





Technical Data of Ceramic Resonator

Type CSB400P

Applied to M34513M4

**TOYAMA MURATA MANUFACTURING CO., LTD.**

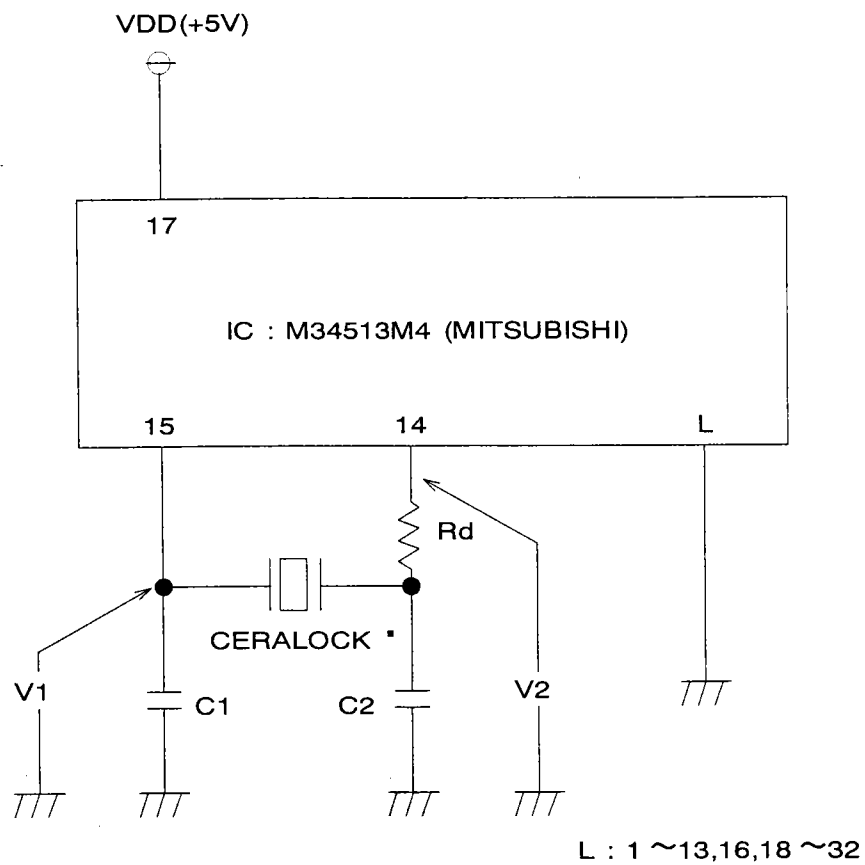
Product Engineering Service Section I  
Engineering Service Department  
Piezoelectric Components Group

| Approved by   | Checked by   | Checked by   | Issued by  | Issued Date  | TCD No.     |
|---|--|--|--|--------------|-------------|
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## Contents

|    |  |   |
|----|--|---|
| 1. | Test Circuit   | 1 |
| 2. | Temperature Characteristics of Oscillating Frequency, Oscillating Voltage                              | 2 |
| 3. | Rise Time, Oscillating Frequency, Oscillating Voltage vs Vdd Characteristics                           | 3 |
| 4. | Oscillating Frequency, Oscillating Voltage vs (C1,C2) Characteristics                                  | 4 |
| 5. | Oscillating Frequency, Oscillating Voltage, Rise Time, Oscillating Voltage vs C(C1=C2) Characteristics | 5 |
| 6. | Oscillating Frequency, Oscillating Voltage, Rise Time, Oscillating Voltage vs Rd Characteristics       | 6 |

