

G5M62GR

CMOS Positive Voltage Regulator

Description

The G5M62GR series are highly precise, low consumption positive voltage regulators, manufactured using CMOS and laser trimming technologies. The series achieves high output current, with low input-output voltage differentials, and consists of a high precision voltage reference, an error correction circuit, and an output driver with current limitation. With good transient response, output remains stable even during load changes. Also, having high ripple rejection ratios, the series can be used with low power supply noise. The CE input enables the output to be turned off, resulting in reduced power consumption. With regards to the CE function, as well as the positive logic G5M62GR series, a negative logic G5M62GP series is also available.

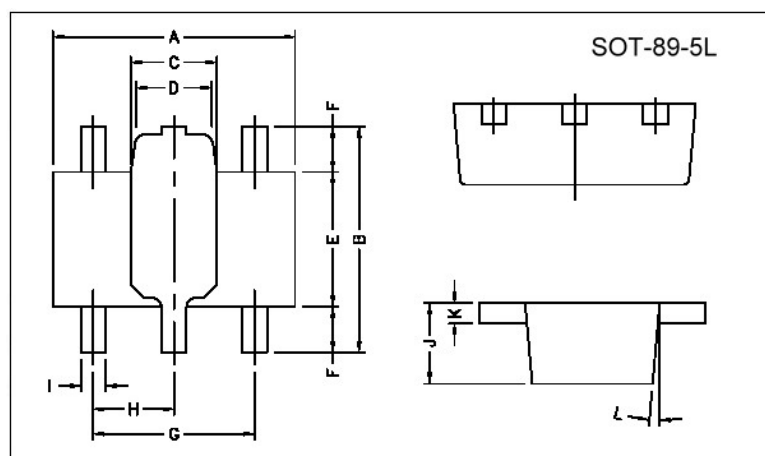
Features

- Maximum Output Current: 150mA (within max. power dissipation, $V_{OUT}=3.0V$)
- Output Voltage Range: 2.1V ~ 5.0V in 0.1V increments
- Low Power Consumption: Typ. 13uA @ $V_{OUT}=5.0V$
- Output Voltage Temperature Characteristics: Typ. $\pm 100\text{ppm}/^\circ\text{C}$
- Input Stability: Typ. 0.2%/V
- Small Input-Output Differential: $I_{OUT}=160\text{mA}$ @ $V_{OUT}=3.0V$ with a 0.38V differential
- Highly Accurate: Output voltage $\pm 2\%$

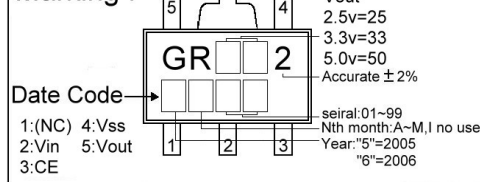
Applications

- Battery Powered Equipment
- Palmtops
- Cameras, Video Recorders
- Voltage Supplies for Cellular Phones

Package Dimensions

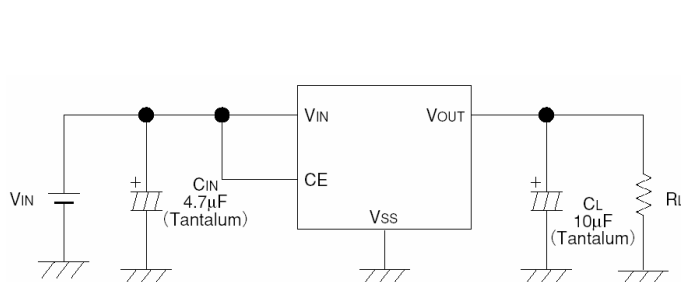


Marking :

