

Technical Data of Ceramic Resonator

Type CSB1000J

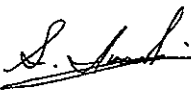
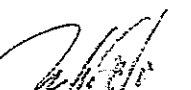
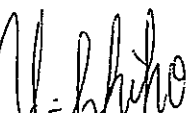
Applied to μ PD780032A

TOYAMA MURATA MANUFACTURING CO., LTD.

Product Engineering Service Section I

Engineering Service Department

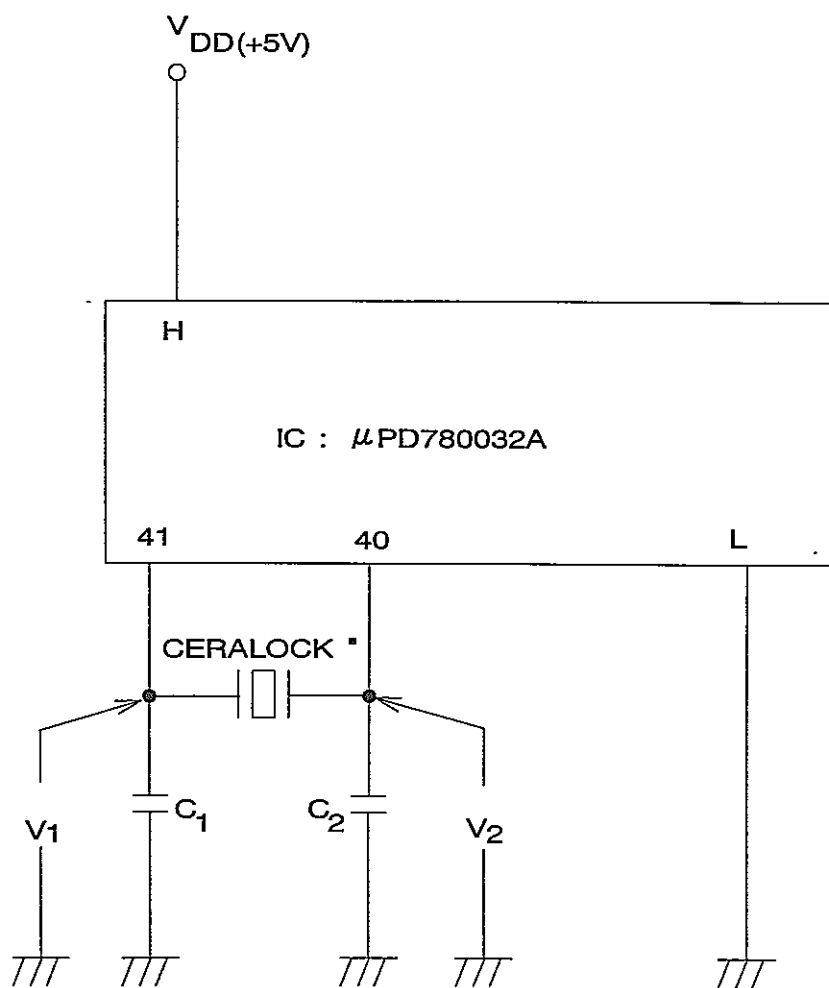
Piezoelectric Components Group

Approved by	Checked by	Checked by	Issued by	Issued Date	TCD No.
 S.Iwasaki	 K.Kuramoto	 M.Kurosaka	 Y.Ishiho	Jan 28, 1999	TCD-99-6A18

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Test Circuit



H:10,24,35,36,38

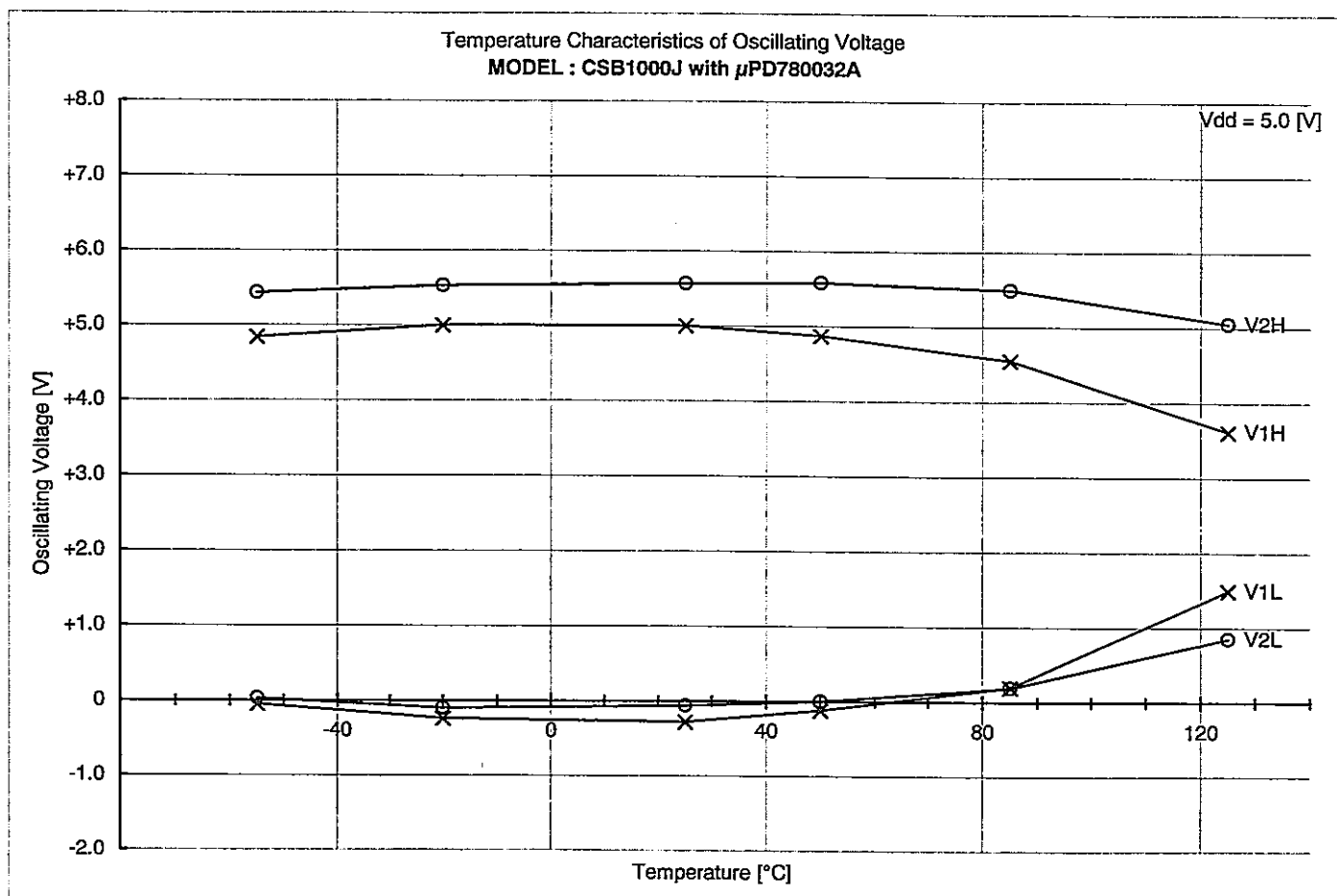
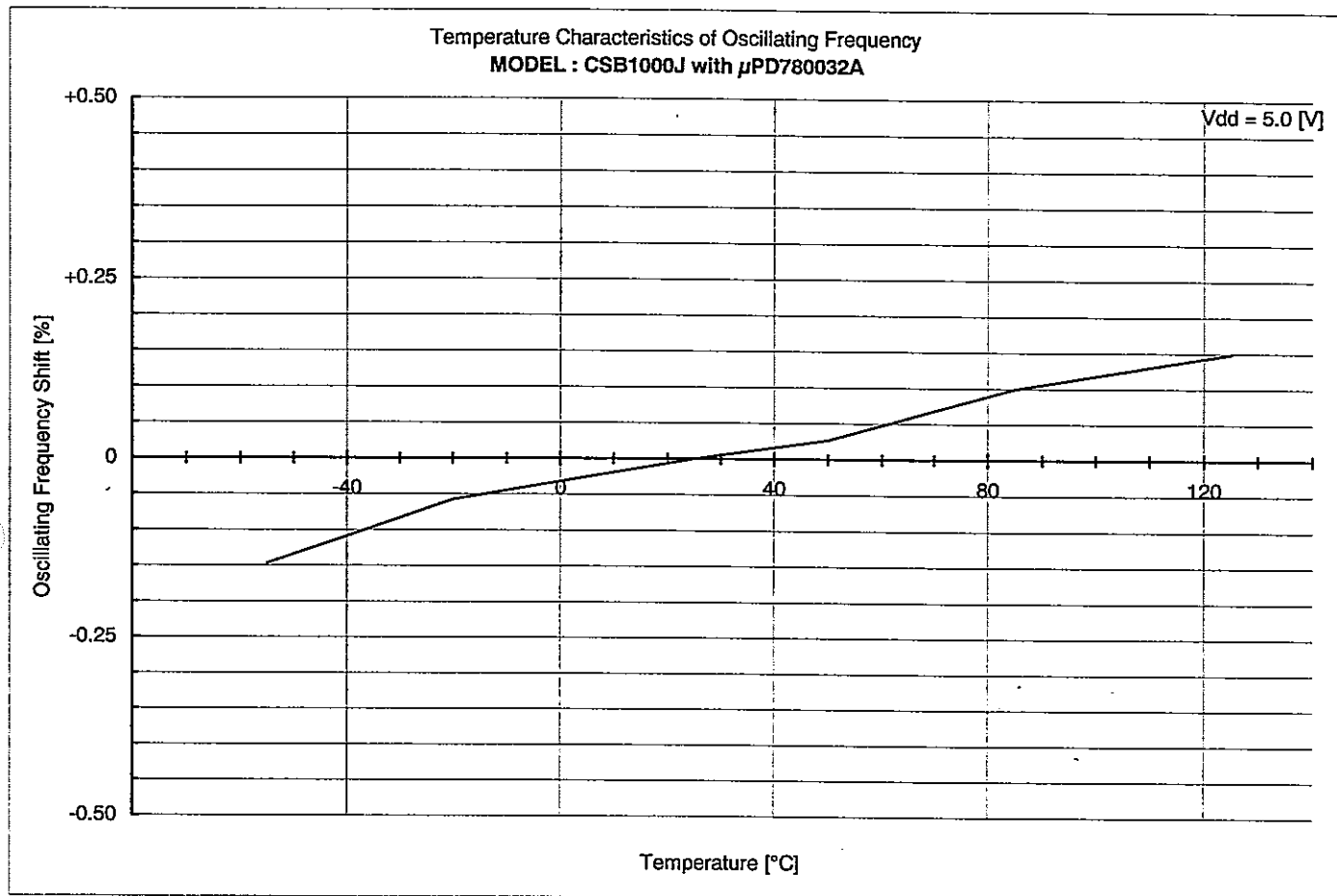
L:9,25 ~34,39,42