## Test Circuit



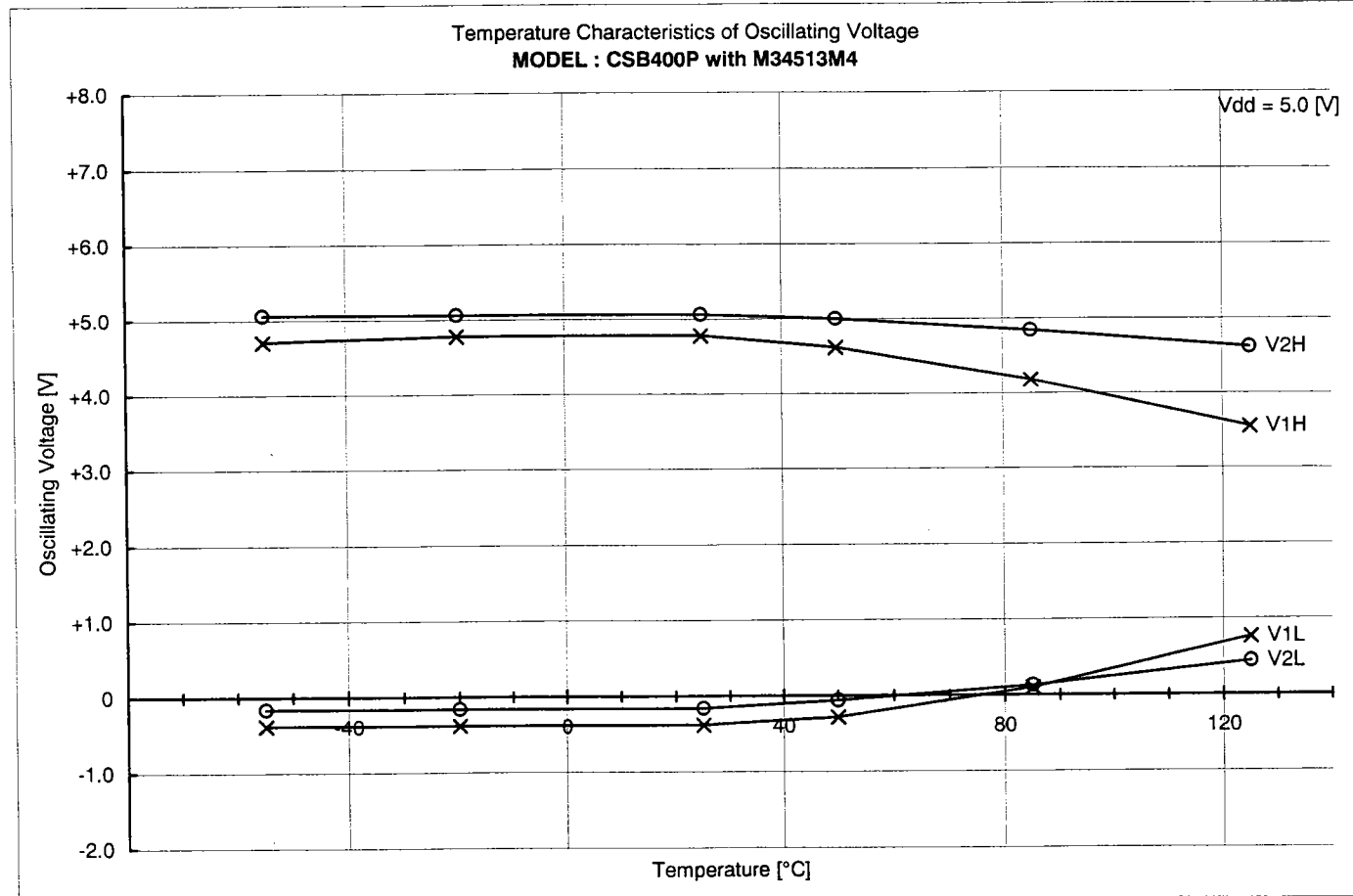
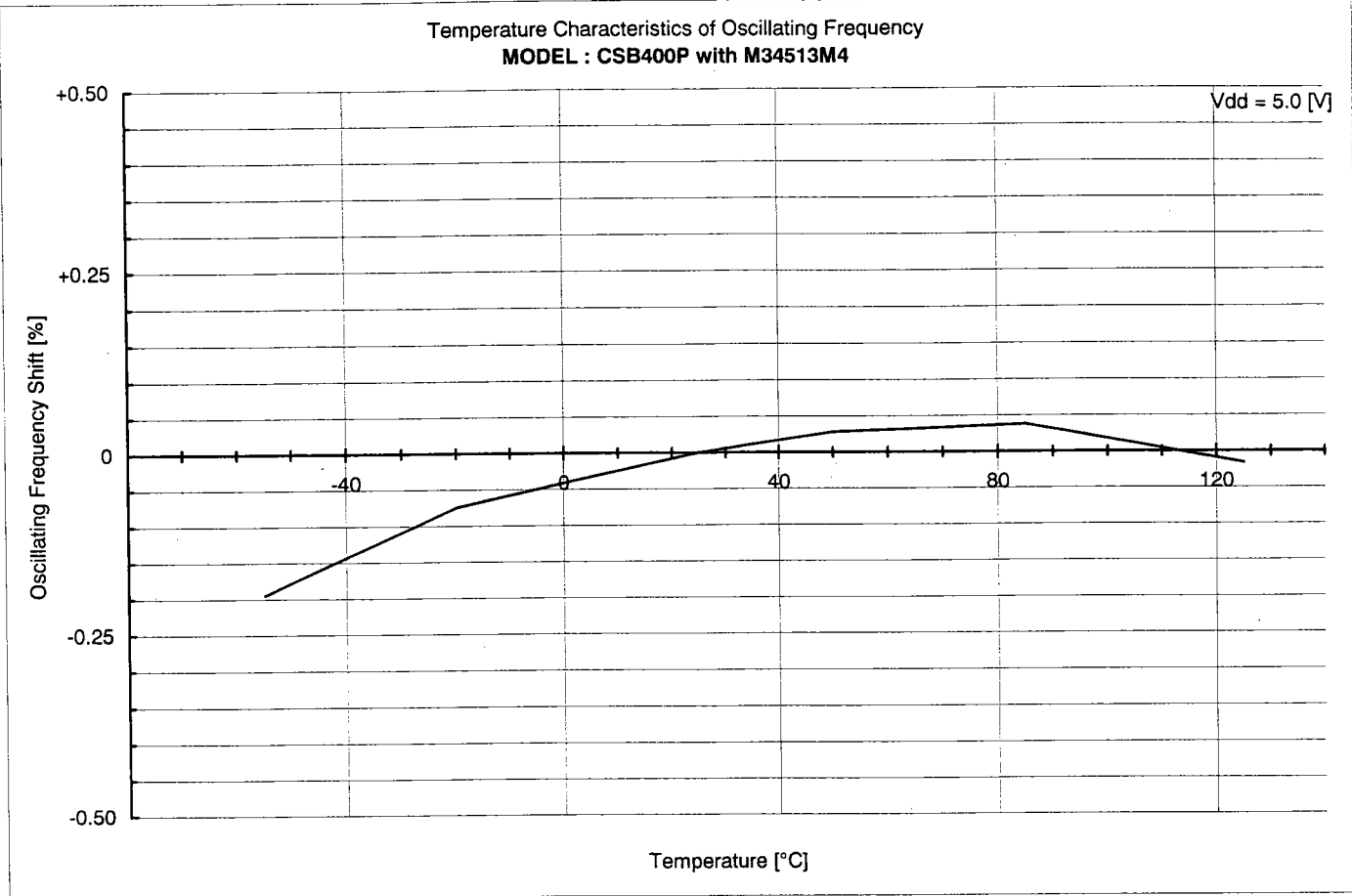
## Recommendable Value

