

OPERATION TEST REPORT ON TDK CERAMIC RESONATOR

(CCR4.0MUC8)

IC R5F21258SNFP-LOW
(Renesas Technology)

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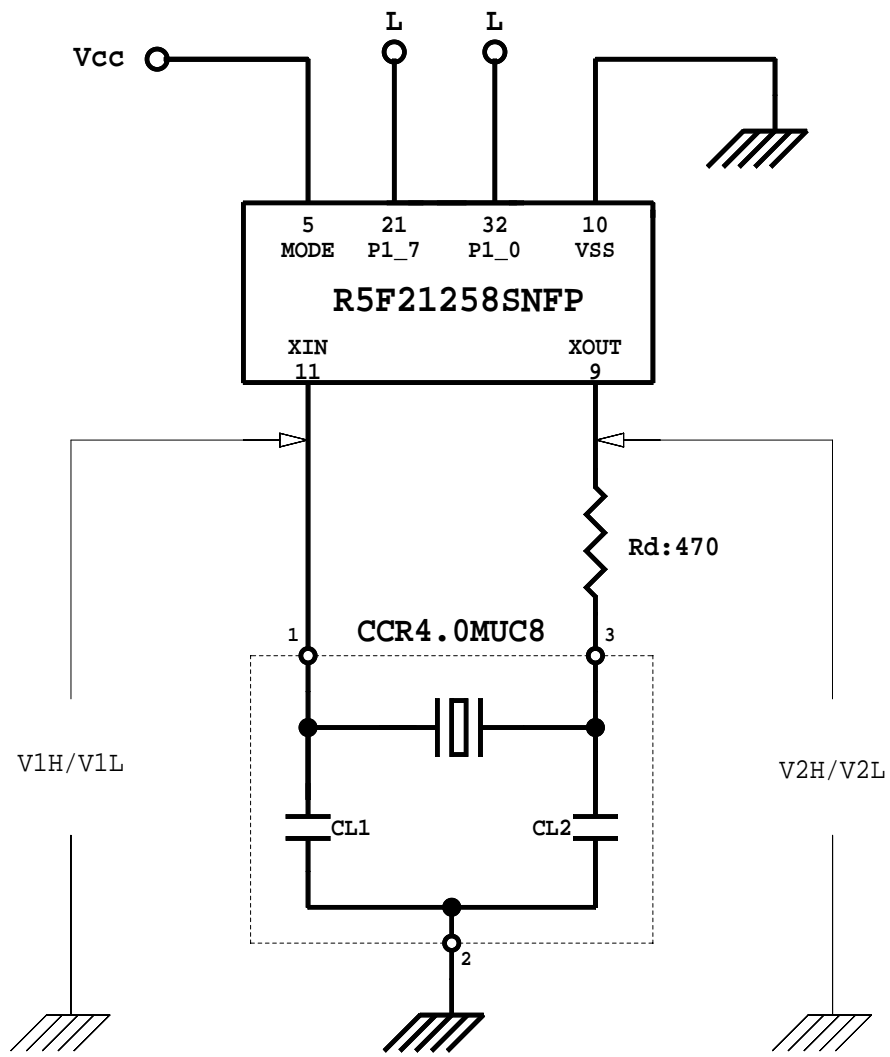
2.Test Conditions

IC	:	R5F21258SNFP-LOW (Renesas Technology)
Ceramic Resonator	:	CCR4.0MUC8 (Typical and worst sample are tested)
Power Supply Voltage range	:	2.2(V) - 5.5(V)
Temperature Range	:	-45(degC) - +90(degC)

3.Conclusions and recommendable circuit constant

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

Power Supply Voltage range	:	2.2(V) - 5.5(V)
Temperature Range	:	-45(degC) - +90(degC)
Load capacitance(CL1/CL2)	:	Built-in [27(pF)]
Damping resistance(Rd)	:	470(ohm)
Feedback resistance(Rf)	:	Built-in(IC side)



