

Technical Data of Ceramic Resonator

Type CSB400P

Applied to M34513M4

TOYAMA MURATA MANUFACTURING CO., LTD.

Product Engineering Service Section I

Engineering Service Department

Piezoelectric Components Group

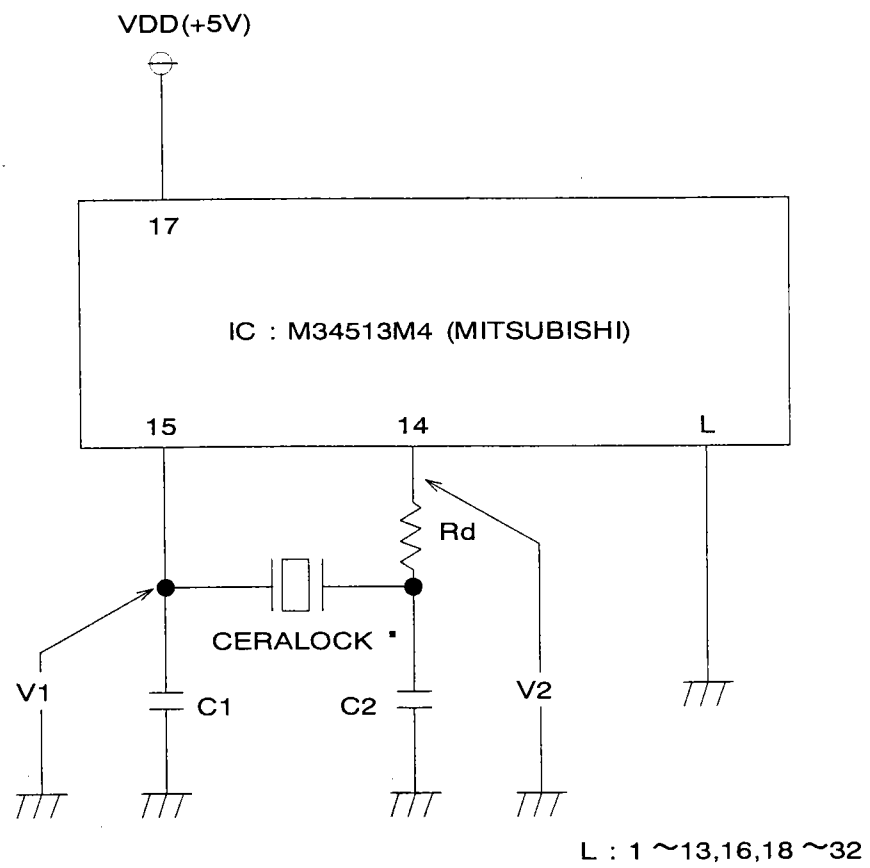
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Test Circuit