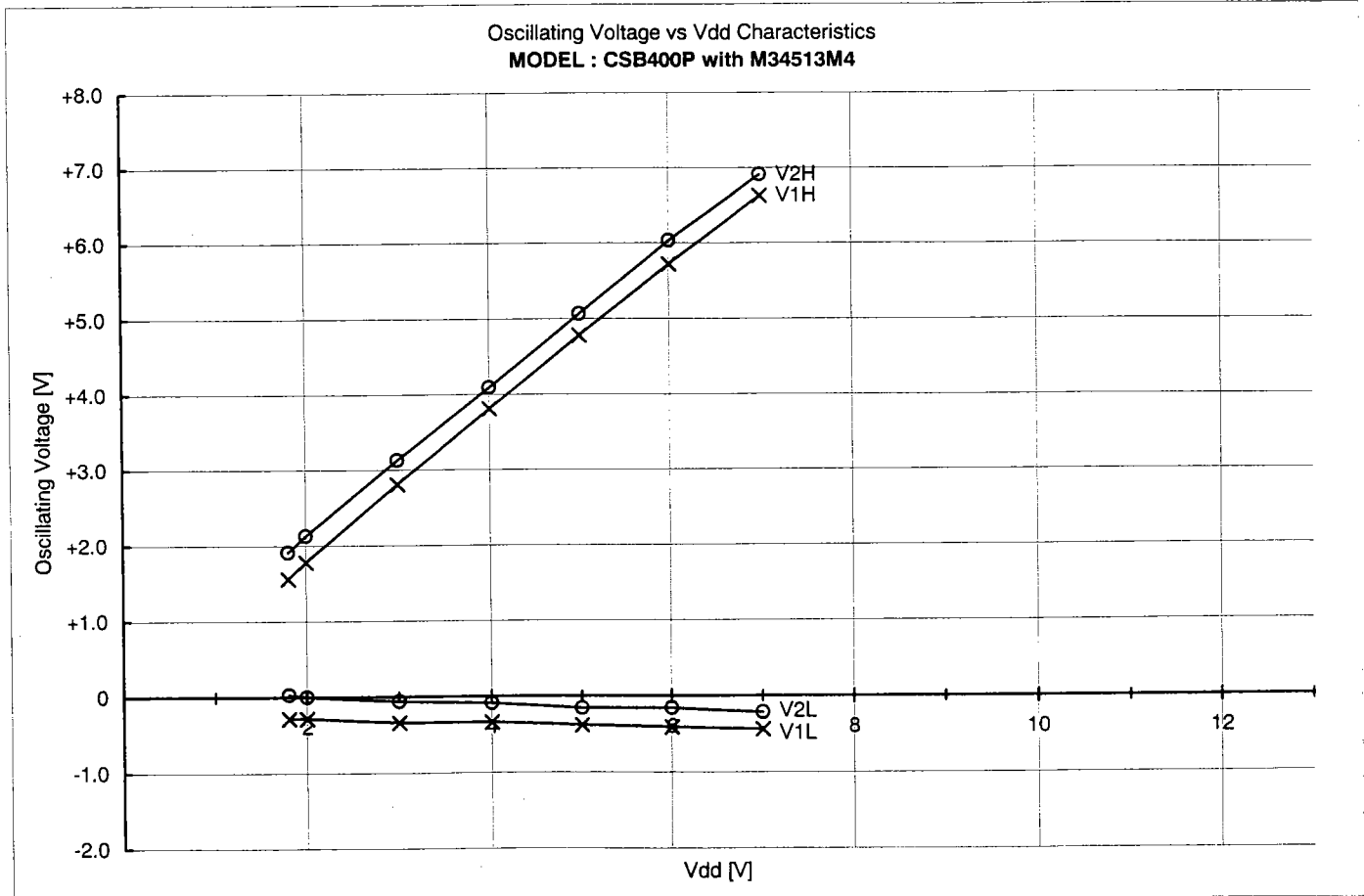
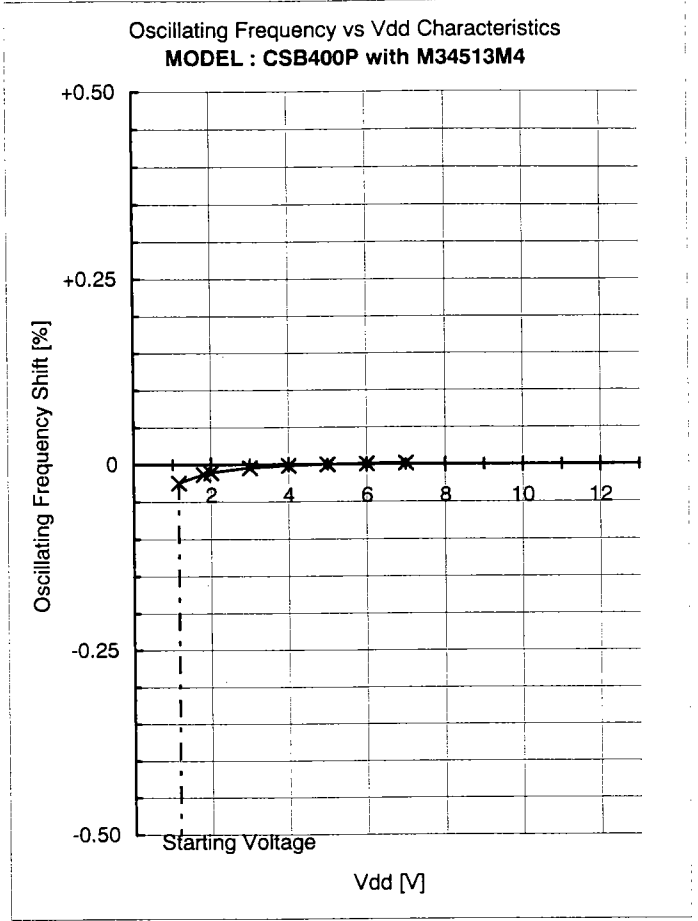
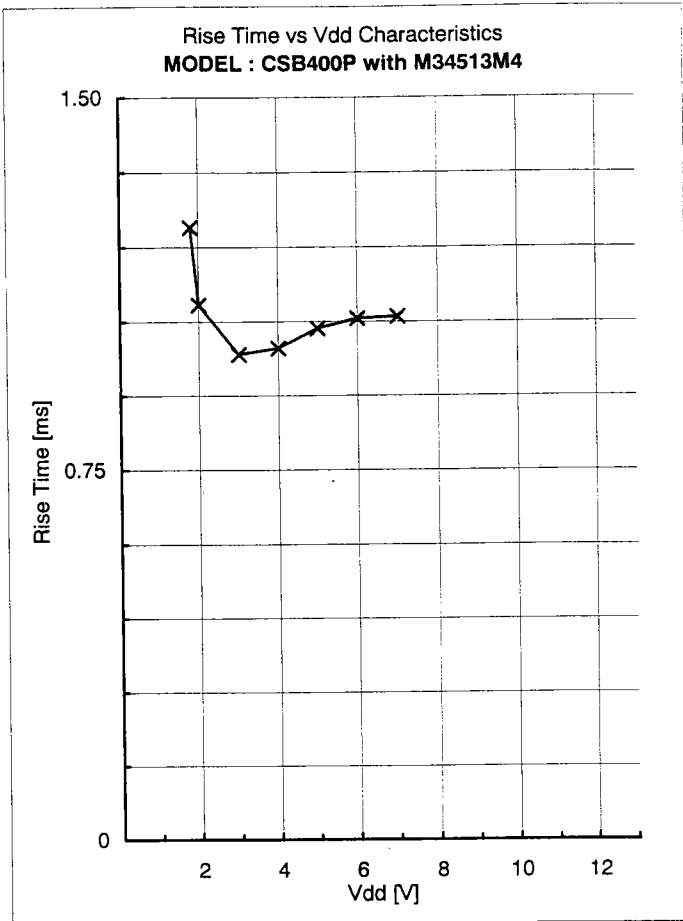
CERALOCK® : CSB400P

