

OPERATION TEST REPORT ON TDK CERAMIC RESONATOR

(CCR20.0MXC7)

IC R5F212L4SNFP-HIGH
(Renesas Technology)

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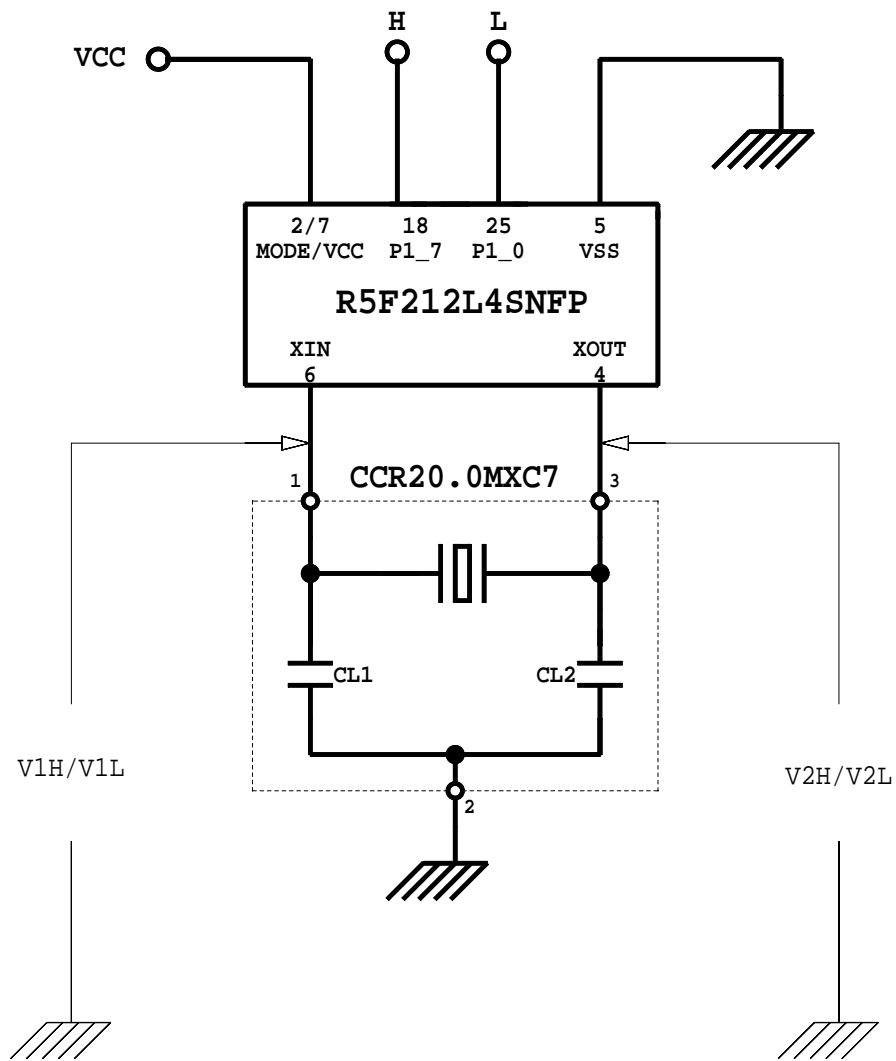
2.Test Conditions

IC	:	R5F212L4SNFP-HIGH (Renesas Technology)
Ceramic Resonator	:	CCR20.0MXC7 (Typical and worst sample are tested)
Power Supply Voltage range	:	3.0 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	:	3.0 to 5.5(V)
Temperature Range	:	-45 to +110(degC)
Load capacitance(CL1/CL2)	:	Built-in [9(pF)]
Damping resistance(Rd)	:	short (0ohm)
Feedback resistance(Rf)	:	Built-in(IC side)