Recommendable Value

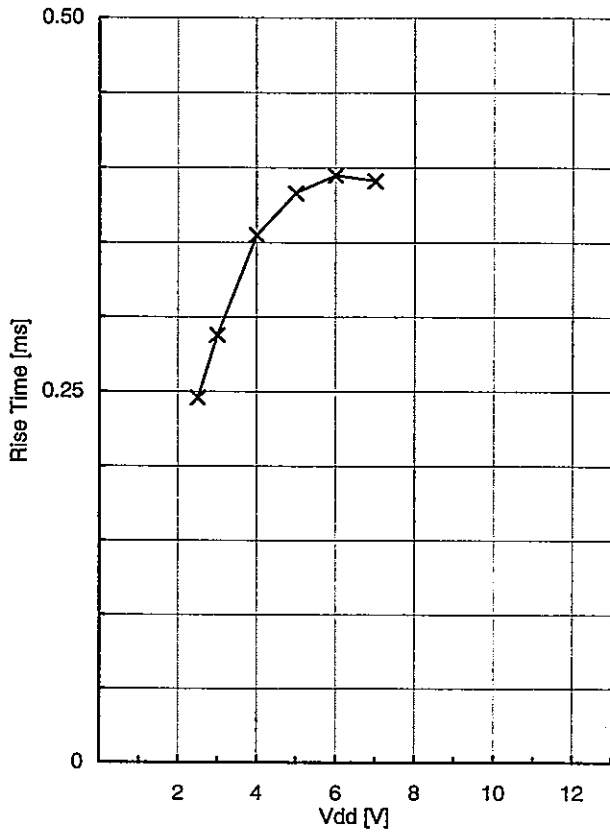
CERALOCK® : CSB1000J

$C_1 = 100 \text{ [pF]}$

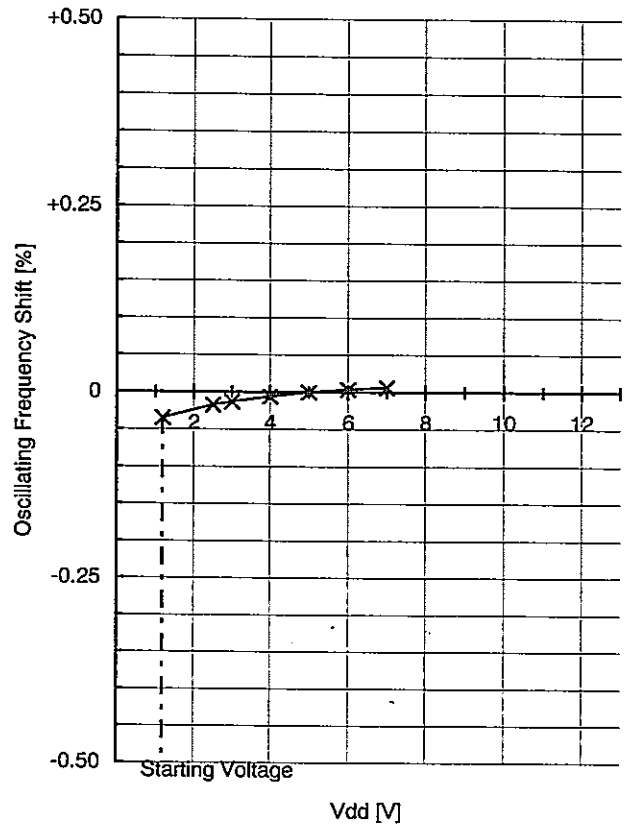
$C_2 = 100 \text{ [pF]}$



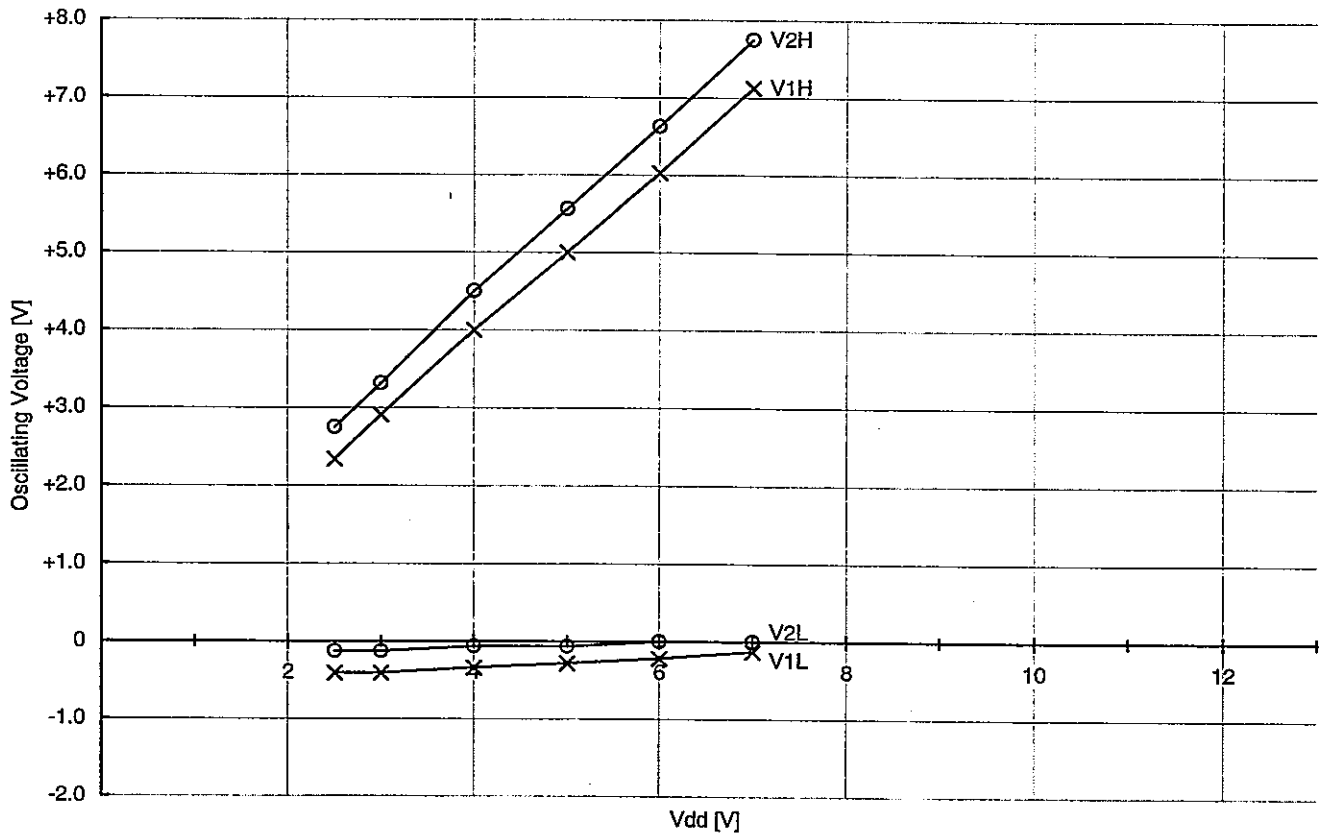
Rise Time vs Vdd Characteristics
MODEL : CSB1000J with μ PD780032A