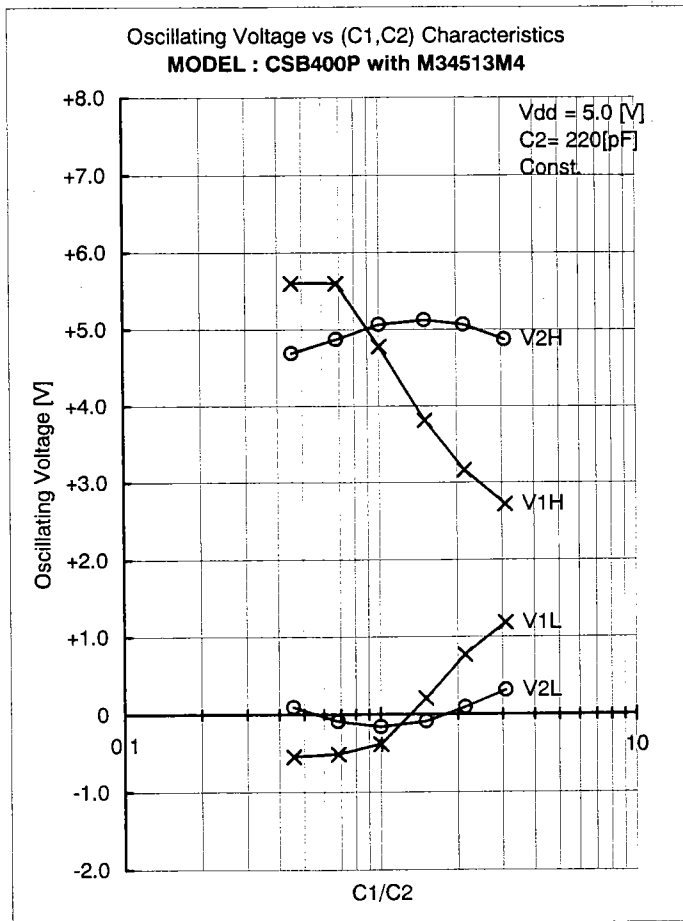
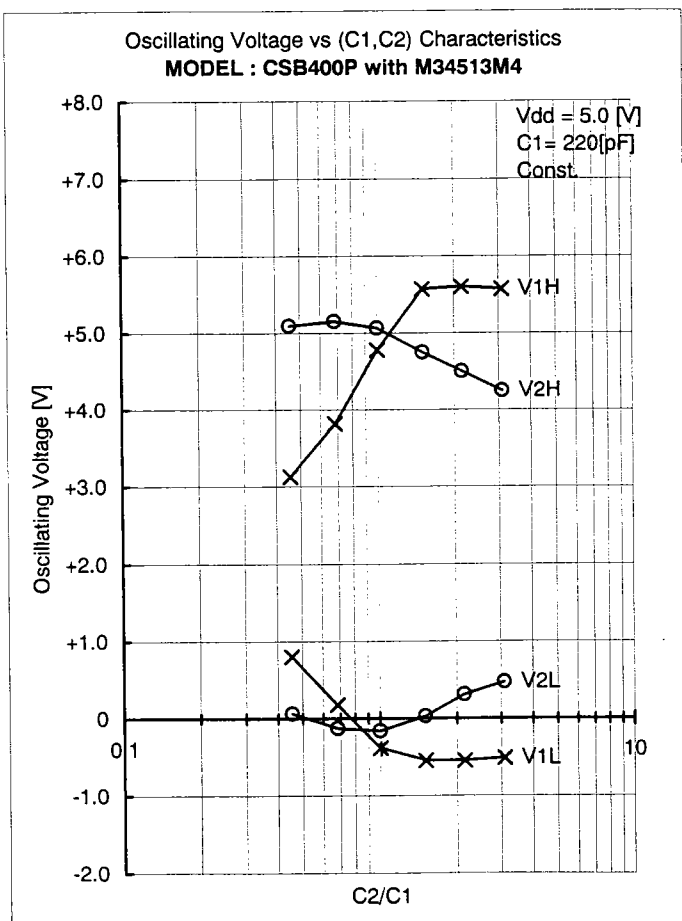
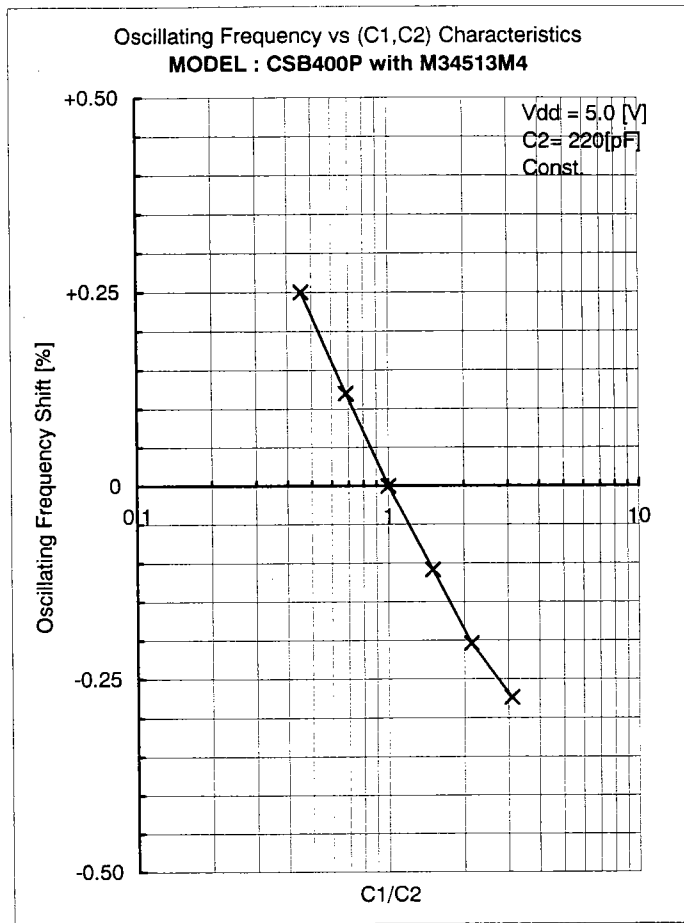
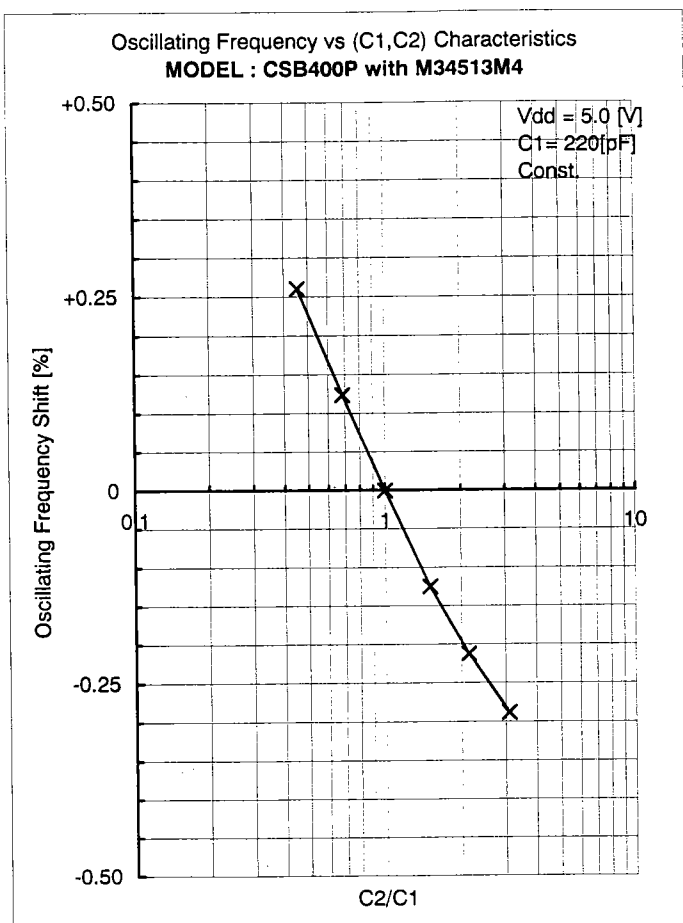
C1 = 220 [pF]