*BUILT-IN LOADING CAPACITOR
 CL1/CL2=9/9pF +/-20%

Oscillating circuit for evaluation

IC dependence of oscillating characteristics

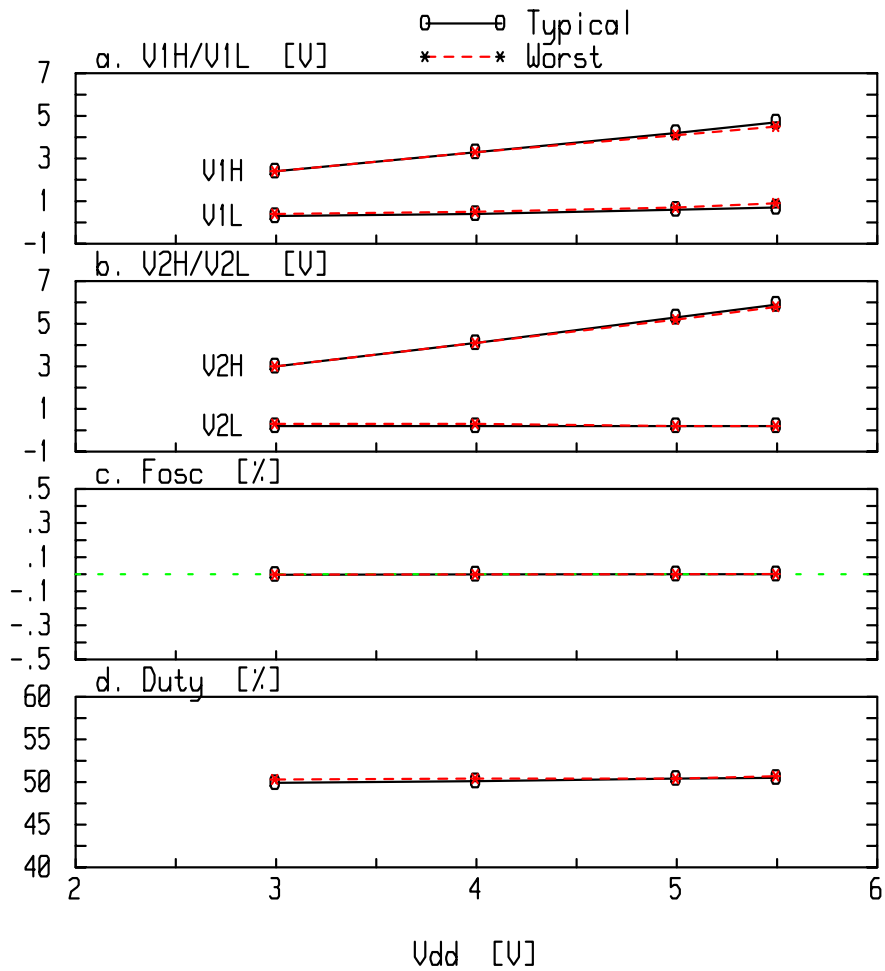
R5F212L4SNFP
CCR20.0MXC7 - S

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] Uhold
LL	4.2 .6	5.2 .1	20.0369	98	50.5	1.7	1.64
LH	4.2 .6	5.3 .2	20.0369	97	51.1	1.83	1.75
TYP	4.2 .6	5.3 .2	20.0371	96	50.6	1.84	1.76
HL	4.2 .5	5.2 .1	20.0372	100	50.3	1.83	1.75
HH	4.2 .6	5.3 .2	20.0368	95	50.3	1.98	1.88

R5F212L4SNFP - TYP(HIGH)

CCR20.0MXC7
T_a = 25 [deg]