Recommendable Value

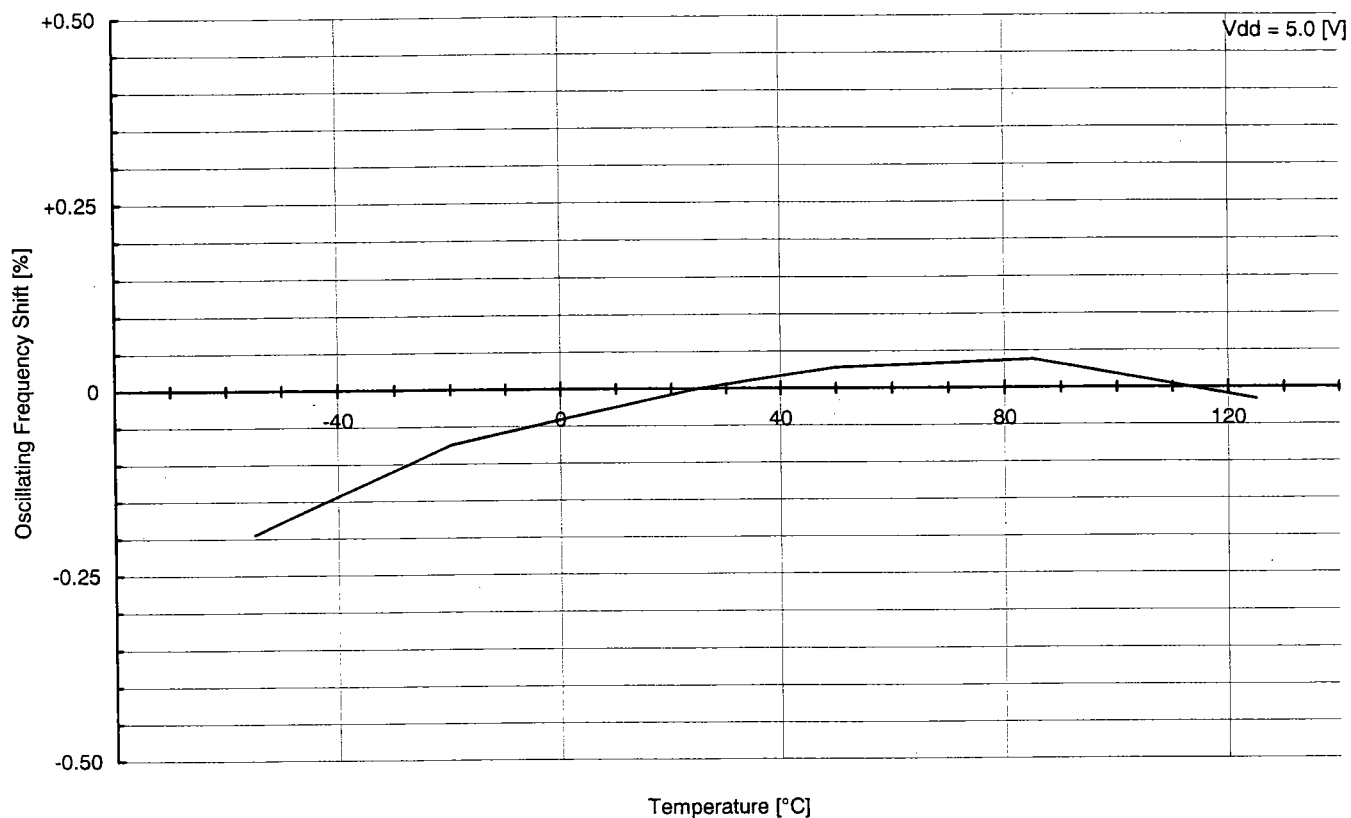
CERALOCK® : CSB400P

C1 = 220 [pF]

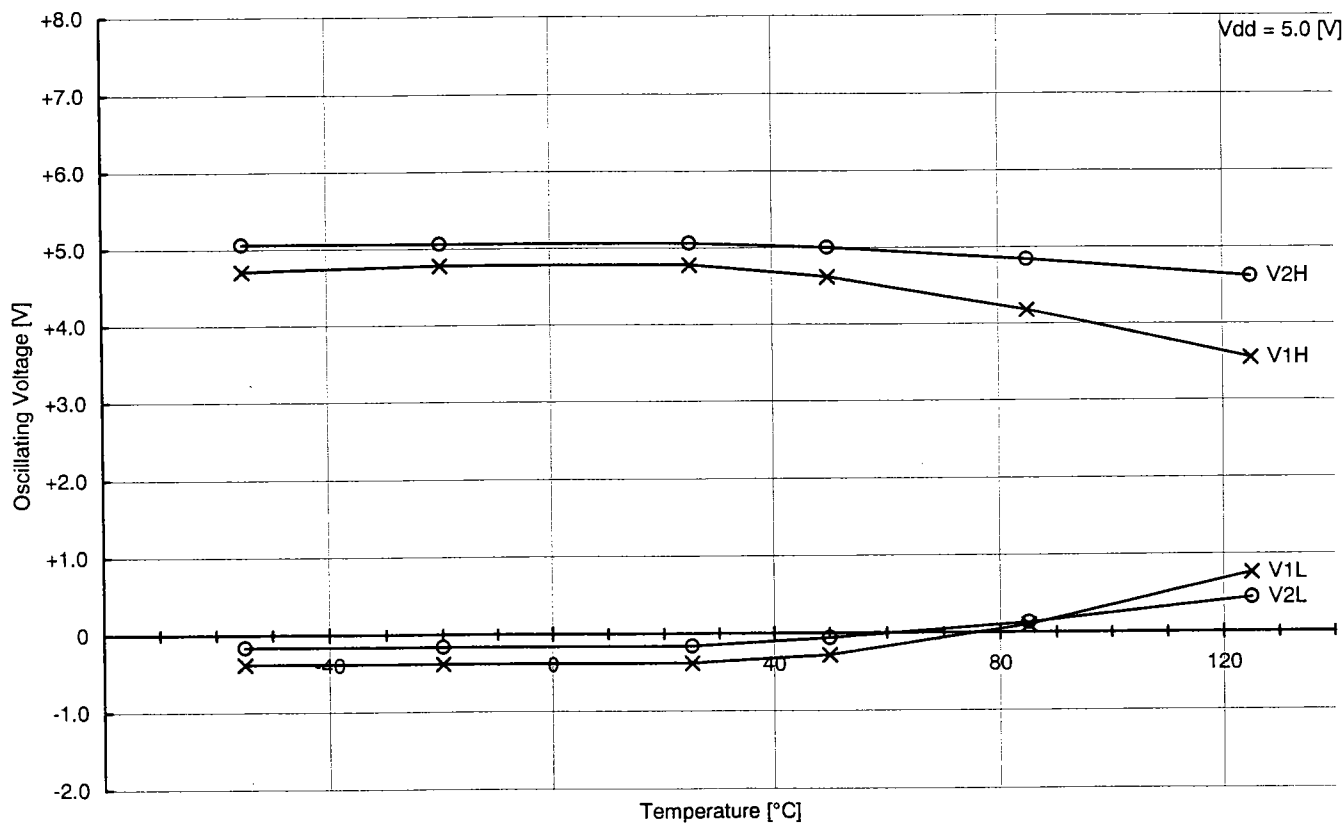
C2 = 220 [pF]

Rd = 2.2 [k ohm]