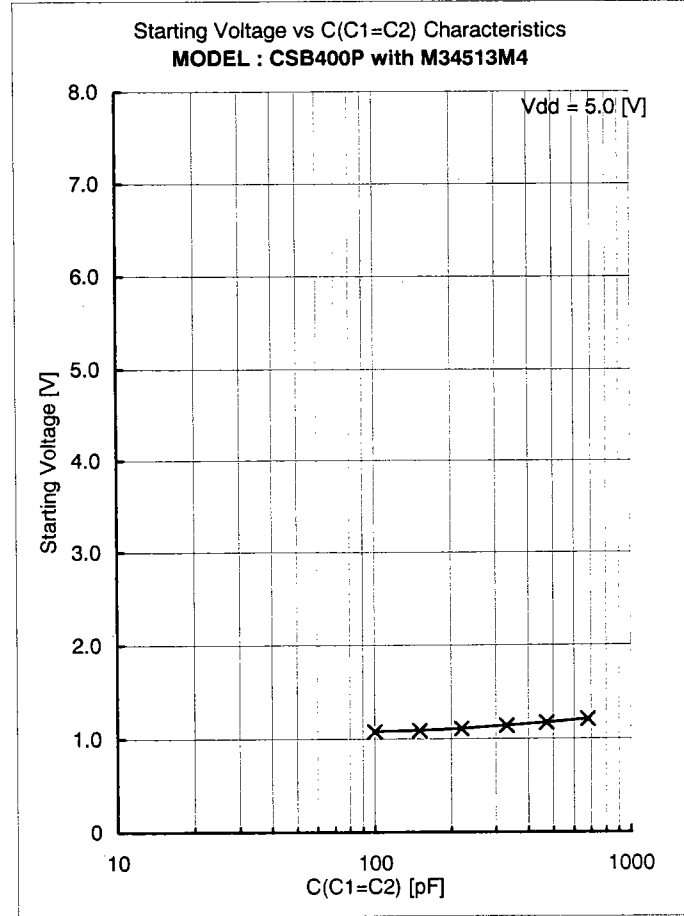
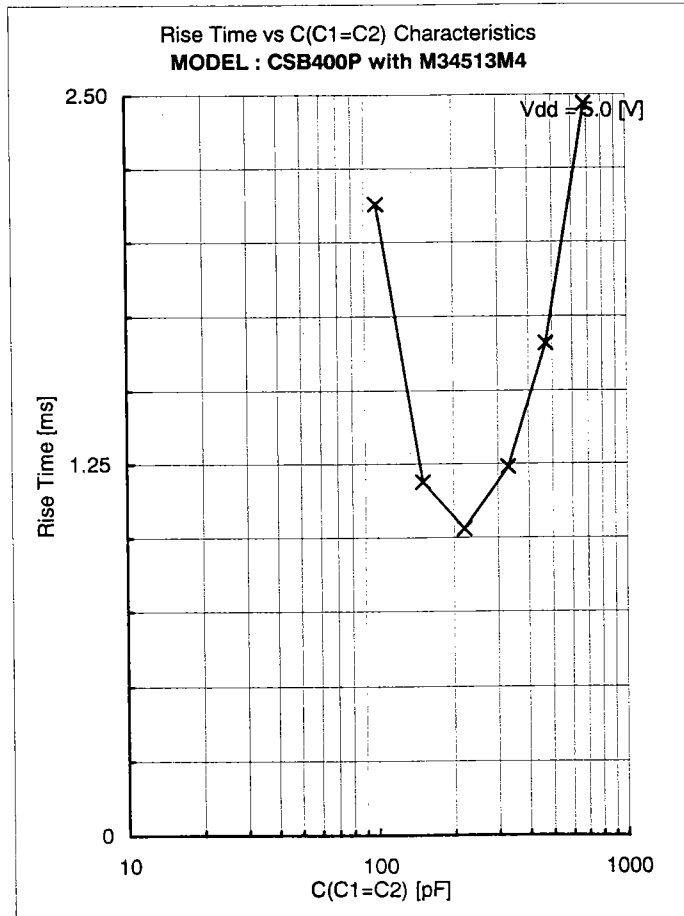
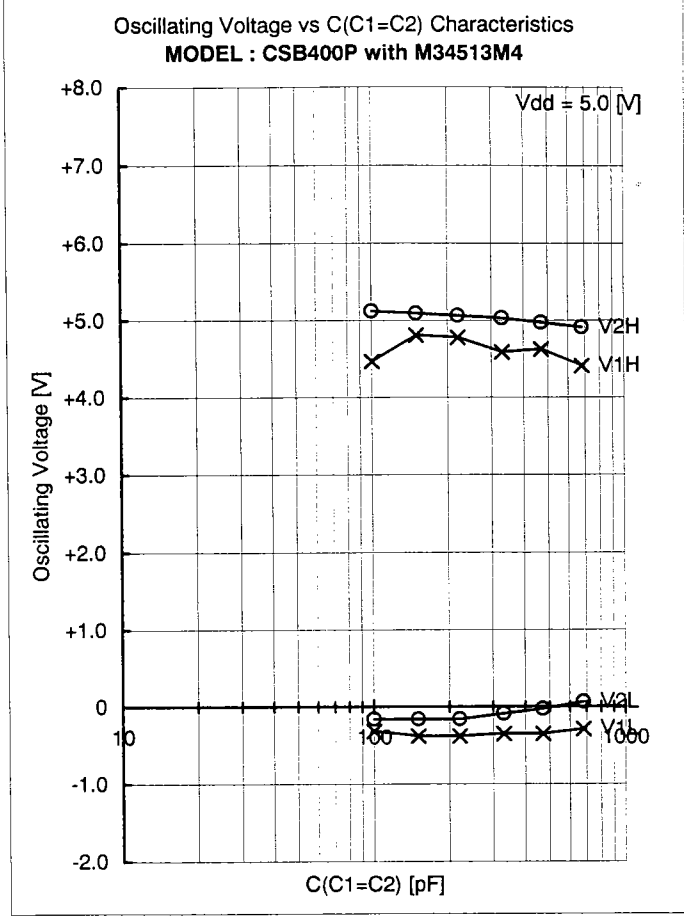
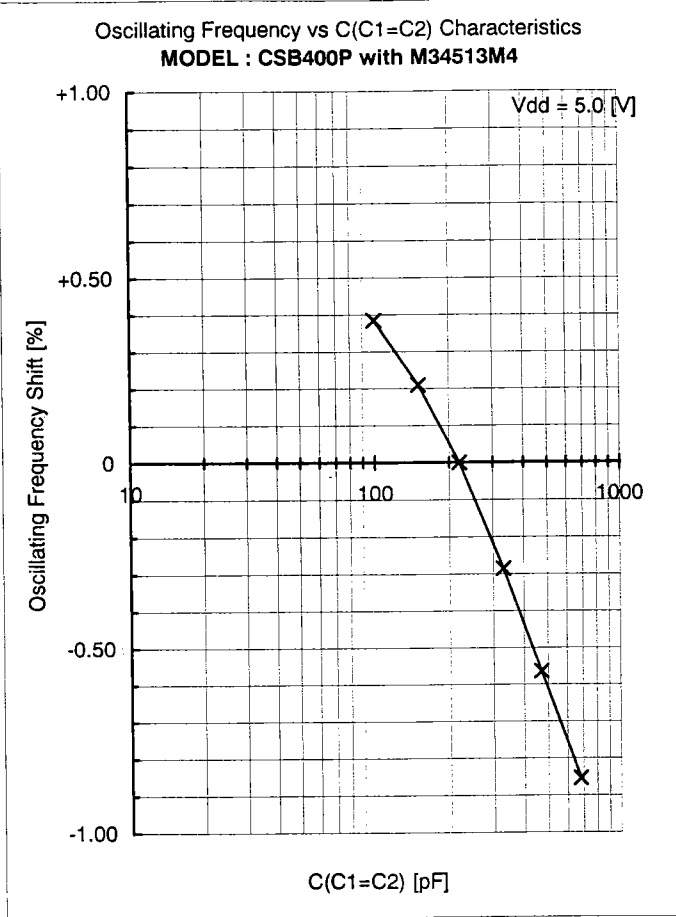
C2 = 220 [pF]