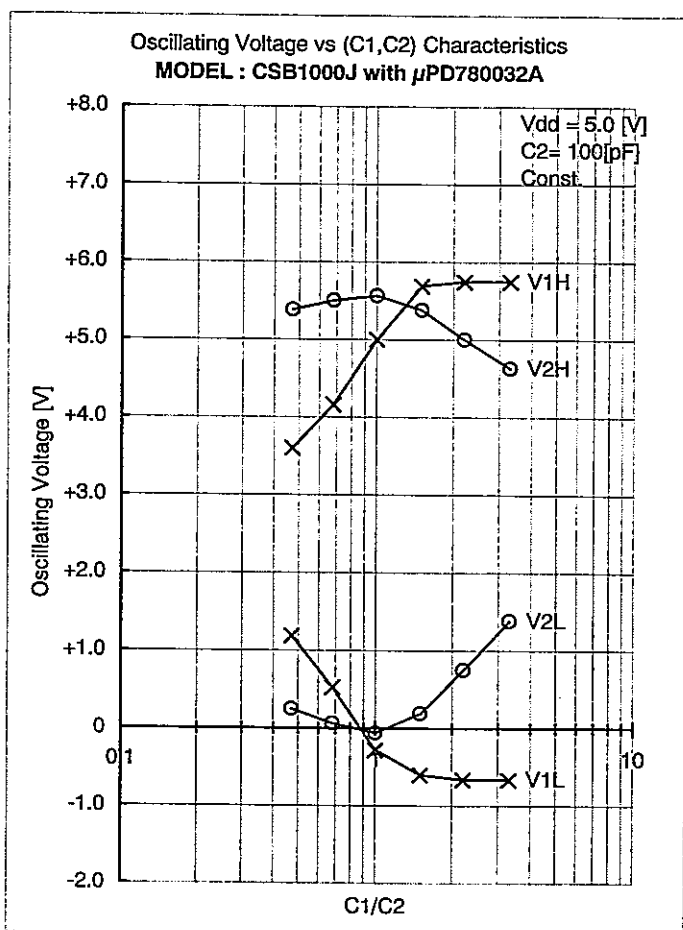
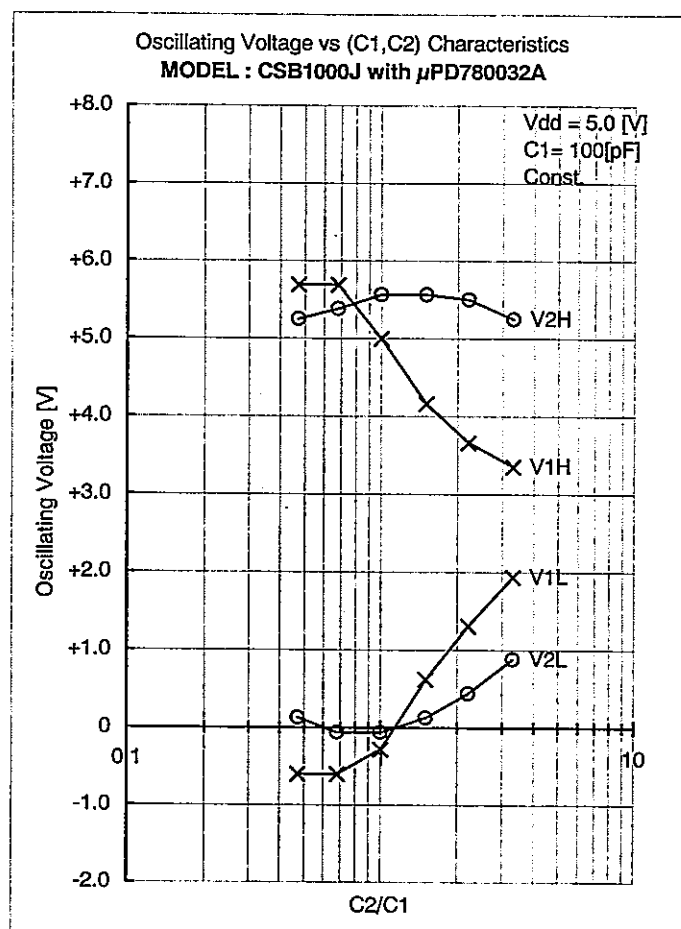
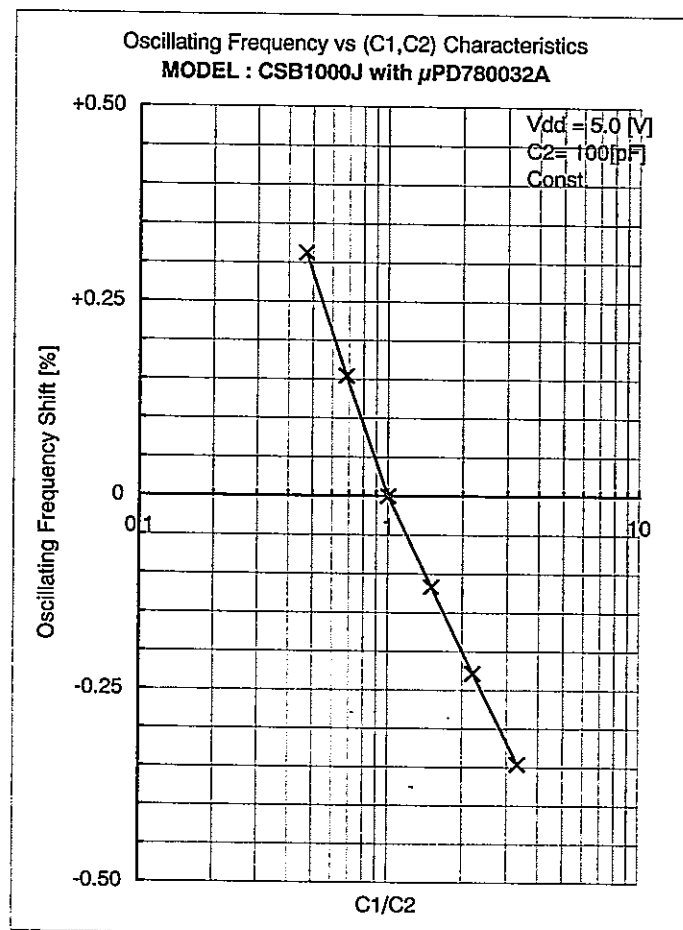
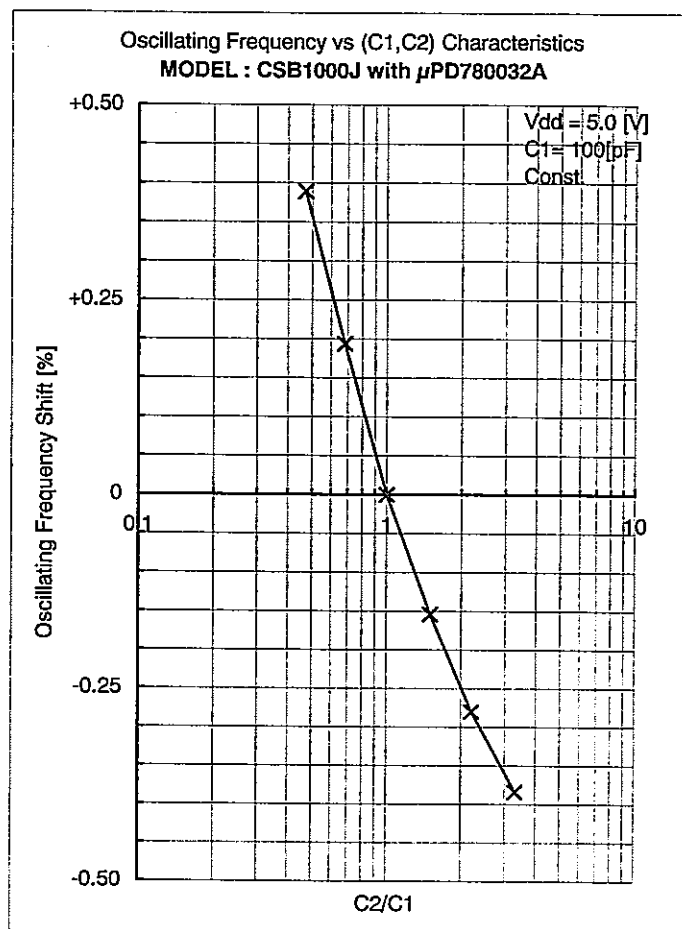