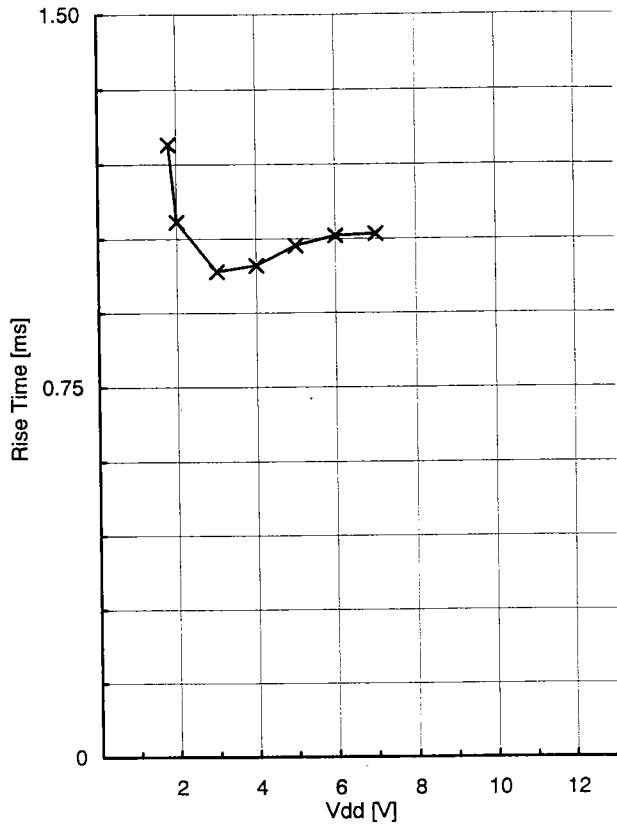
Temperature Characteristics of Oscillating Frequency
MODEL : CSB400P with M34513M4



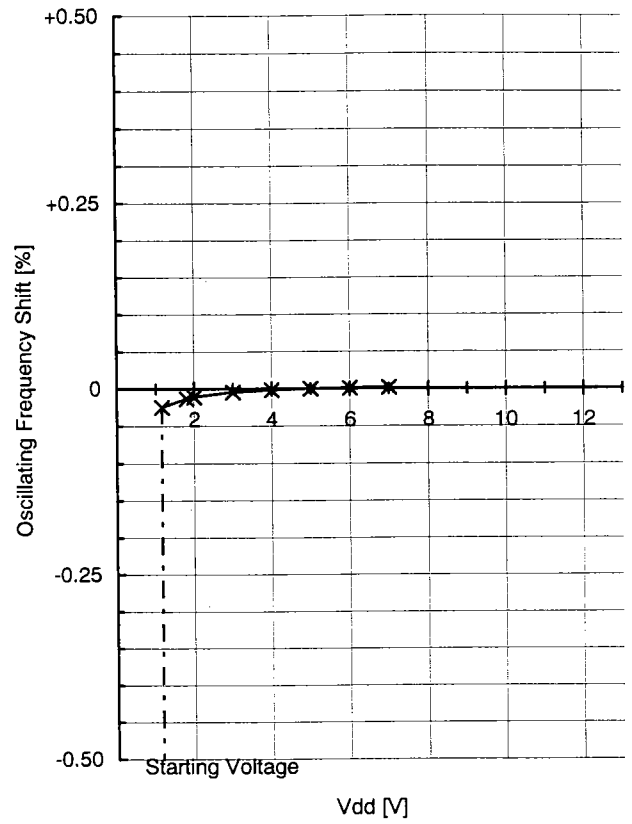
Temperature Characteristics of Oscillating Voltage
MODEL : CSB400P with M34513M4



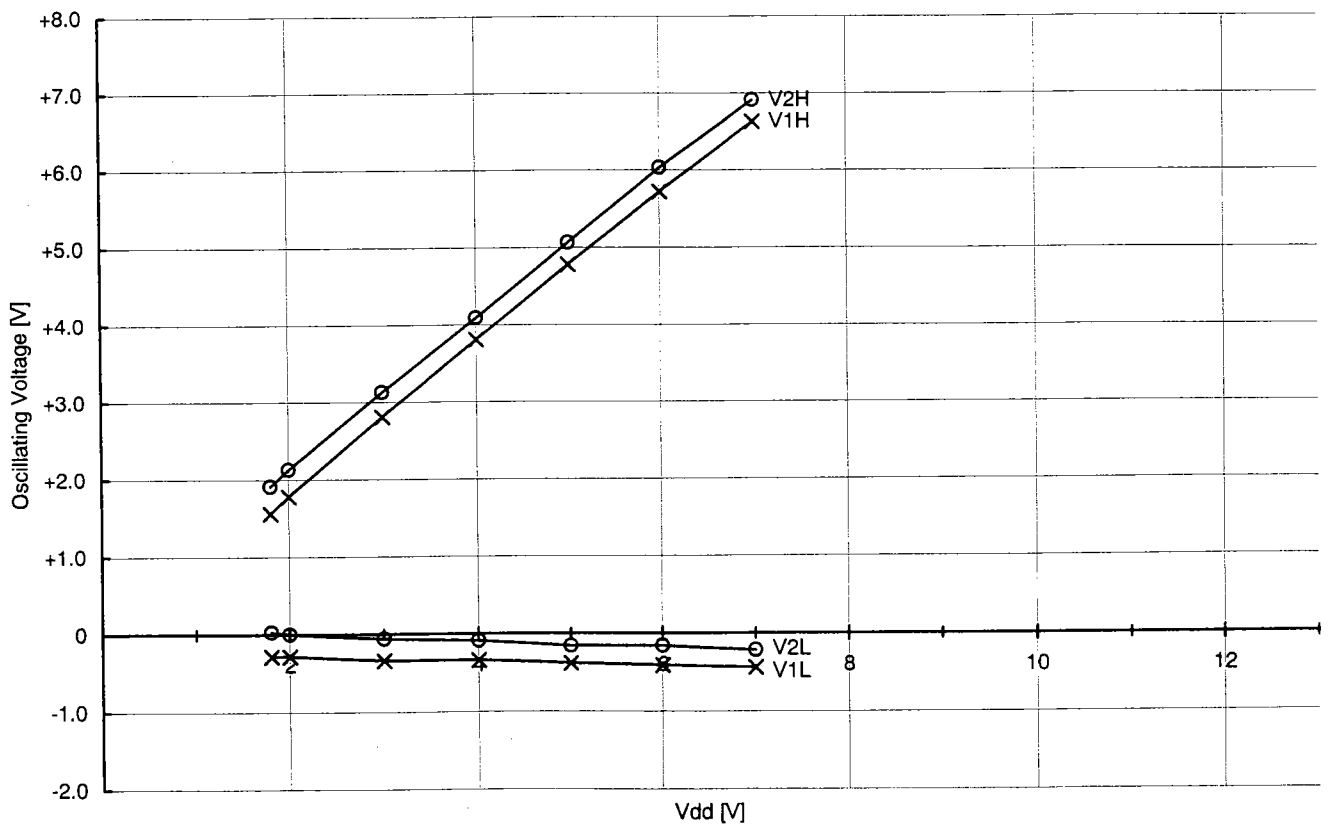
Rise Time vs Vdd Characteristics
MODEL : CSB400P with M34513M4