*BUILT-IN LOADING CAPACITOR
 CL1/CL2=27/27pF +/-20%

Oscillating circuit for evaluation

IC dependence of oscillating characteristics

R5F21258SNFP
CCR4.0MUC8 - S

Room Temp.
Vdd [V] 5 (item a~e)
Rd [ohm] 470

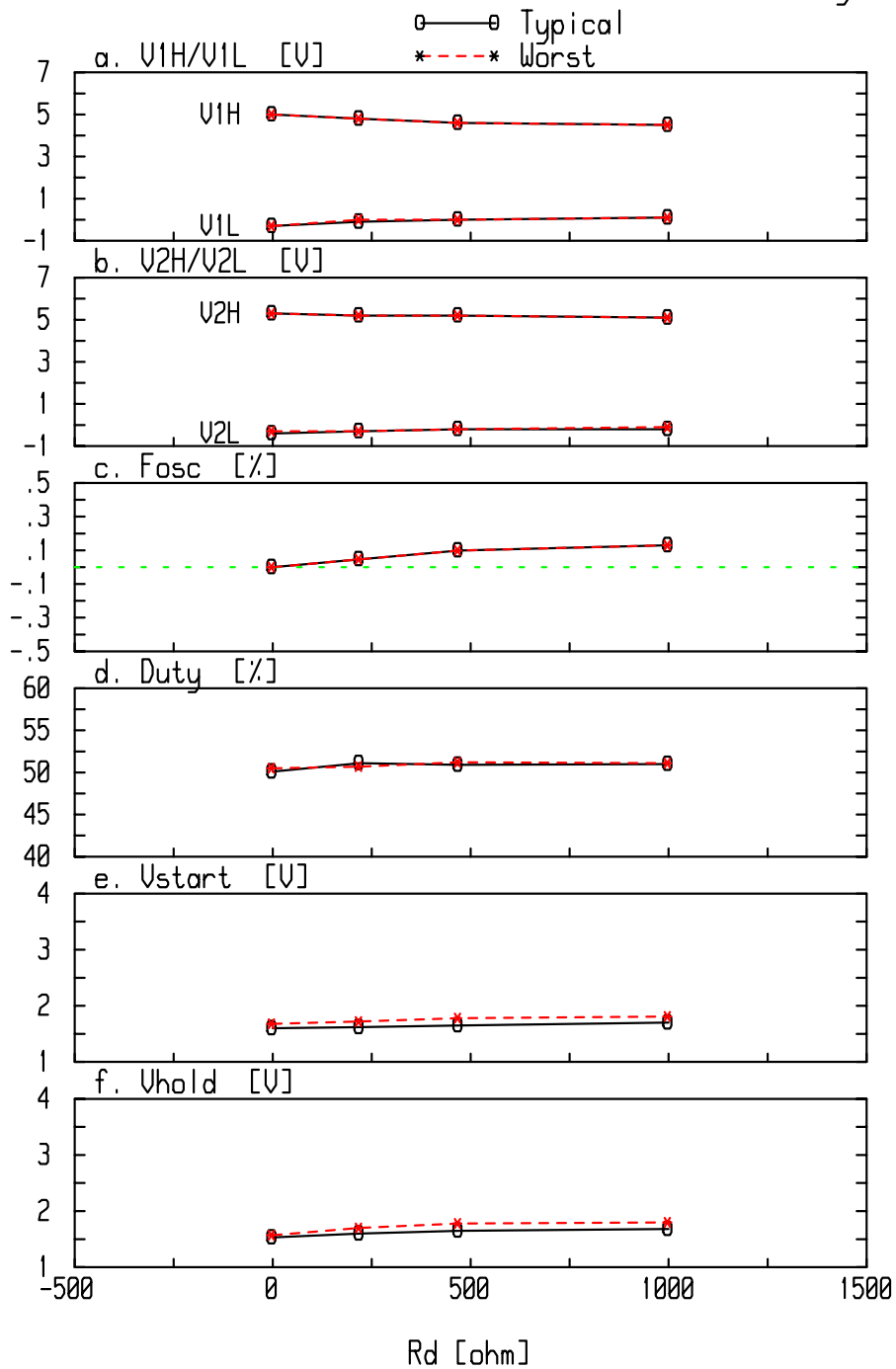
item IC NO	a. [V] V1H/V1L	b. [V] V2H/V2L	c. [MHz] Fosc	d. [uS] Trise	e. [%] Duty	f. [V] Vstart	g. [V] Uhold
LL	4.6 0	5.1 -.2	4.00775		50.9	1.56	1.56
LH	4.6 0	5.1 -.1	4.00767		51.1	1.64	1.64
TYP	4.6 0	5.1 -.2	4.00744		50.9	1.65	1.65
HL	4.6 -.1	5.1 -.1	4.00754		51.1	1.68	1.67
HH	4.6 -.1	5.1 -.1	4.0074		50.3	1.76	1.75