e. Vstart [V]
Typical = 1.84
Worst = 1.98

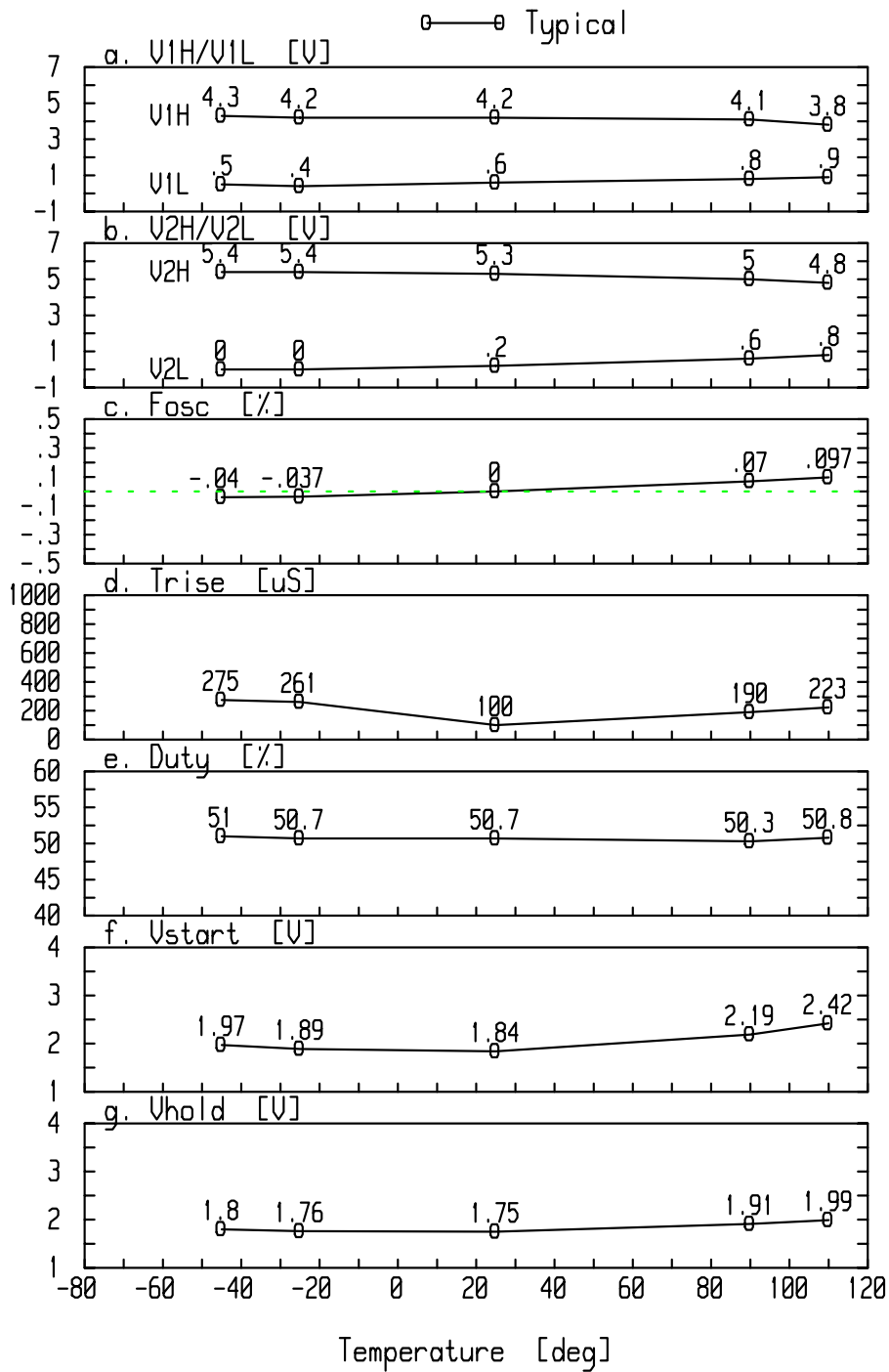
f. Vhold [V]
Typical = 1.75
Worst = 1.85

Power supply voltage dependence of oscillating characteristics

R5F212L4SNFP - TYP(HIGH)

CCR20.0MXC7

V_{dd}= 5 [V] (Fig. a~e)