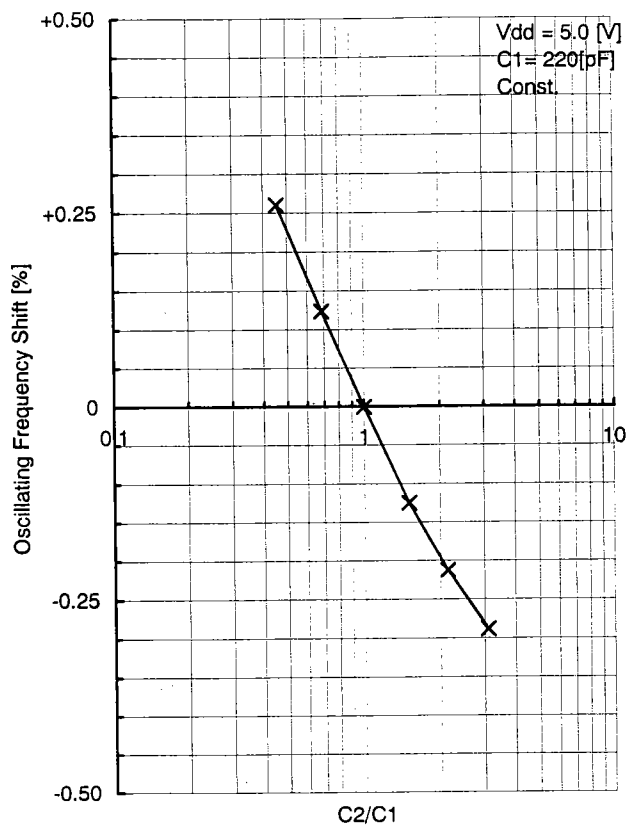
Oscillating Frequency vs Vdd Characteristics
MODEL : CSB400P with M34513M4



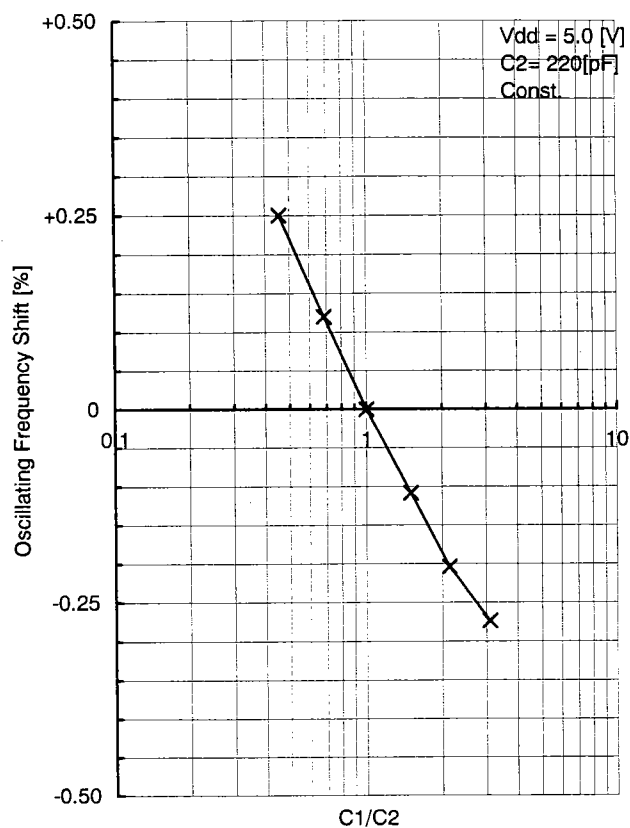
Oscillating Voltage vs Vdd Characteristics
MODEL : CSB400P with M34513M4