R5F21258SNFP - TYP(LOW)

CCR4.0MUC8

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

T_a = 25 [deg]



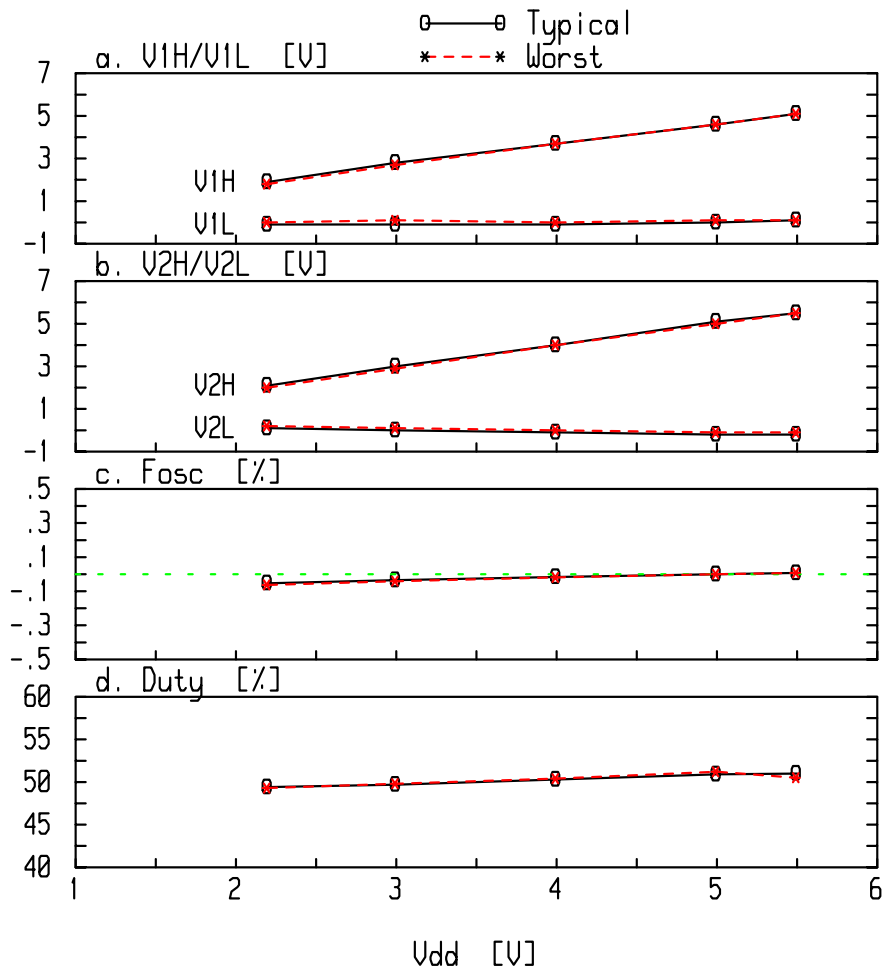
Damping resistance(R_d) dependence of oscillating characteristics

R5F21258SNFP - TYP(LOW)