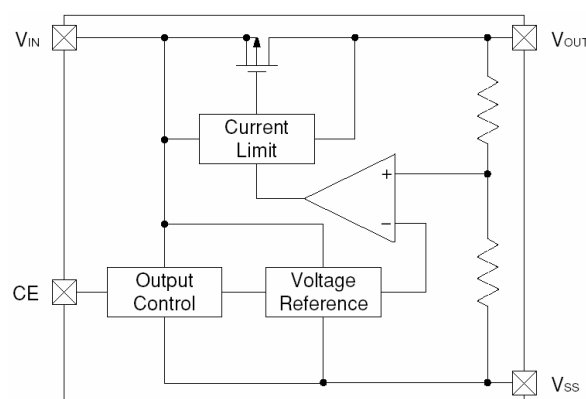


REF.	Millimeter		REF.	Dimensions	
	Min.	Max.		Millimeter	
A	4.40	4.60	G	3.00 REF.	
B	4.05	4.25	H	1.50 REF.	
C	1.50	1.70	I	0.40	0.52
D	1.30	1.50	J	1.40	1.60
E	2.40	2.60	K	0.35	0.41
F	0.80	-	L	5 ° TYP.	

Typical Application Circuit



Block Diagram



Function List

Series	CE	Voltage Output
G5M62GR	High	ON
	Low	OFF
G5M62GP	High	ON
	Low	OFF

Absolute Maximum Ratings Ta=25°C

Parameter	Symbol	Ratings	Unit
Input Voltage	V _{IN}	12	V
Output Current	I _{OUT}	500	mA
Output Voltage	V _{OUT}	V _{SS} -0.3 ~ V _{IN} +0.3	V
CE Input Voltage	V _{CE}	V _{SS} -0.3 ~ V _{IN} +0.3	V
Operating Ambient Temperature	T _{opr}	-30 ~ +80	°C
Storage Temperature	T _{stg}	-40 ~ +125	°C
Continuous Total Power Dissipation	PD	500	mW

Note: I_{OUT} must be less than Pd/(V_{IN}-V_{OUT})

Electrical Characteristics Ta=25°C

G5M62GR-50 V_{OUT} (T) =5.0V (Note1)

Parameter	Symbol	Condition	Min	TYP	Max	Unit	Circuit
Output Voltage	V _{OUT} (E) (Note2)	V _{IN} =6.0V, I _{OUT} =40mA	4.900	5.000	5.100	V	1
Max. Output Current	I _{OUT max}	V _{IN} =6V, V _{OUT} (E)≥4.5V	180	-	-	mA	1
Load Stability	ΔV _{OUT}	V _{IN} =6V, I _{OUT} =1mA to 100mA	-	40	80	mV	1
Input-Output Voltage Differential (Note3)	V _{dif1}	I _{OUT} =100mA	-	165	330	mV	1
	V _{dif2}	I _{OUT} =200mA	-	330	660		1
Supply Current1	I _{SS1}	V _{IN} =V _{CE} =6V	-	13	21	μA	2
Supply Current2	I _{SS2}	V _{IN} =6V, V _{CE} =V _{SS}	-	-	0.1	μA	2
Input Stability	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \cdot V_{OUT}}$	I _{OUT} =40mA V _{IN} =6V to 10V	-	0.2	0.3	%/V	1
Input Voltage	V _{IN}		-	-	10	V	-
Output Voltage Temperature Characteristics	$\frac{\Delta V_{OUT}}{\Delta T_{opr} \cdot V_{OUT}}$	I _{OUT} =40mA -30°C ≤ T _{opr} ≤ 85°C	-	±100	-	ppm/°C	
CE Input Voltage "High"	V _{CEH}		1.5	-	-	V	1
CE Input Voltage "Low"	V _{CEL}		-	-	0.25	V	1
CE Input Current "High"	I _{CEH}	V _{CE} =V _{IN}	-	-	5.0	μA	2
CE Input Current "Low"	I _{CEL}	V _{CE} =V _{SS}	-0.2	-0.05	0	μA	2

Note 1: V_{OUT} (T) =Specified Output Voltage.2: V_{OUT} (E) =Effective Output Voltage (i.e. the output voltage when "V_{OUT} (T) +1.0V" is provided at the V_{IN} pin while maintaining a certain I_{OUT} value).3: V_{dif}=V_{IN1} (Note5)-V_{OUT1} (Note4)4: V_{OUT1}=A voltage equal to 98% of the Output Voltage whenever an amply stabilized I_{OUT} {V_{OUT} (T)+1.0V} is input.5: V_{IN1}=The input voltage when V_{OUT1} appears as input voltage is gradually decreased.