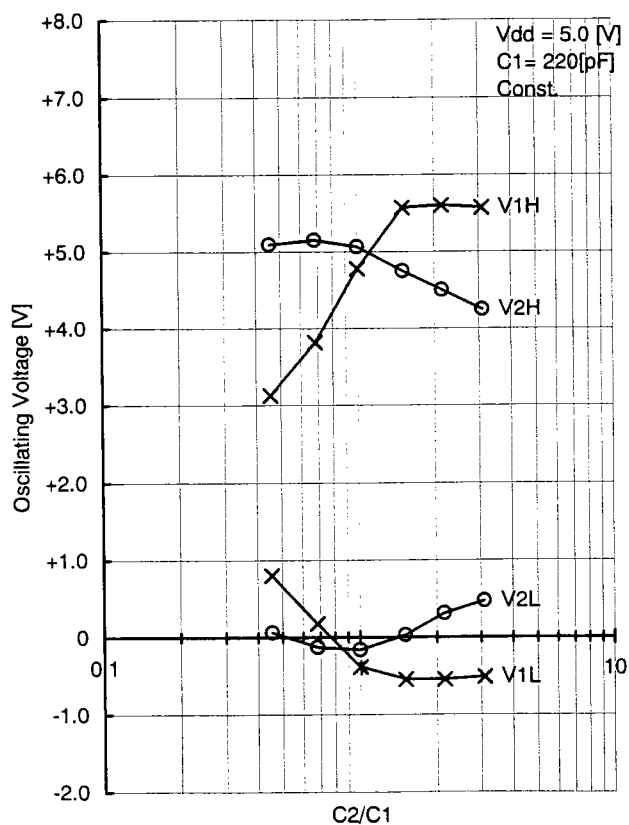
Oscillating Frequency vs (C1,C2) Characteristics
MODEL : CSB400P with M34513M4



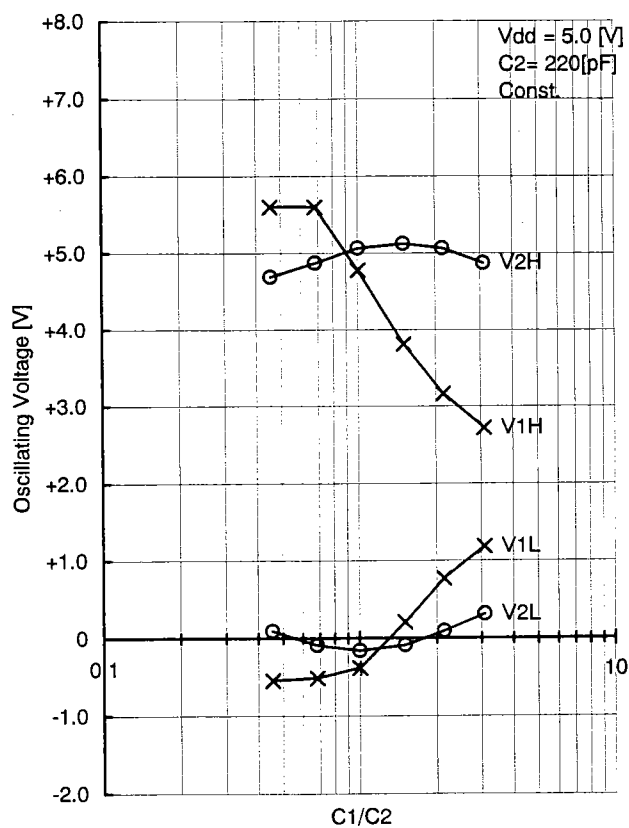
Oscillating Frequency vs (C1,C2) Characteristics
MODEL : CSB400P with M34513M4



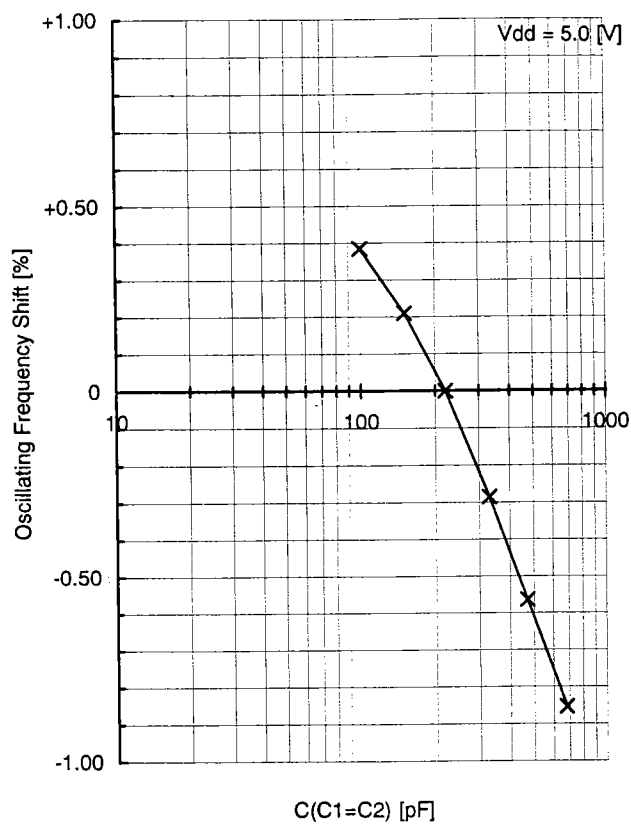
Oscillating Voltage vs (C1,C2) Characteristics
MODEL : CSB400P with M34513M4