Rd [ohm] 470

CCR4.0MUC8

Ta= 25 [deg]



e. V_{start} [V]
Typical = 1.65
Worst = 1.78

f. V_{hold} [V]
Typical = 1.65
Worst = 1.78

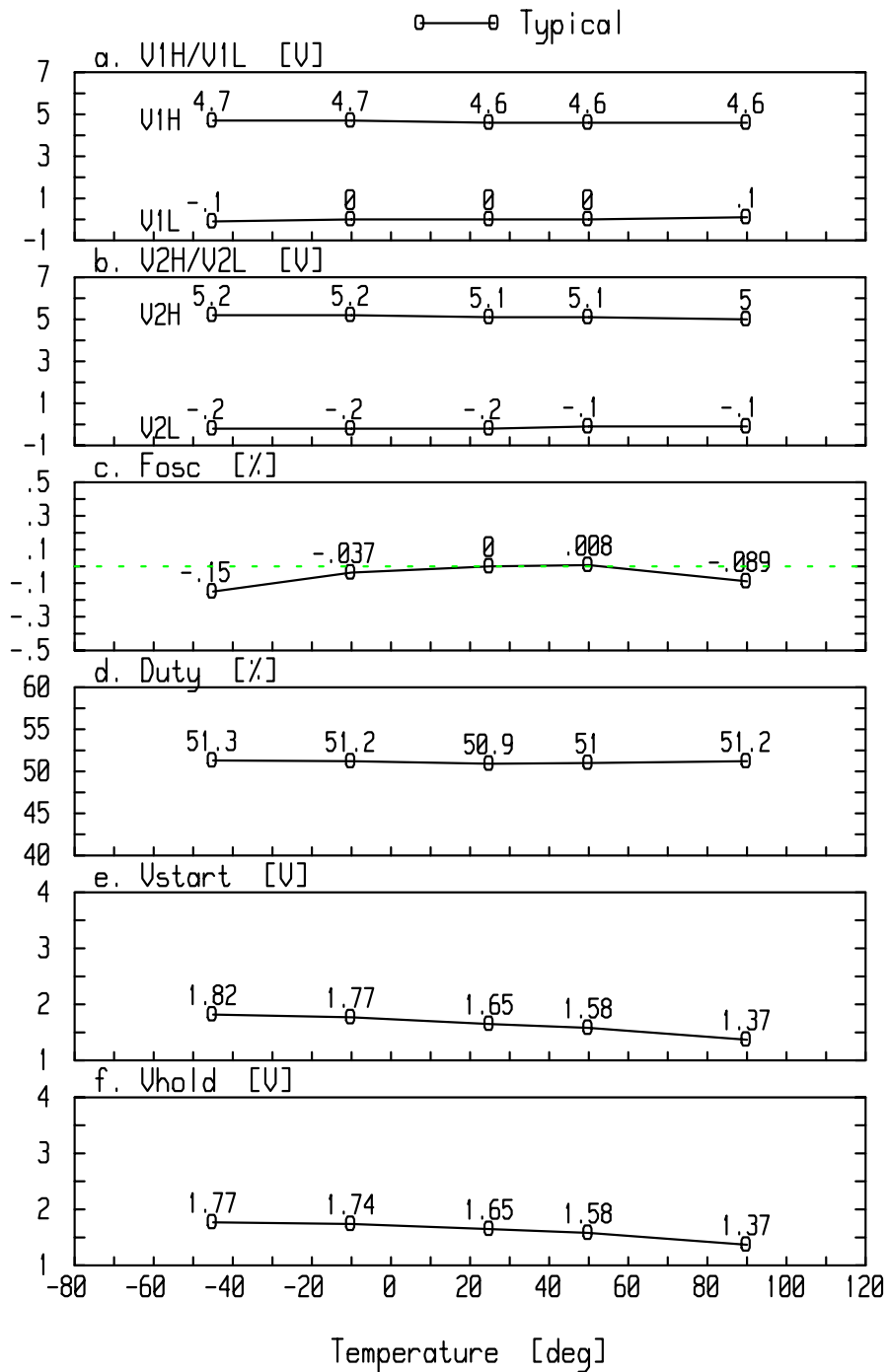
Power supply voltage dependence of oscillating characteristics

R5F21258SNFP - TYP(LOW)