G5M62GR-30 V_{OUT} (T) =3.0V (Note1)

Parameter	Symbol	Condition	Min	TYP	Max	Unit	Circuit
Output Voltage	V _{OUT} (E) (Note2)	V _{IN} =4.0V, I _{OUT} =40mA	2.940	3.000	3.060	V	1
Max. Output Current	I _{OUT max}	V _{IN} =4V, V _{OUT} (E)≥2.7V	150	-	-	mA	1
Load Stability	ΔV _{OUT}	V _{IN} =4V, I _{OUT} =1mA to 80mA	-	45	90	mV	1
Input-Output Voltage Differential (Note3)	V _{dif1}	I _{OUT} =80mA	-	200	395	mV	1
	V _{dif2}	I _{OUT} =160mA	-	380	770		1
Supply Current1	I _{SS1}	V _{IN} =V _{CE} =4V	-	11	19	μA	2
Supply Current2	I _{SS2}	V _{IN} =4V, V _{CE} =V _{SS}	-	-	0.1	μA	2
Input Stability	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \cdot V_{OUT}}$	I _{OUT} =40mA V _{IN} =4V to 10V	-	0.2	0.3	%/V	1
Input Voltage	V _{IN}		-	-	10	V	-
Output Voltage Temperature Characteristics	$\frac{\Delta V_{OUT}}{\Delta T_{opr} \cdot V_{OUT}}$	I _{OUT} =10mA -30°C ≤ T _{opr} ≤ 85°C	-	±100	-	ppm/°C	
CE Input Voltage "High"	V _{CEH}		1.5	-	-	V	1
CE Input Voltage "Low"	V _{CEL}		-	-	0.25	V	1
CE Input Current "High"	I _{CEH}	V _{CE} =V _{IN}	-	-	5.0	μA	2
CE Input Current "Low"	I _{CEL}	V _{CE} =V _{SS}	-0.2	-0.05	0	μA	2

Note 1: V_{OUT} (T) =Specified Output Voltage.

2: V_{OUT} (E) =Effective Output Voltage (i.e. the output voltage when "V_{OUT} (T) +1.0V" is provided at the V_{IN} pin while maintaining a certain I_{OUT} value).

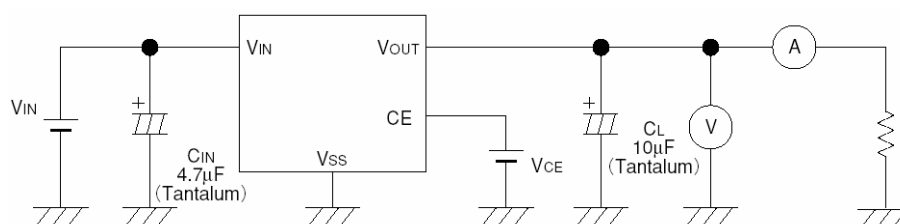
3: V_{dif}={V_{IN1} (Note5)-V_{OUT1} (Note4)}

4: V_{OUT1}=A voltage equal to 98% of the Output Voltage whenever an amply stabilized I_{OUT} {V_{OUT} (T)+1.0V} is input.