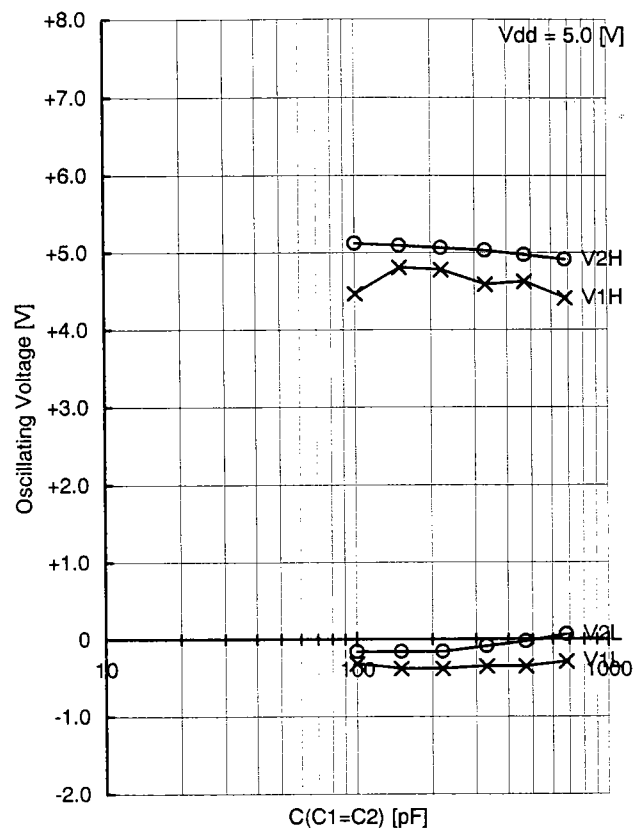
Oscillating Voltage vs (C1,C2) Characteristics
MODEL : CSB400P with M34513M4



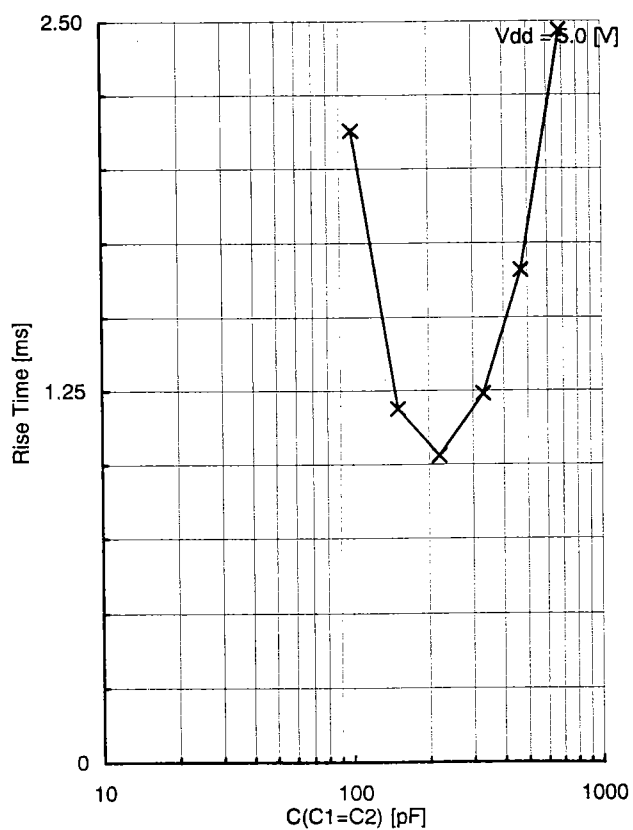
Oscillating Frequency vs C(C1=C2) Characteristics
MODEL : CSB400P with M34513M4



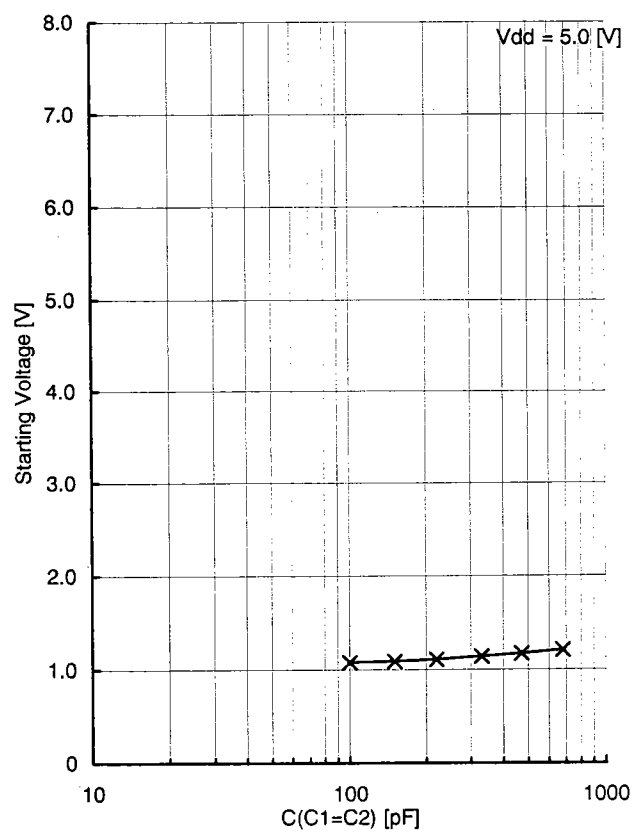
Oscillating Voltage vs C(C1=C2) Characteristics
MODEL : CSB400P with M34513M4