Oscillating Frequency vs Vdd Characteristics
MODEL : CSB1000J with μ PD780032A

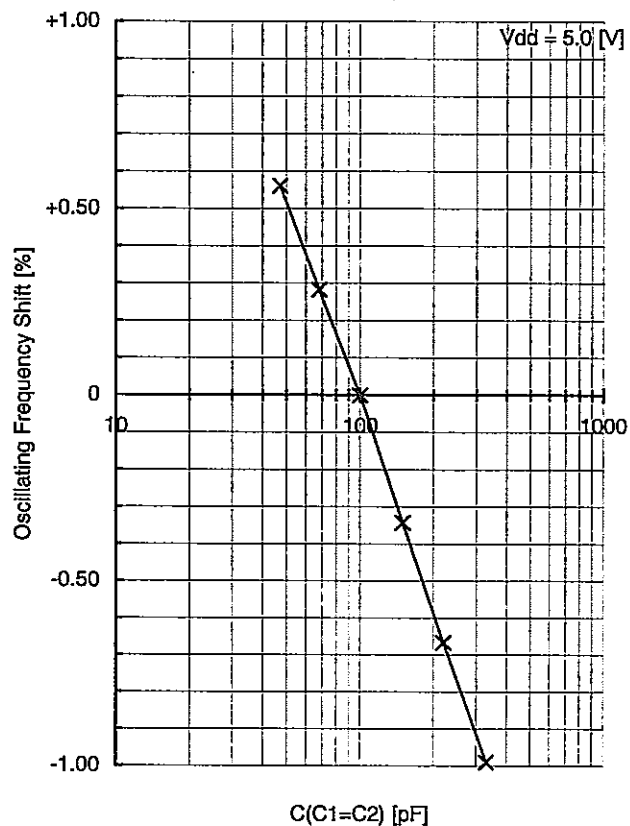


Oscillating Voltage vs Vdd Characteristics
MODEL : CSB1000J with μ PD780032A

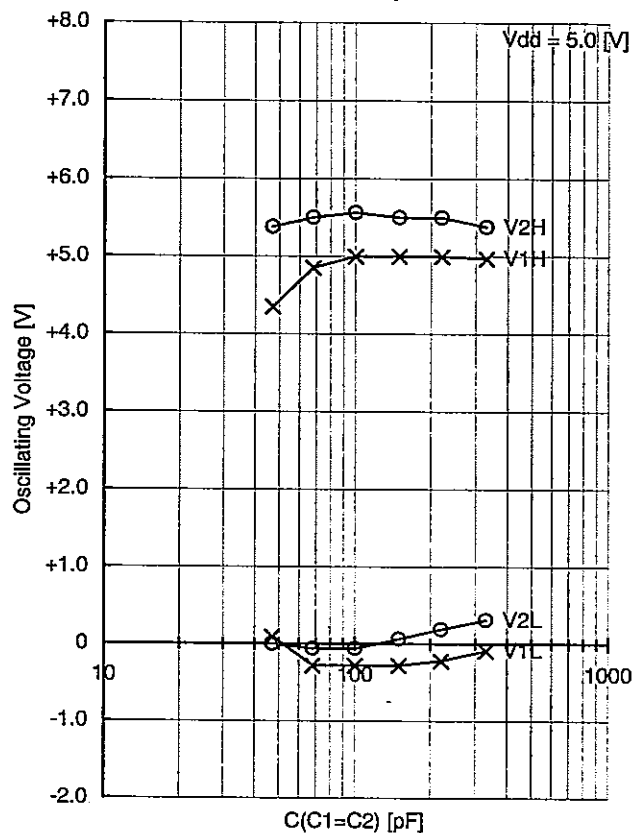




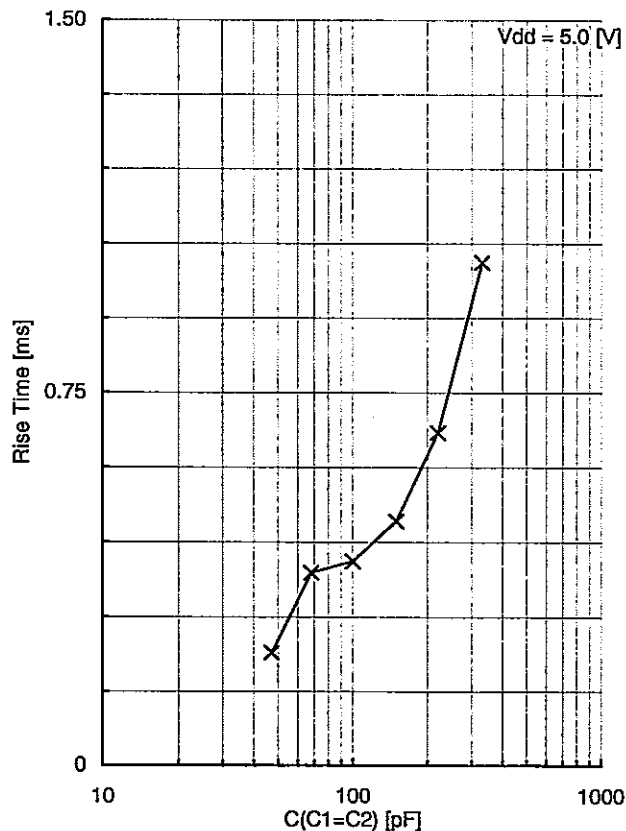
Oscillating Frequency vs C(C1=C2) Characteristics
MODEL : CSB1000J with μ PD780032A



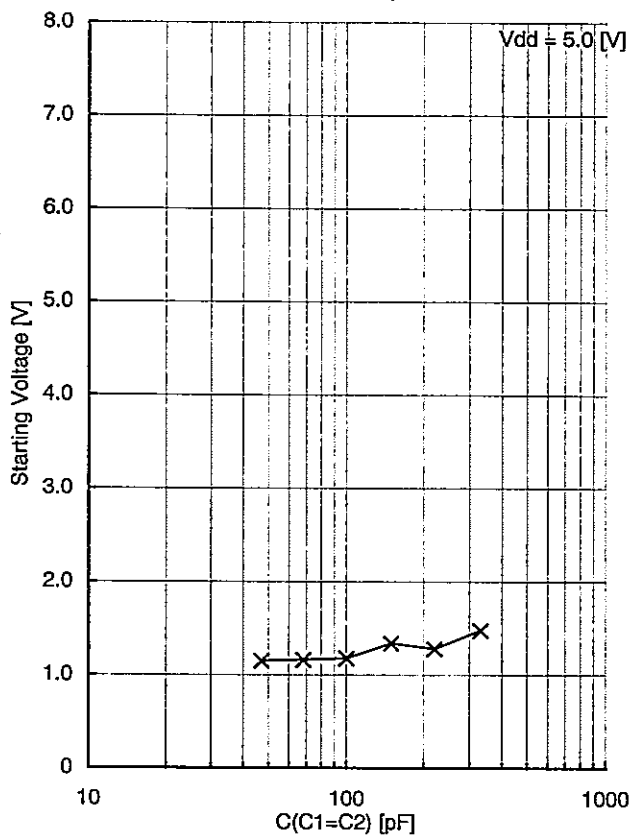
Oscillating Voltage vs C(C1=C2) Characteristics
MODEL : CSB1000J with μ PD780032A



Rise Time vs C(C1=C2) Characteristics
MODEL : CSB1000J with μ PD780032A



Starting Voltage vs C(C1=C2) Characteristics
MODEL : CSB1000J with μ PD780032A



Comparison Table

IC : No	V1H [V]	V1L [V]	V1p-p [V]	V2H [V]	V2L [V]	V2p-p [V]	Fosc [kHz]	Trise [ms]	Vstart [V]
W03	4.97	-0.35	5.32	5.56	-0.13	5.69	1000.162	0.378	1.28
W05	5.00	-0.22	5.22	5.56	0.00	5.56	1000.184	0.426	1.08
W07	4.97	-0.35	5.32	5.56	-0.13	5.69	1000.176	0.382	1.29
W09	5.00	-0.16	5.16	5.56	0.00	5.56	1000.186	0.432	1.06
W15	5.00	-0.28	5.28	5.56	-0.06	5.62	1000.163	0.404	1.18

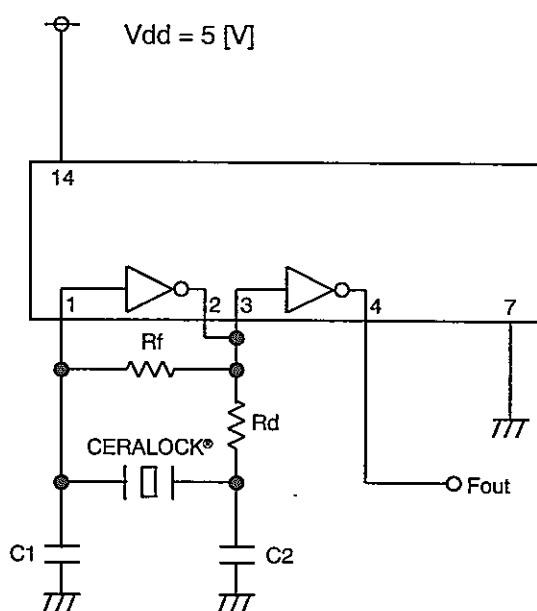
Ref.

Performance described page 2 to 5 were measured with IC No. W15

Frequency Correlation Data

Sample No.	μ PD780032A Fosc [kHz]	CD4069UBE Fosc [kHz]	Shift [%]
1	1000.218	999.784	0.0434
2	999.232	998.928	0.0304
3	999.444	999.133	0.0311
4	1001.510	1001.186	0.0324
5	1000.163	999.742	0.0422
$\bar{X}$	1000.113	999.755	0.0359

muRata Standard Circuit



CERALOCK® : CSB1000J

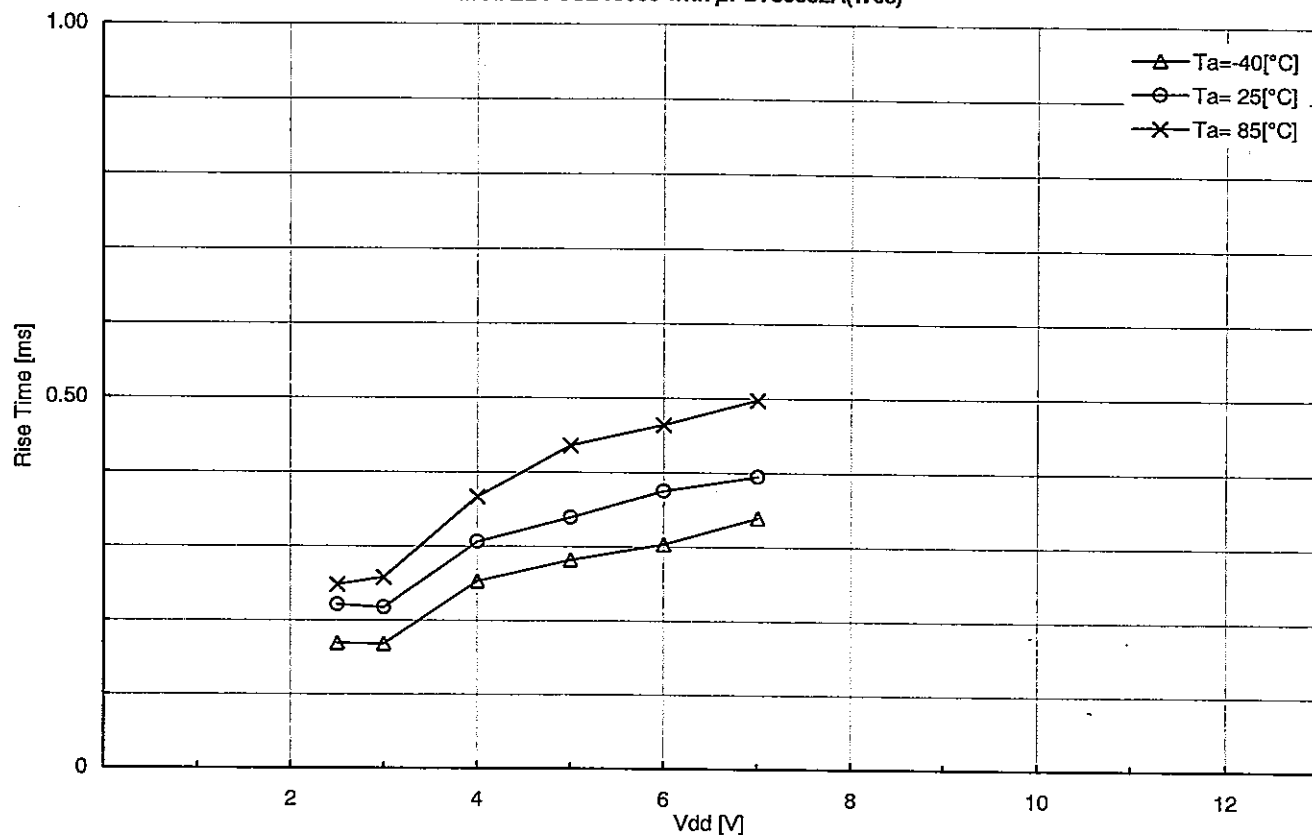
C1 = 100 [pF]