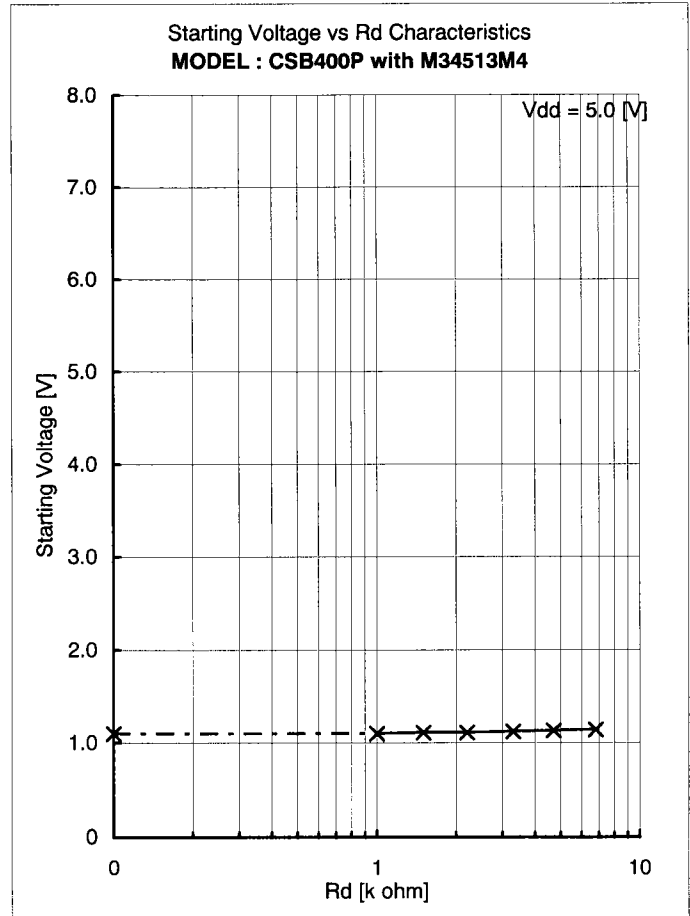
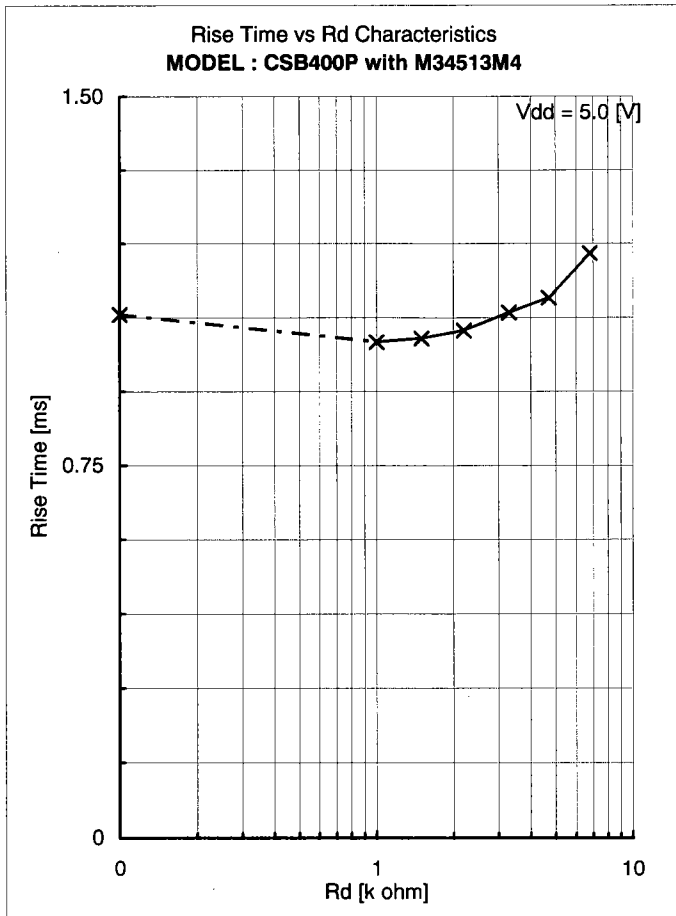
