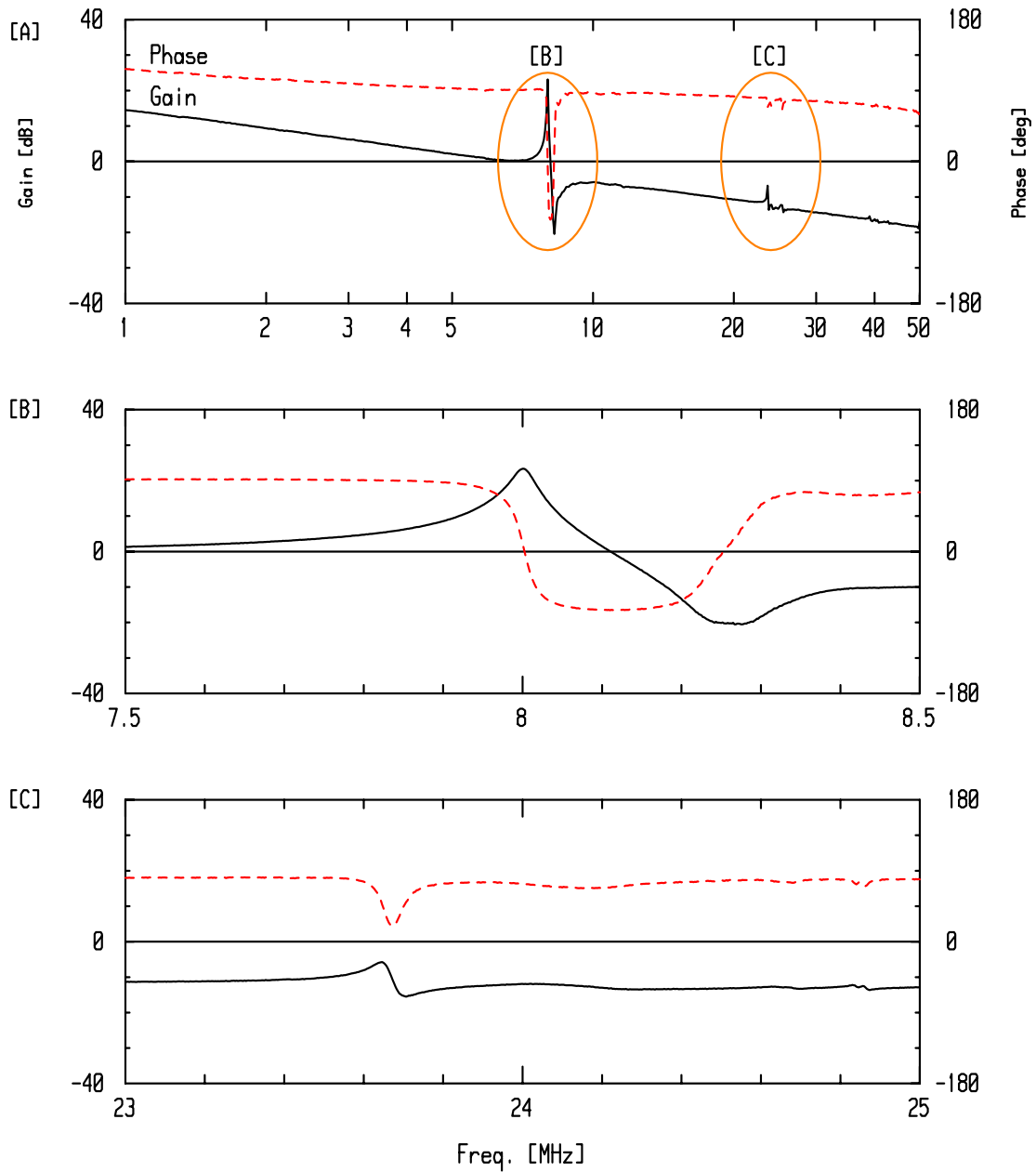


Open loop characteristics (Typical Sample)



R5F212L4SNFP - TYP(HIGH)  
 CCR8.0MXC8 - Worst  
 Vdd [V] 5

	[B]	[C]
Gmax [dB]	23.4	-5.8
LGM [dB]	23.3	0
FLGM [MHz]	8.0032	0
LPM [deg]	-74.2	67.4



Open loop characteristics (Worst Sample)