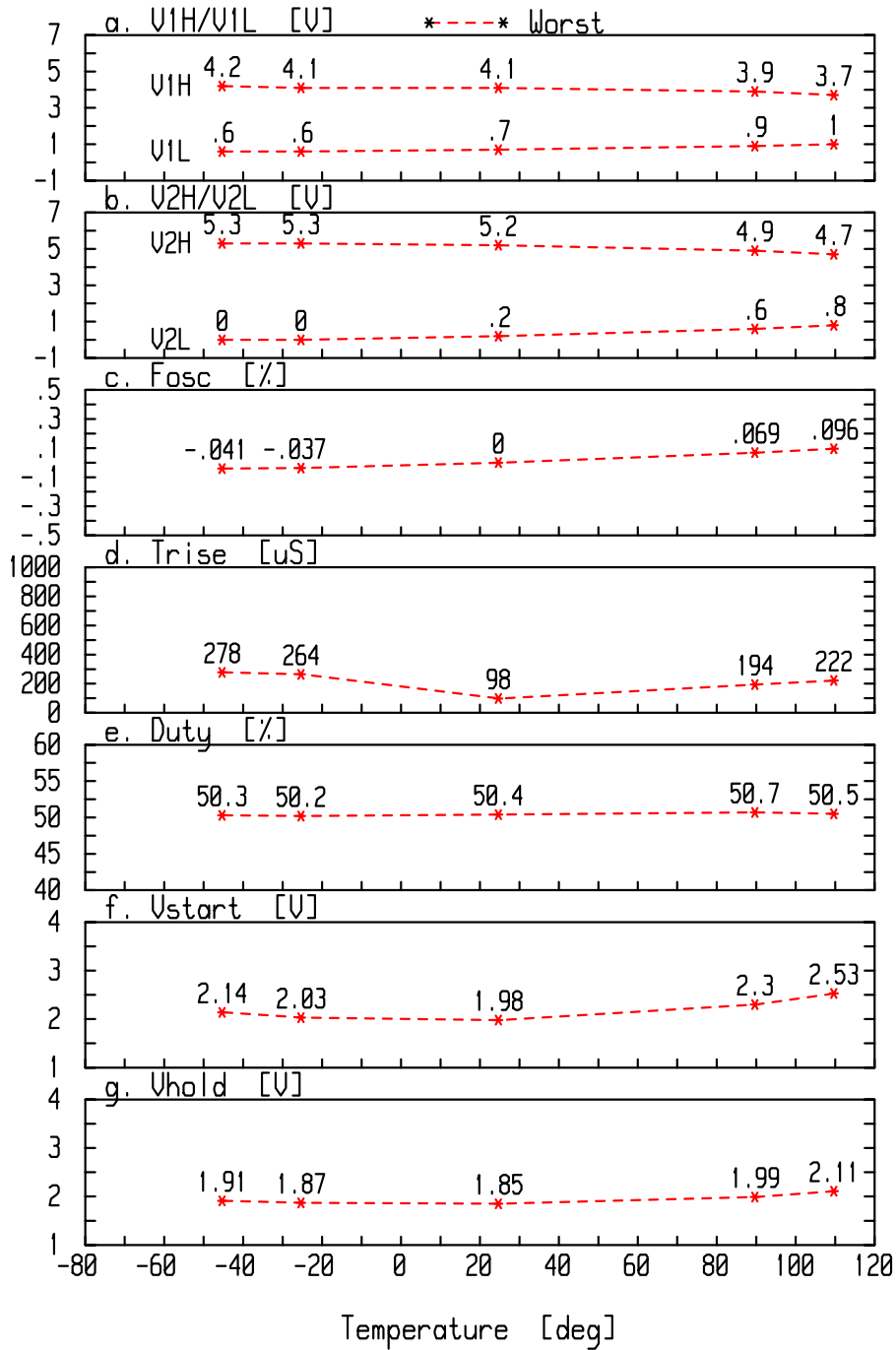


Temperature dependence of oscillating characteristics

R5F212L4SNFP - TYP(HIGH)