Rd [ohm] 470

CCR4.0MUC8

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



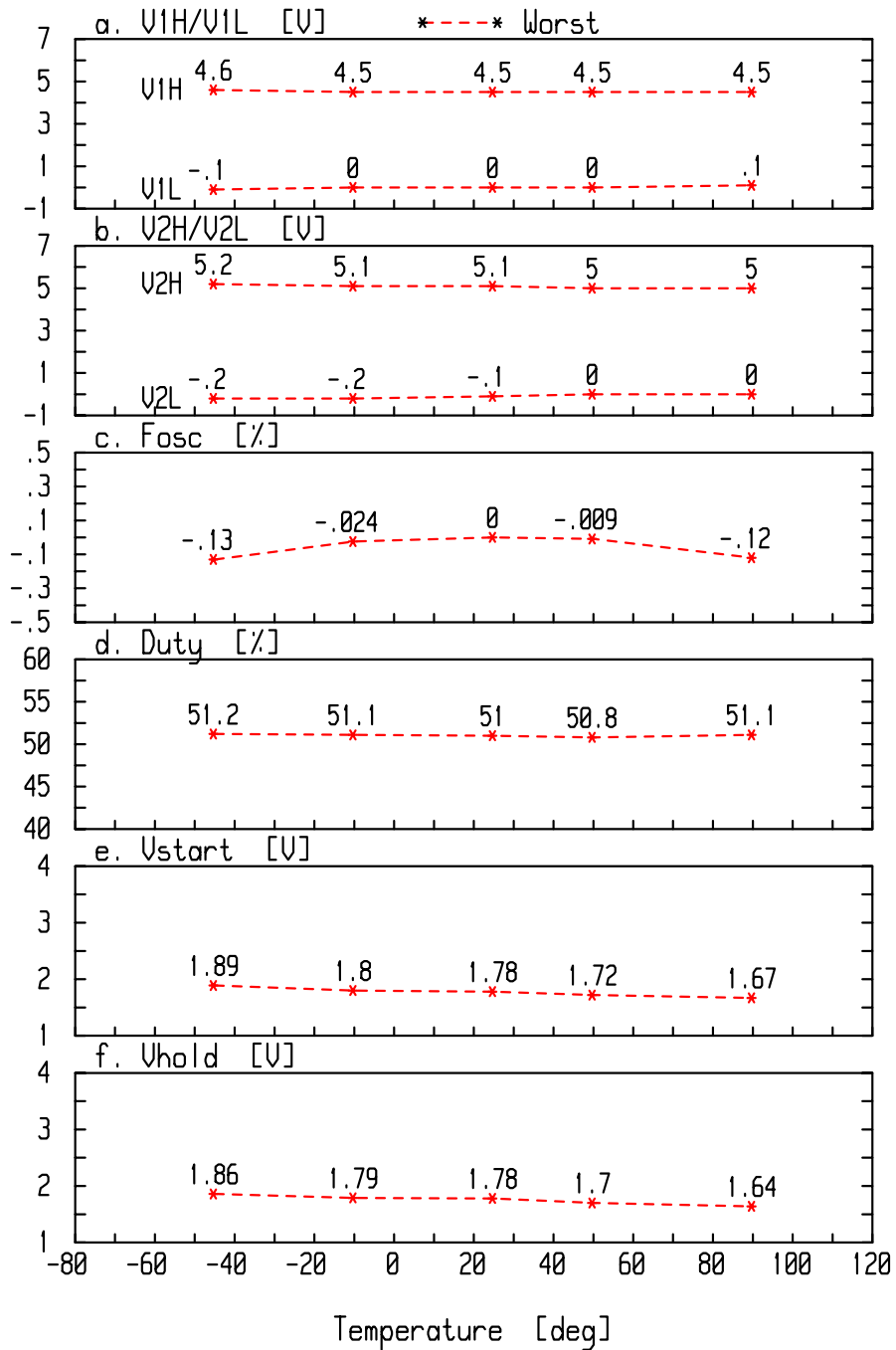
Temperature dependence of oscillating characteristics

R5F21258SNFP - TYP(LOW)