C2 = 100 [pF]

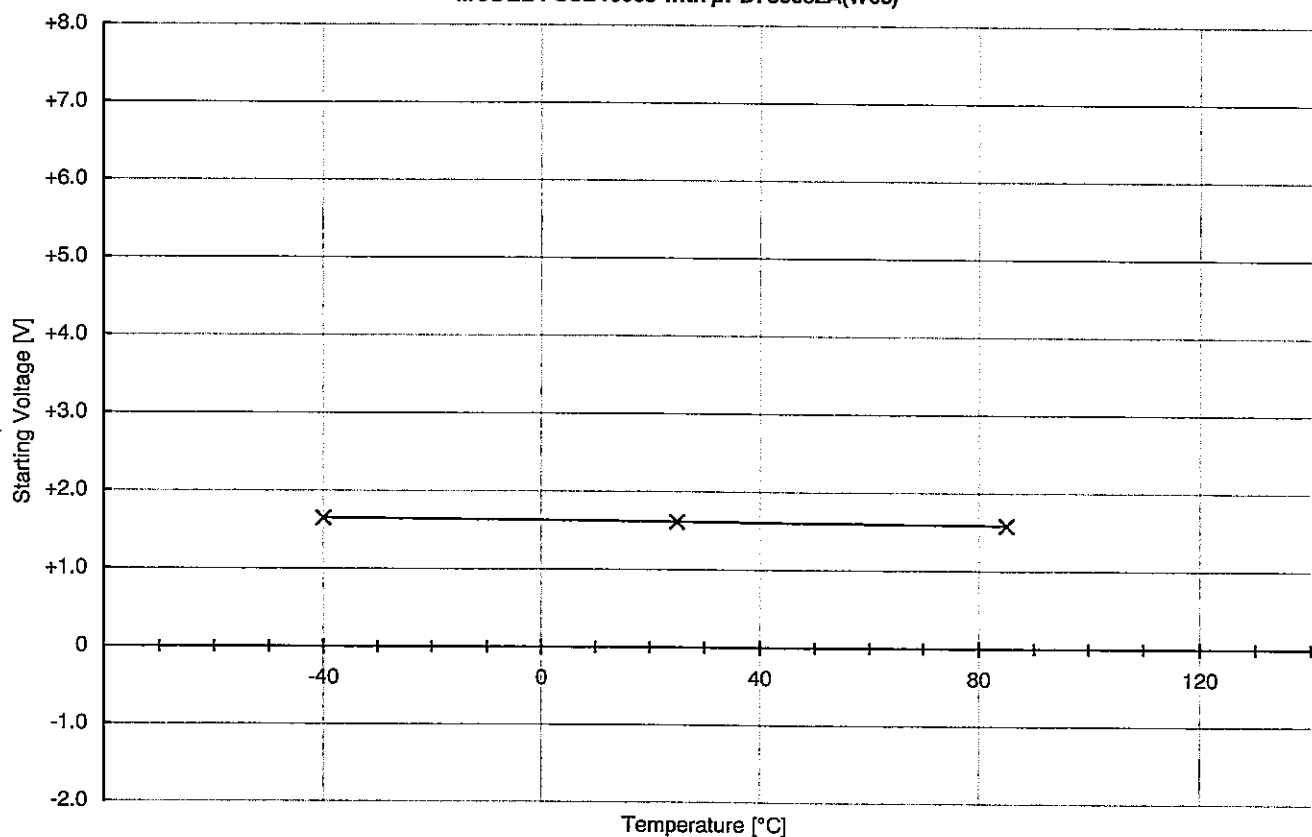
Rf = 1 [Mohm]

Rd = 5.6 [kohm]

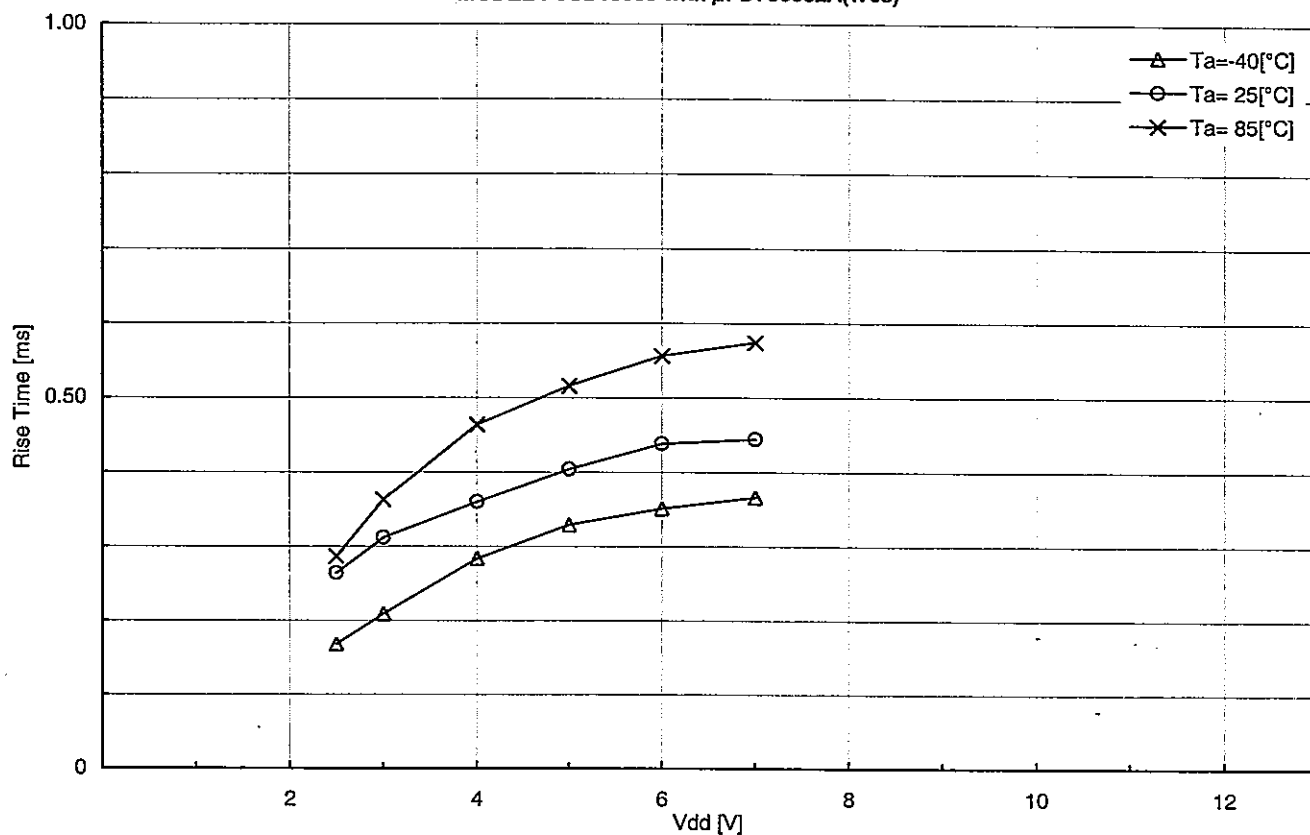
Rise Time vs Vdd Characteristics (Ta : Variable, CERALOCK® : Vst. Worst Sample)
MODEL : CSB1000J with μ PD780032A(W03)