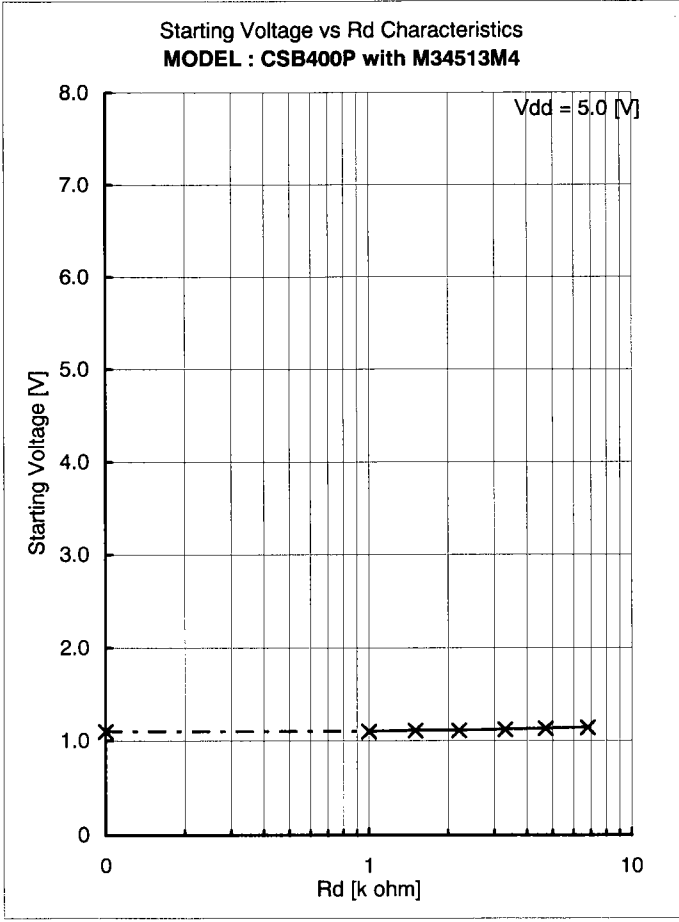
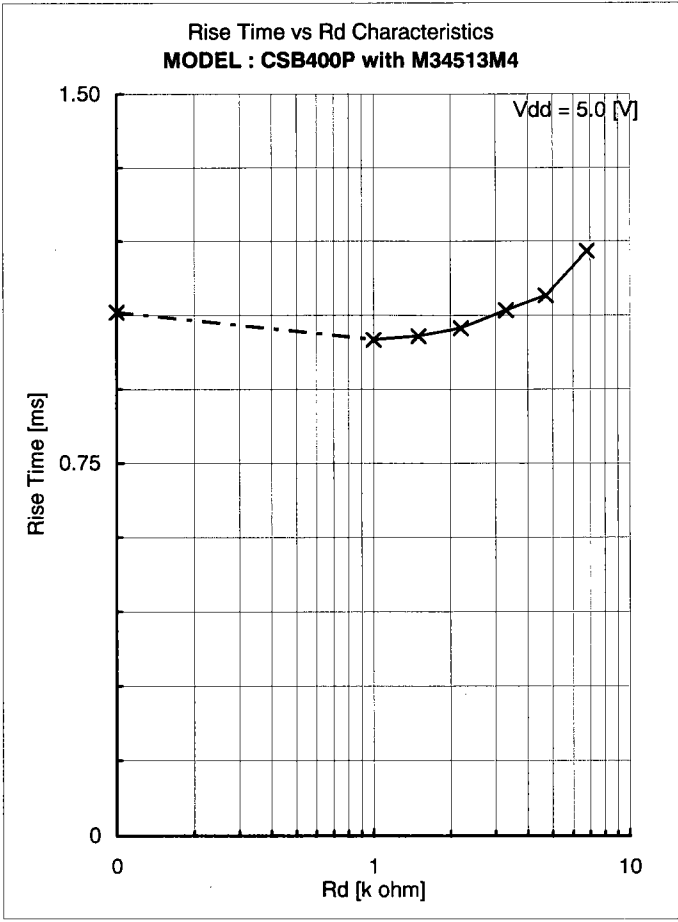
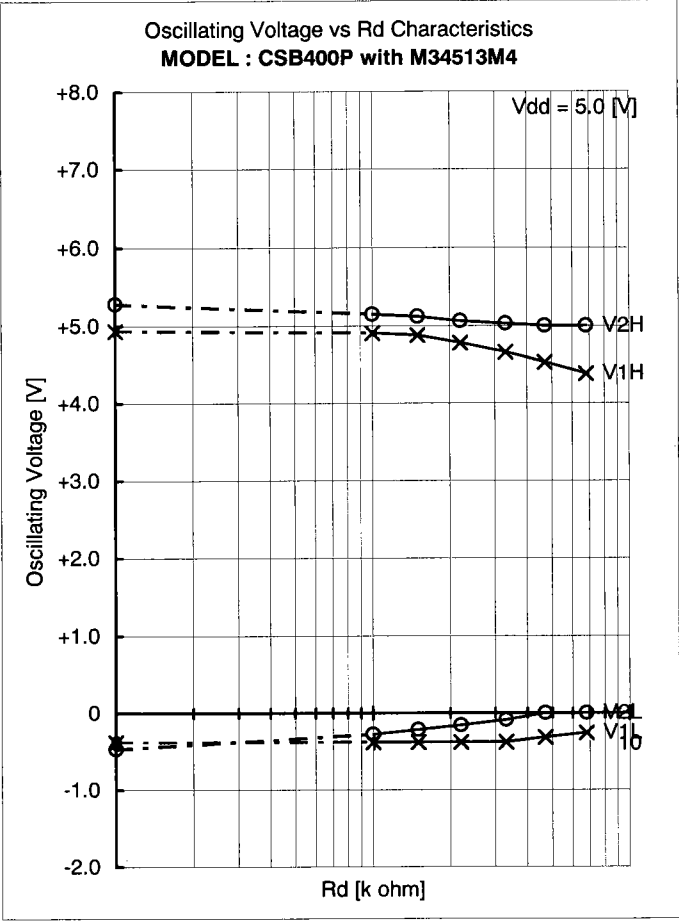
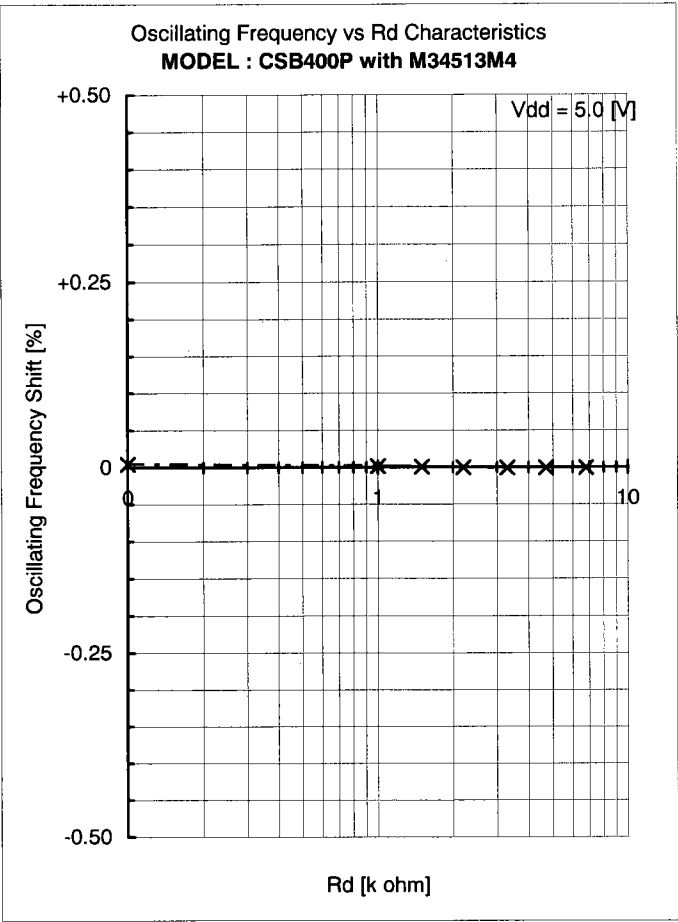