CCR20.0MXC7

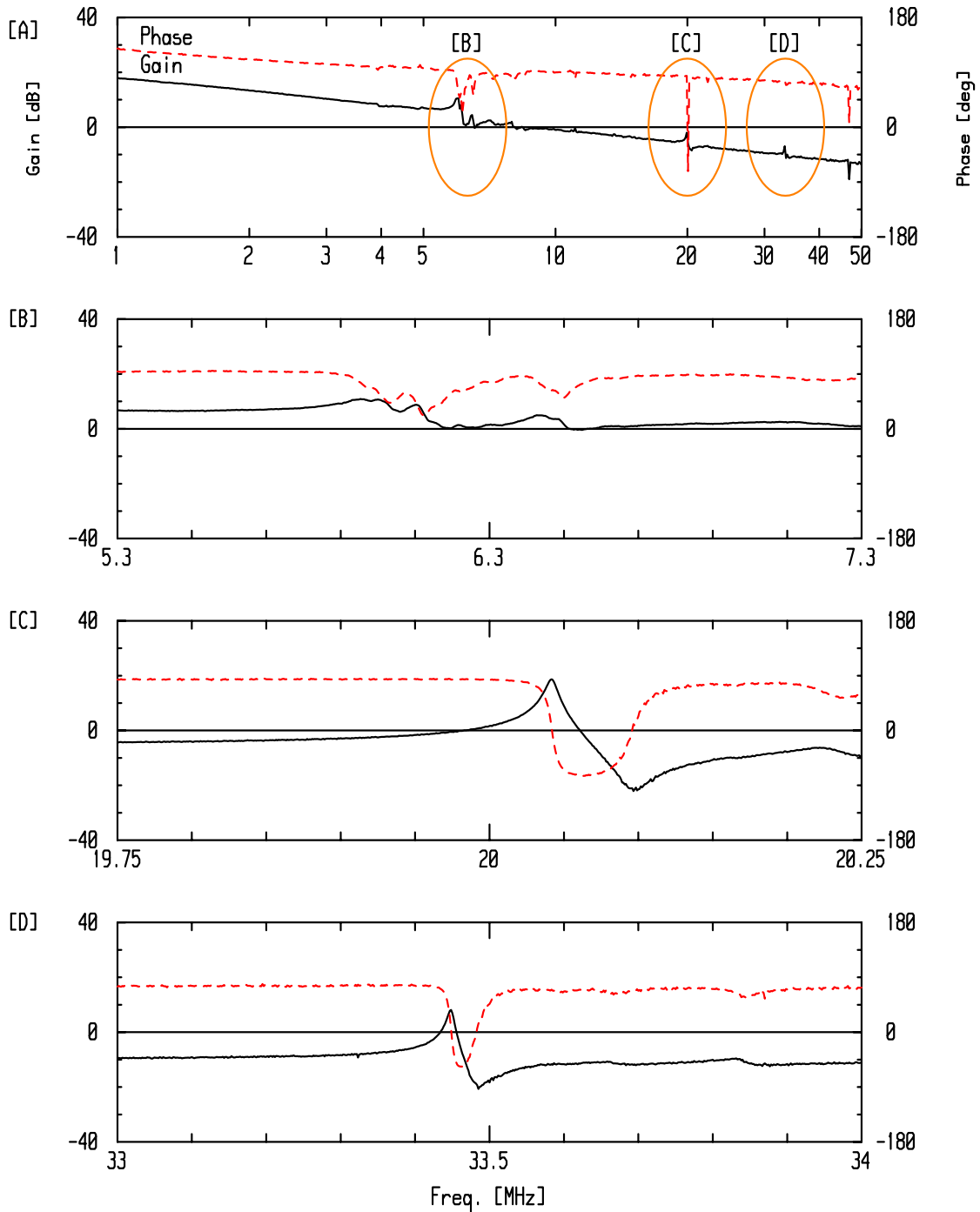
V_{dd}= 5 [V] (Fig. a~e)