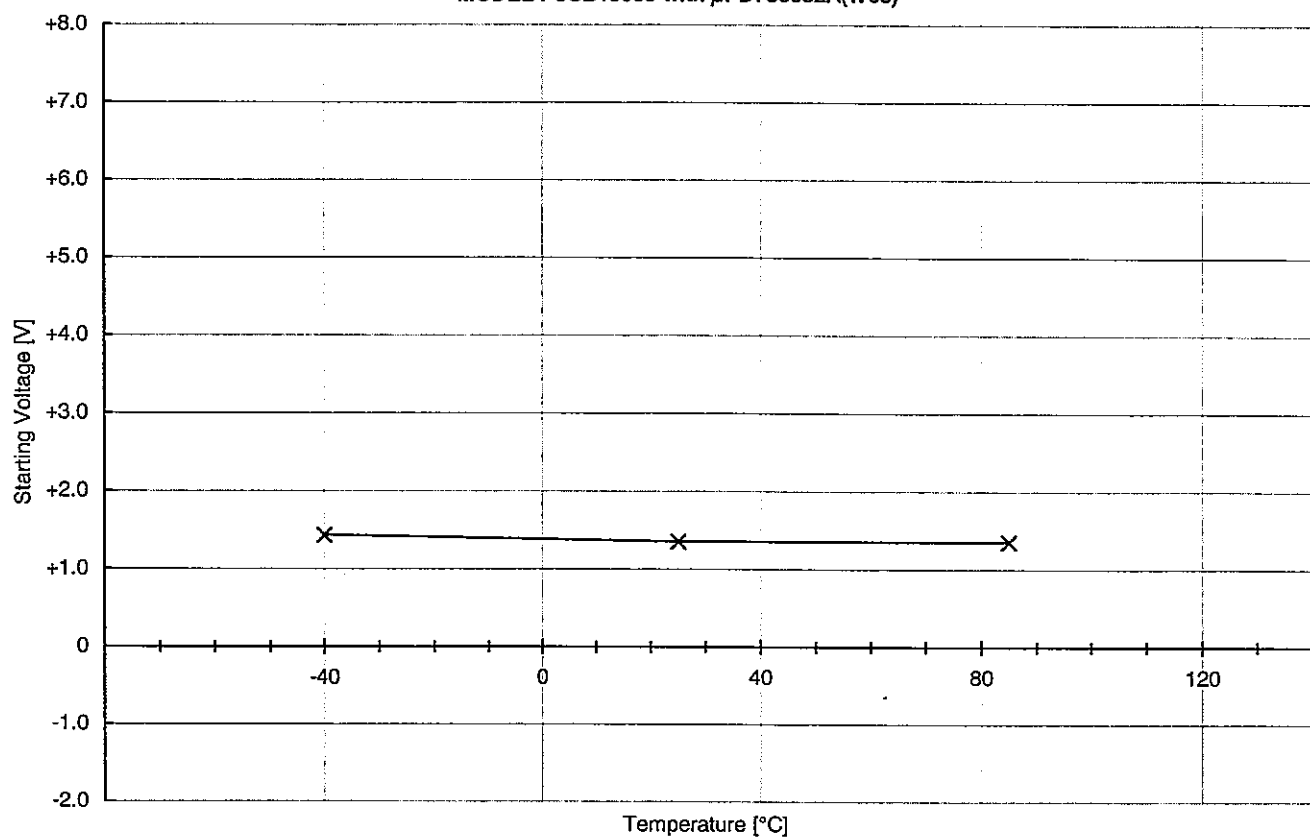
Temperature Characteristics of Starting Voltage (CERALOCK® : Vst. Worst Sample)
MODEL : CSB1000J with μ PD780032A(W03)

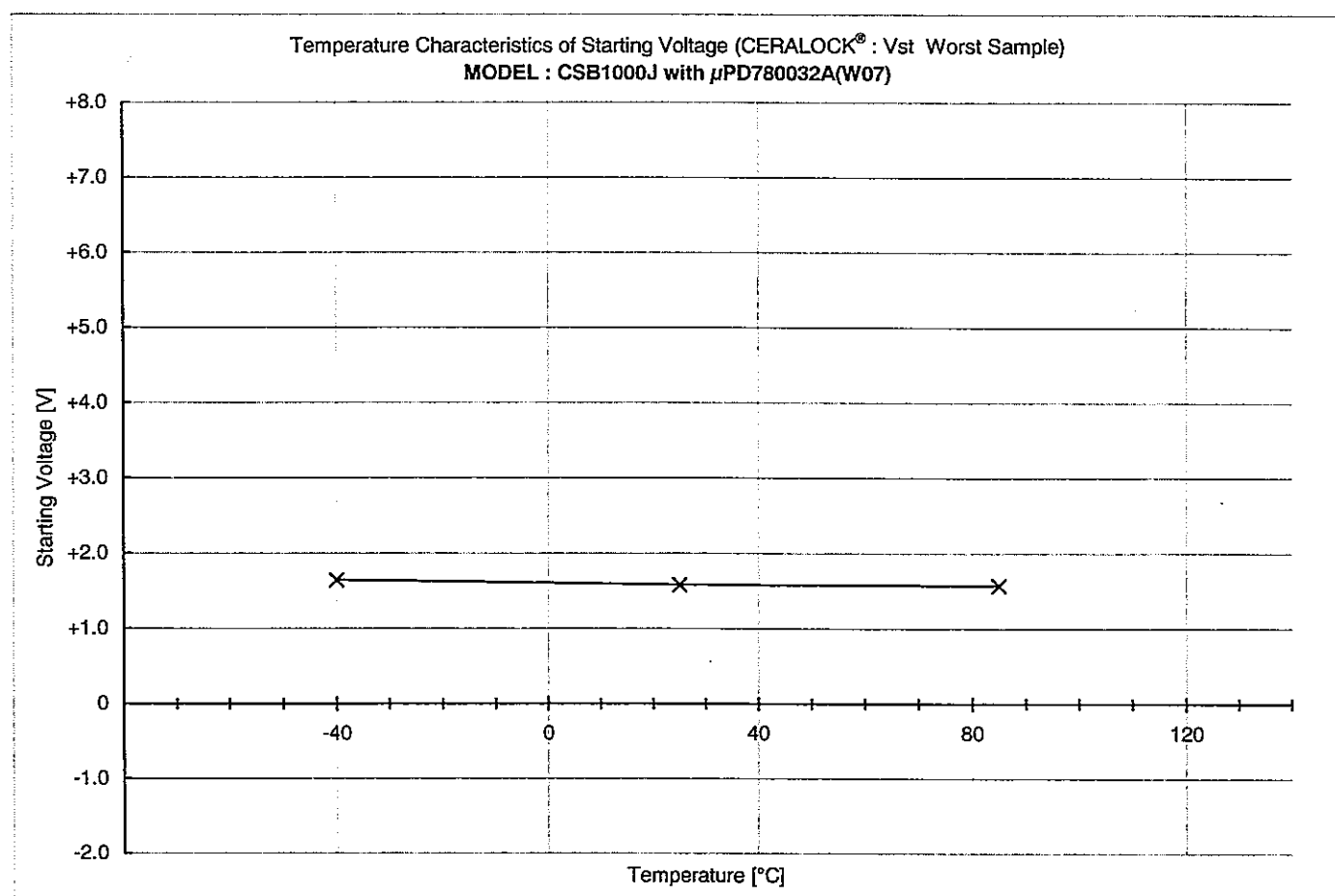
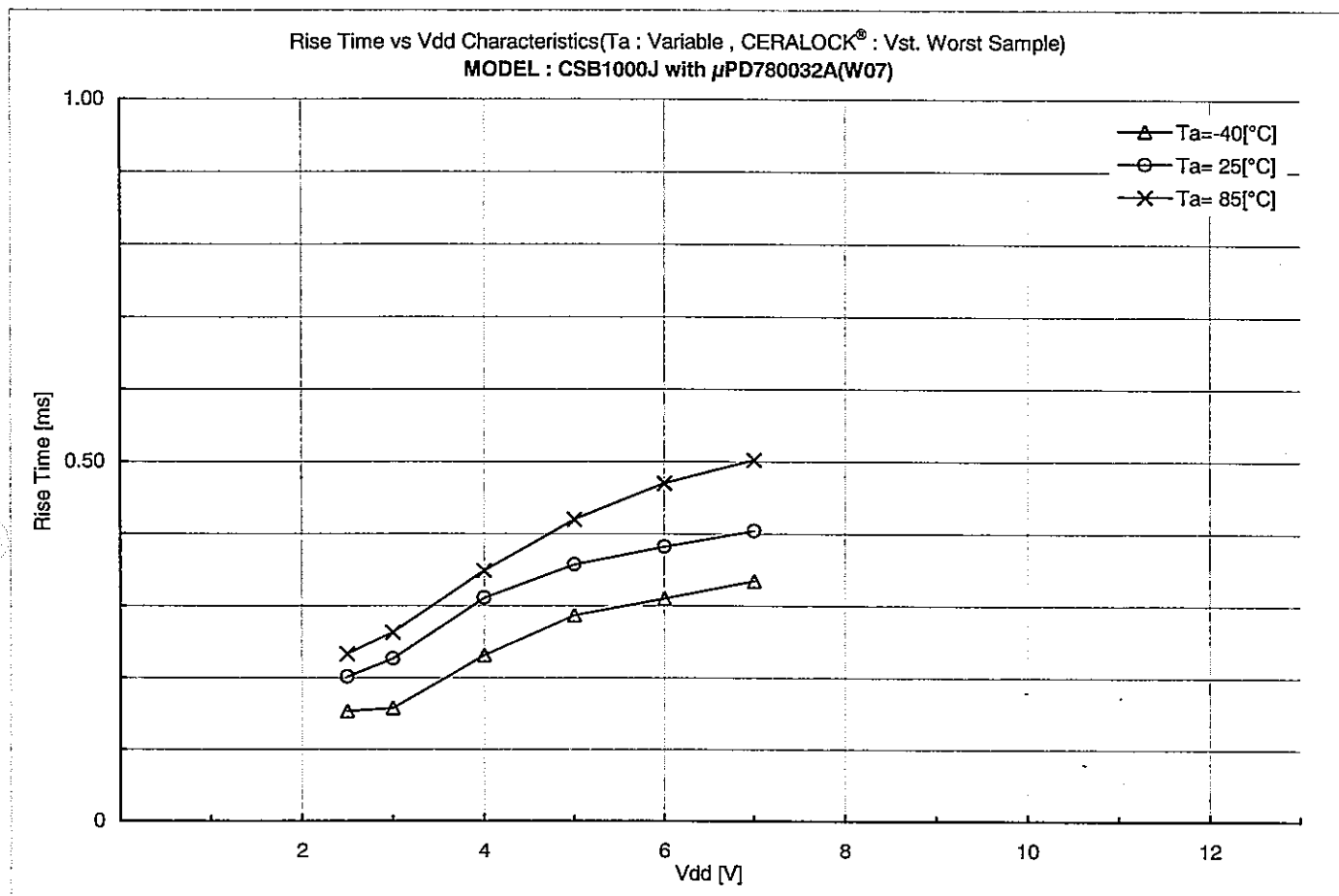