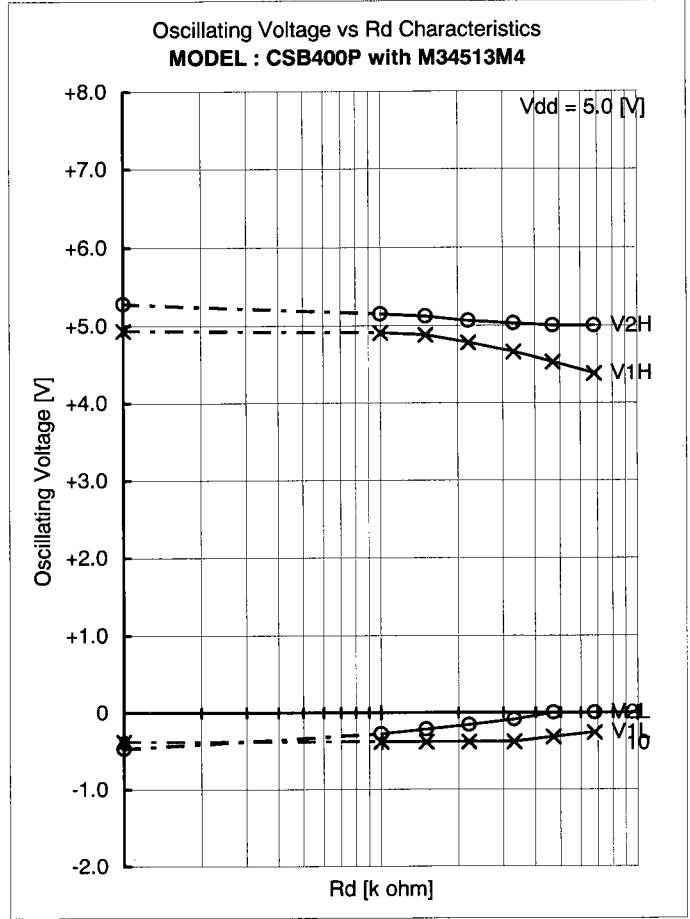
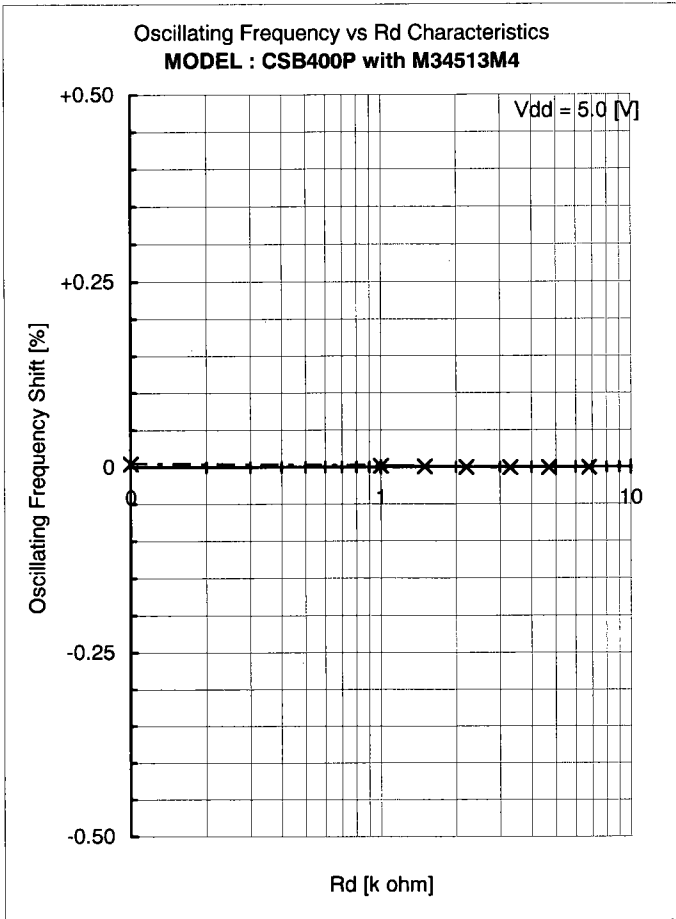
Rd = 2.2 [k ohm]