Temperature dependence of oscillating characteristics

R5F212L4SNFP - TYP(HIGH)
 CCR20.0MXC7 - Typical
 Vdd [V] 5

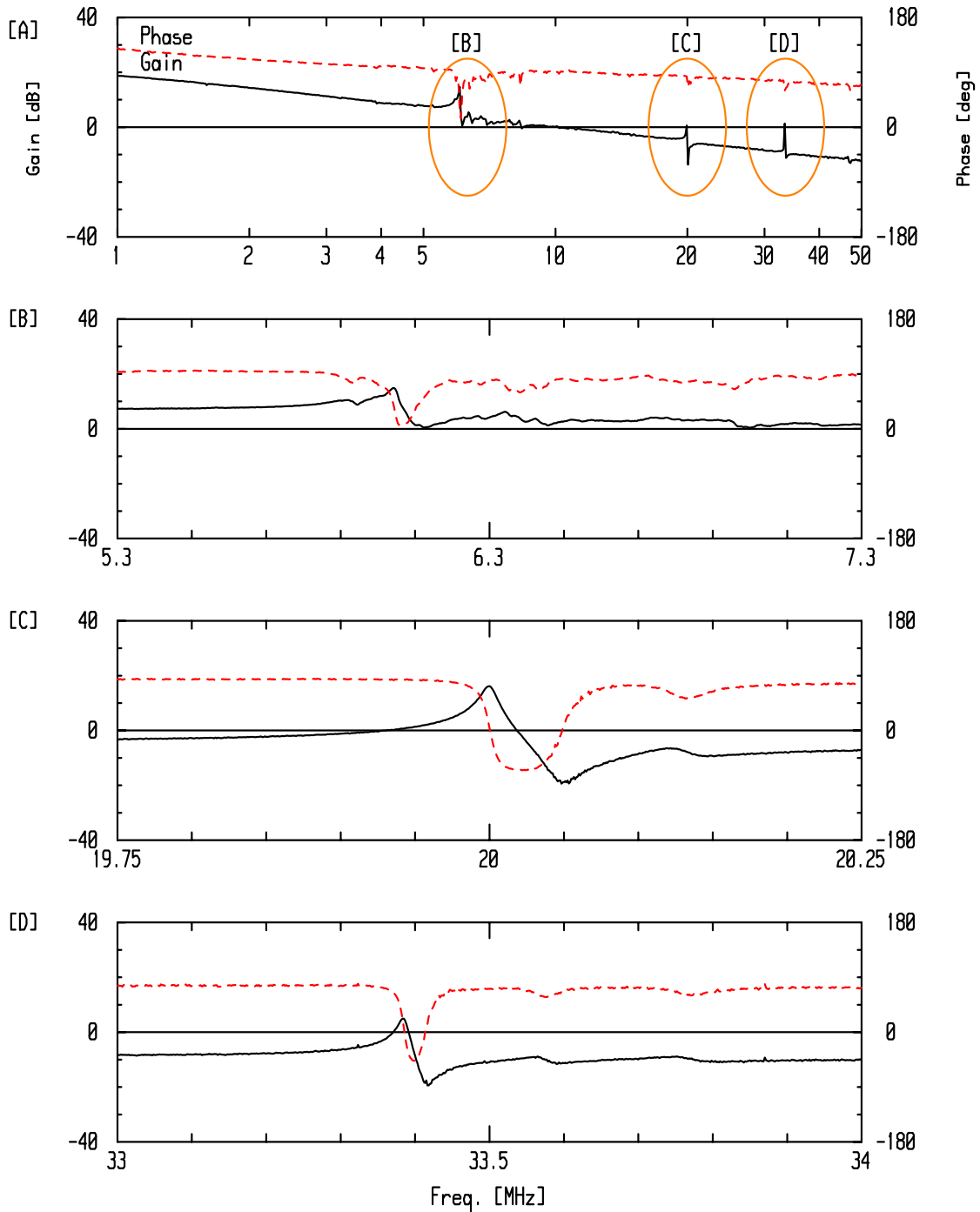
	[B]	[C]	[D]
Gmax [dB]	10.9	18.7	8.1
LGM [dB]	0	18.5	7.1
Pmin [deg]	22.1	-75	-56.5
LPM [deg]	0	-73.5	-51.2



Open loop characteristics (Typical Sample)

R5F212L4SNFP - TYP(HIGH)
 CCR20.0MXC7 - Worst
 Vdd [V] 5

	[B]	[C]	[D]
Gmax [dB]	14.9	16.2	4.9
LGM [dB]	0	16	4.5
Pmin [deg]	6.6	-65.8	-46.9
LPM [deg]	0	-64.2	-31.5



Open loop characteristics (Worst Sample)