Rise Time vs Vdd Characteristics (Ta : Variable , CERALOCK® : Vst. Worst Sample)
MODEL : CSB1000J with μ PD780032A(W05)

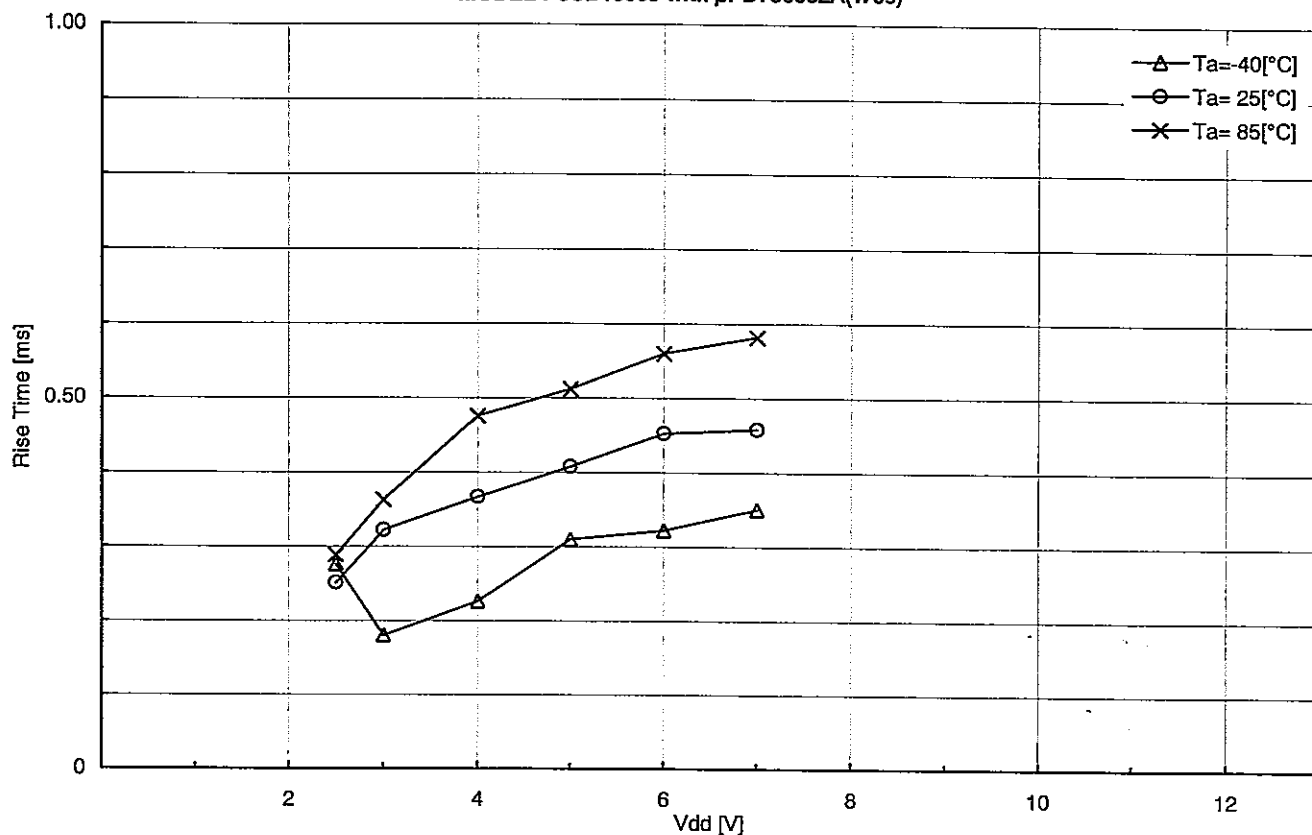


Temperature Characteristics of Starting Voltage (CERALOCK® : Vst. Worst Sample)
MODEL : CSB1000J with μ PD780032A(W05)

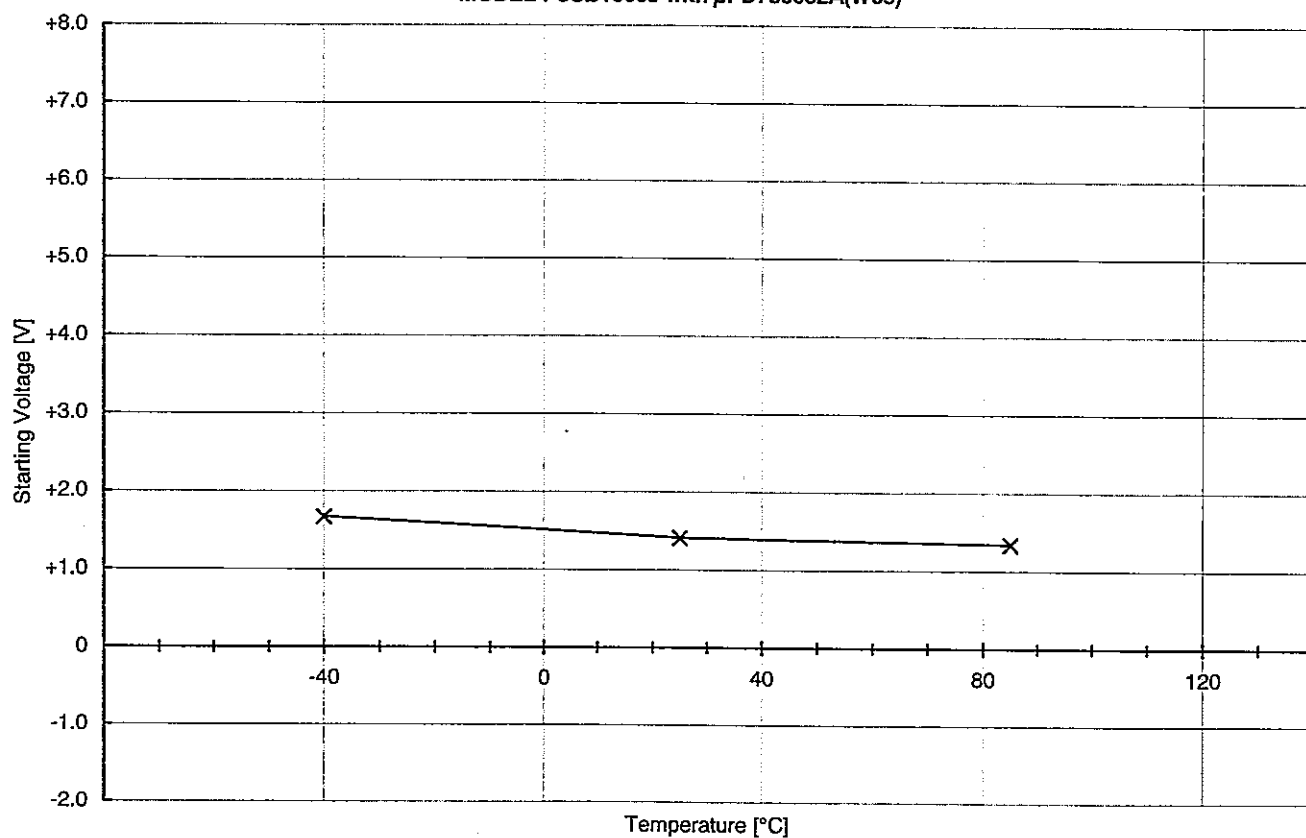




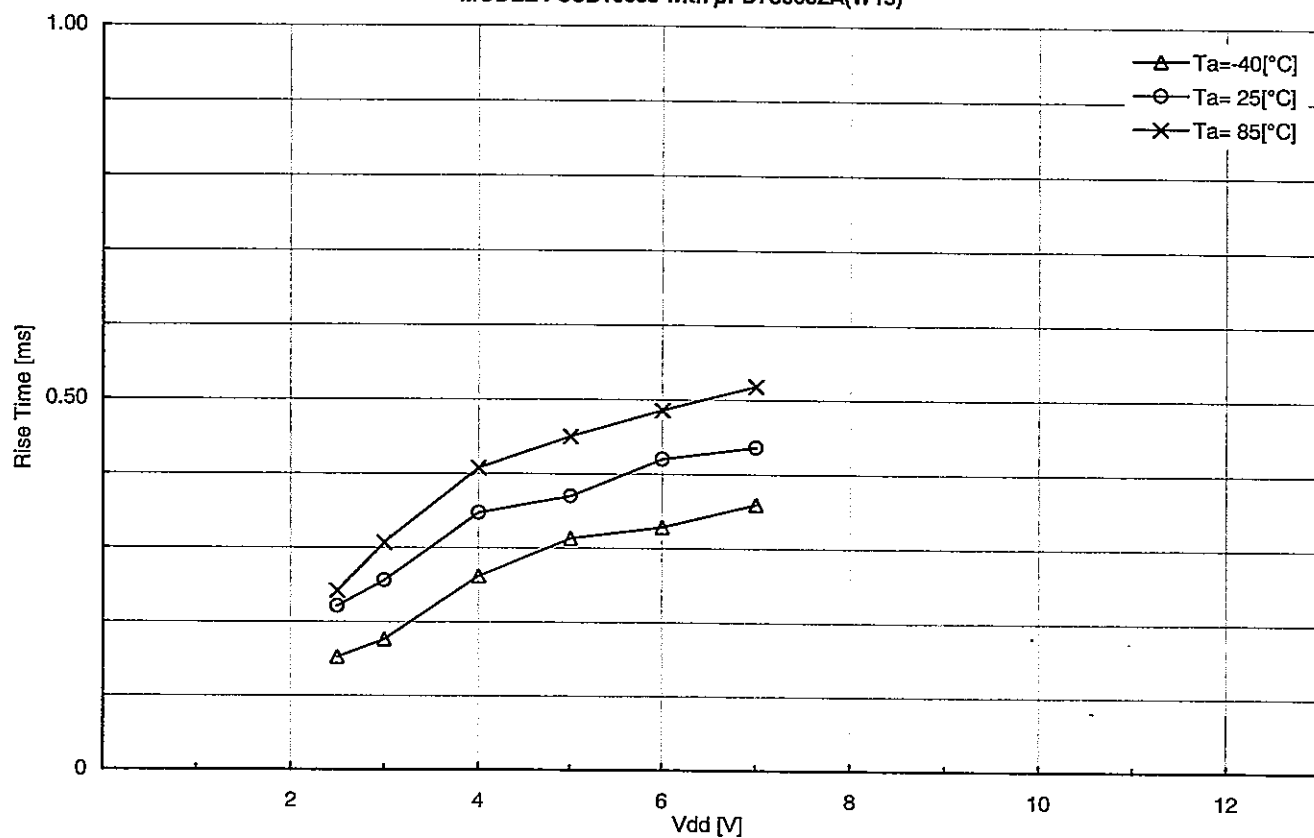
Rise Time vs Vdd Characteristics (Ta : Variable , CERALOCK® : Vst. Worst Sample)
MODEL : CSB1000J with μ PD780032A(W09)