Rd [ohm] 470

CCR4.0MUC8

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



Temperature dependence of oscillating characteristics

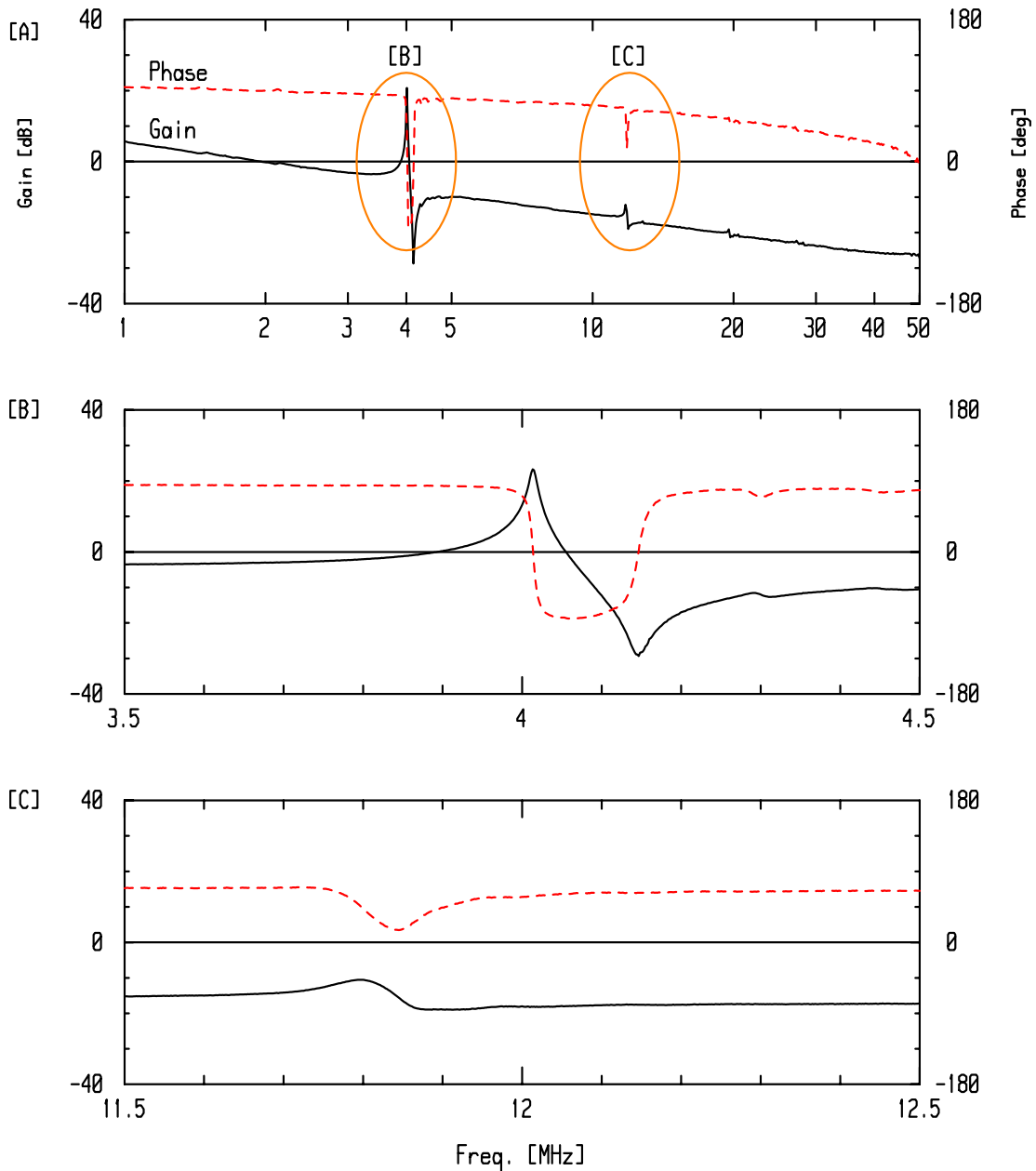
R5F21258SNFP - TYP(LOW)

CCR4.0MUC8 - Typical

Vdd [V] 5

Rd [ohm] 470

	[B]	[C]
Gmax [dB]	23.3	-10.5
LGM [dB]	23.1	0
FLGM [MHz]	4.0146	0
LPM [deg]	-83.8	58.8



Open loop characteristics (Typical Sample)