Rise Time vs C(C1=C2) Characteristics
MODEL : CSB400P with M34513M4



Starting Voltage vs C(C1=C2) Characteristics
MODEL : CSB400P with M34513M4





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Comparison Table

IC : No	V1H [V]	V1L [V]	V1p-p [V]	V2H [V]	V2L [V]	V2p-p [V]	Fosc [kHz]	Trise [ms]	Vstart [V]
029	4.78	-0.34	5.12	5.00	-0.16	5.16	399.223	0.928	1.14
030	4.78	-0.38	5.16	5.06	-0.16	5.22	399.220	1.010	1.12
031	4.84	-0.28	5.12	5.13	-0.06	5.19	399.225	1.112	1.01

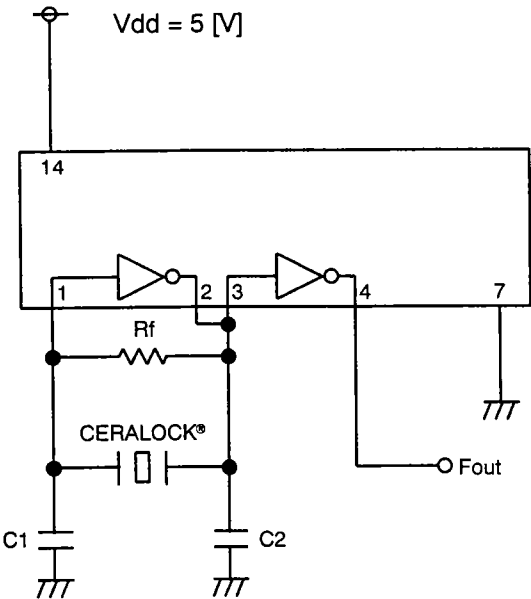
Ref.

Performance described page 2 to 6 were measured with IC No. MM

Frequency Correlation Data

Sample No.	M34513M4 Fosc [kHz]	CD4069UBE Fosc [kHz]	Shift [%]
1	399.220	399.805	-0.1464
2	398.815	399.405	-0.1479
3	399.392	399.989	-0.1491
4	398.351	398.902	-0.1380
5	398.983	399.581	-0.1497
$\bar{X}$	398.952	399.536	-0.1462

muRata Standard Circuit



CERALOCK® : CSB400P
C1 = 120 [pF]
C2 = 470 [pF]
Rf = 1 [Mohm]