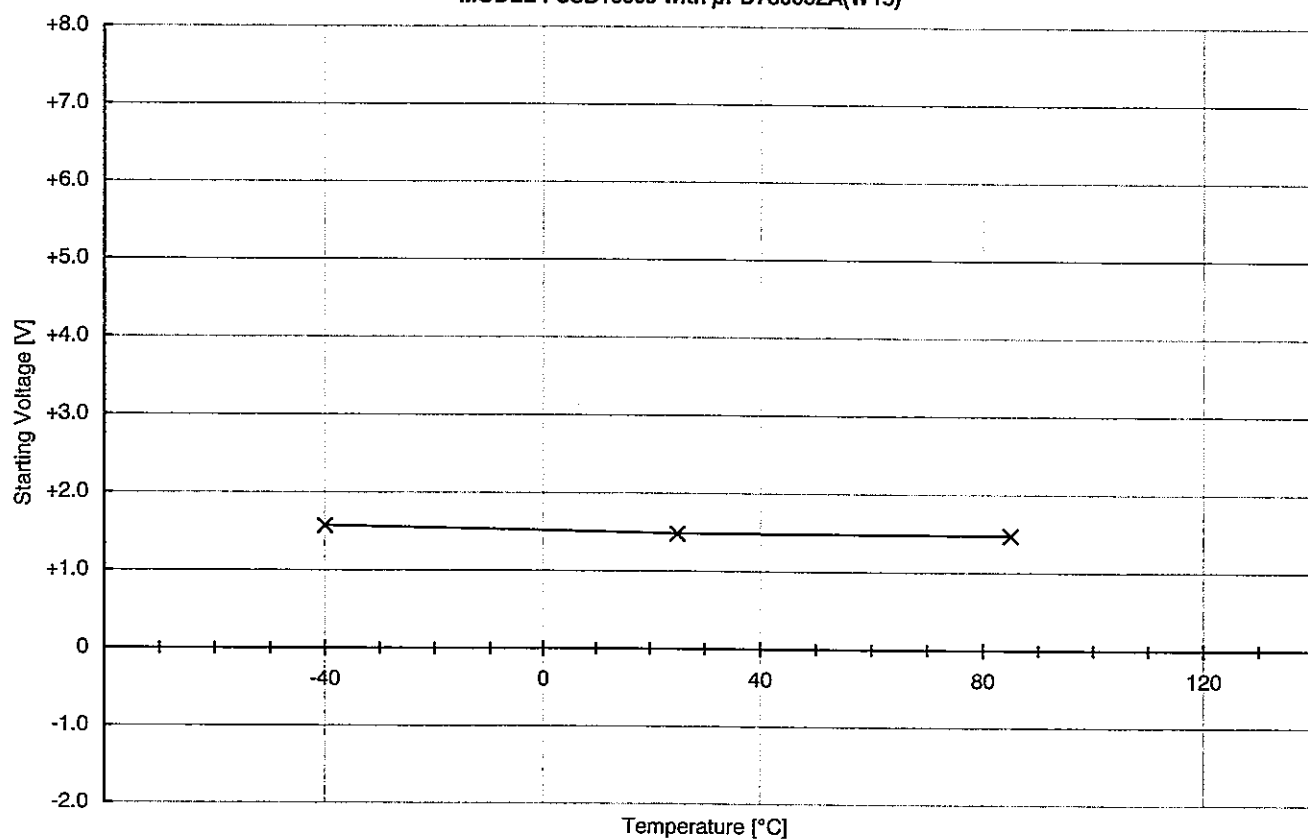
Temperature Characteristics of Starting Voltage (CERALOCK® : Vst. Worst Sample)
MODEL : CSB1000J with μ PD780032A(W09)



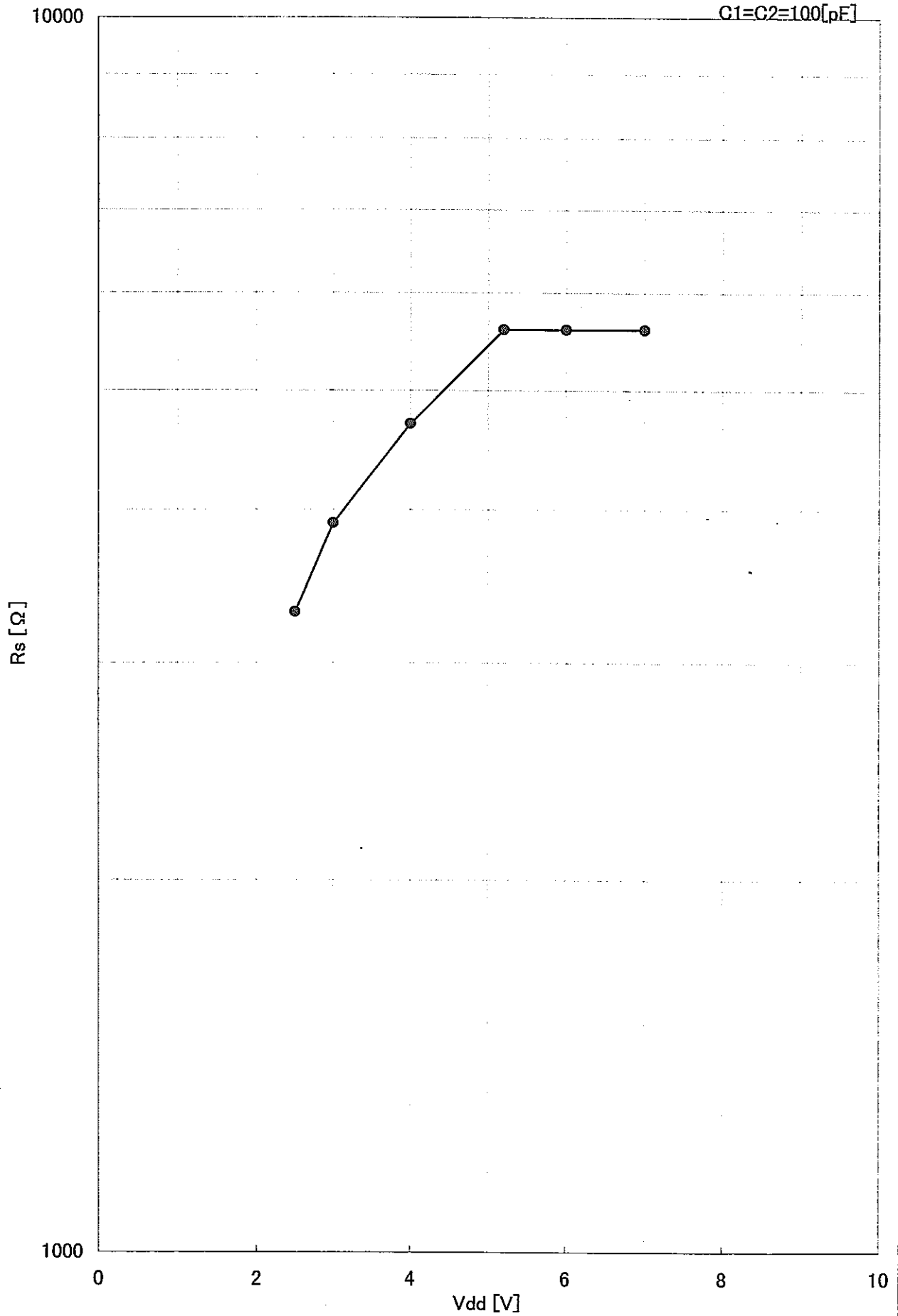
Rise Time vs Vdd Characteristics (Ta : Variable , CERALOCK® : Vst. Worst Sample)
MODEL : CSB1000J with μ PD780032A(W15)



Temperature Characteristics of Starting Voltage (CERALOCK® : Vst. Worst Sample)
MODEL : CSB1000J with μ PD780032A(W15)



Rs vs Vdd Characteristics
MODEL: CSB1000J with uPD780032A



Rs vs C(C1=C2) Characteristics

MODEL : CSB1000J with uPD780032A

Vdd=+5.0V