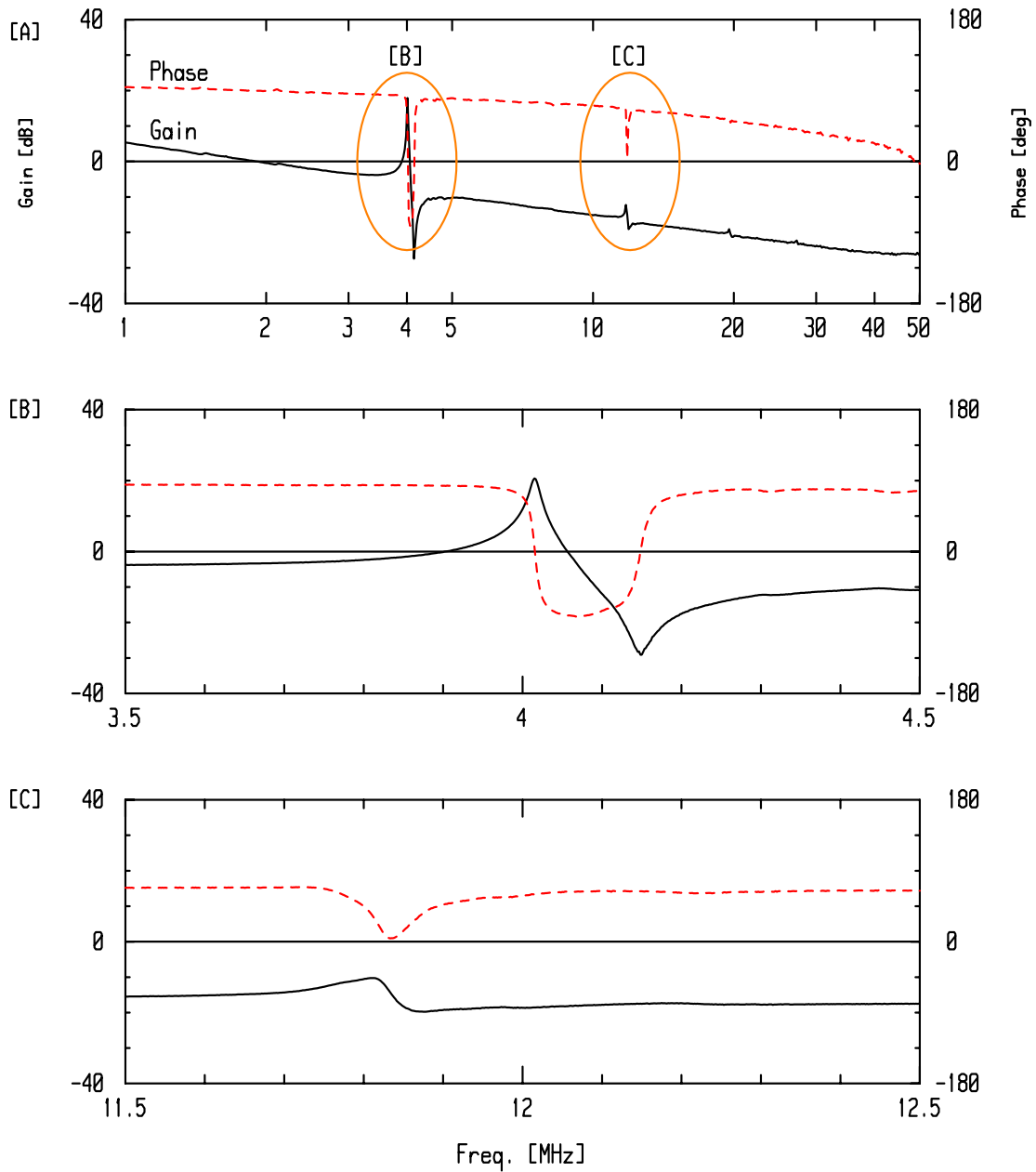
R5F21258SNFP - TYP(LOW)

CCR4.0MUC8 - Worst

Vdd [V] 5

Rd [ohm] 470

	[B]	[C]
Gmax [dB]	20.6	-10.2
LGM [dB]	20.5	0
FLGM [MHz]	4.0163	0
LPM [deg]	-80.9	60.3



Open loop characteristics (Worst Sample)