## Appendixes

|    |                            |   |
|----|----------------------------|---|
| 7. | Comparison Table           | 7 |
| 8. | Frequency Correlation Data | 8 |

### 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       |

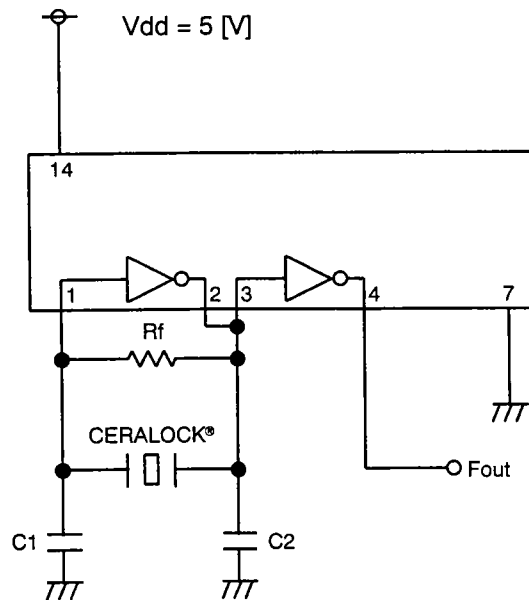
Ref.

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

### Frequency Correlation Data

| Sample No. | M34513M4<br>Fosc [kHz] | CD4069UBE<br>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]