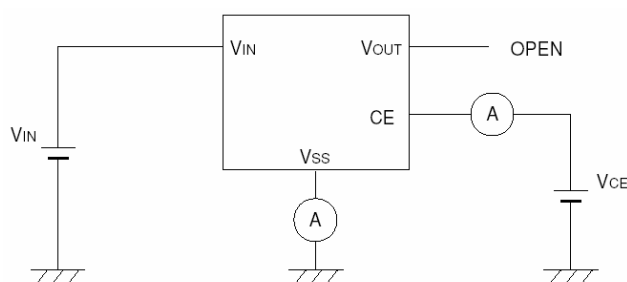
5: V_{IN1}=The input voltage when V_{OUT1} appears as input voltage is gradually decreased.

Test Circuit

Circuit1

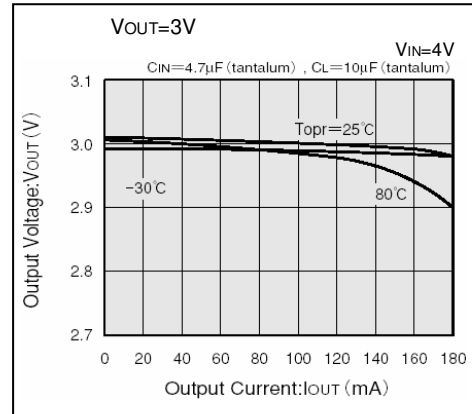
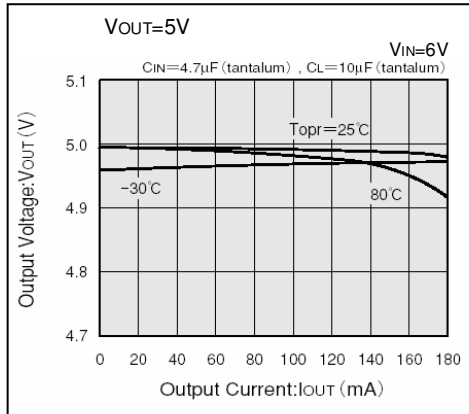


Circuit2

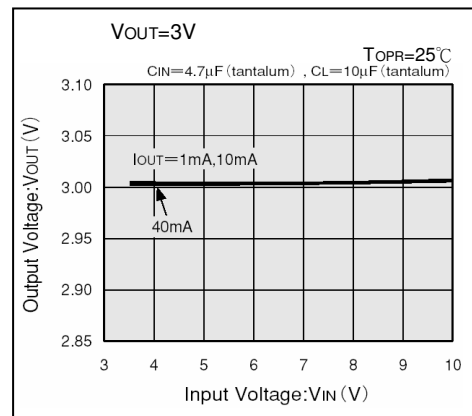
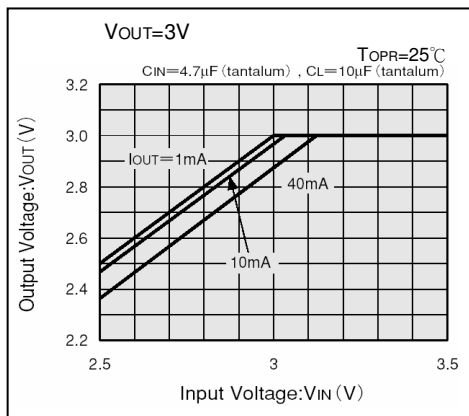
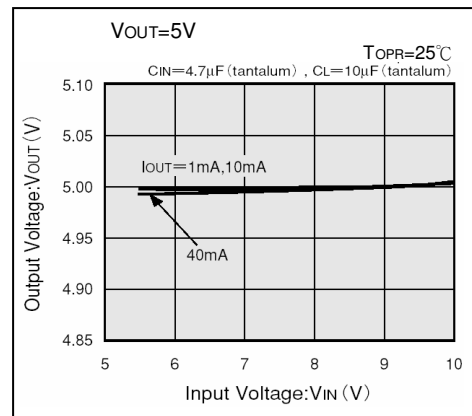
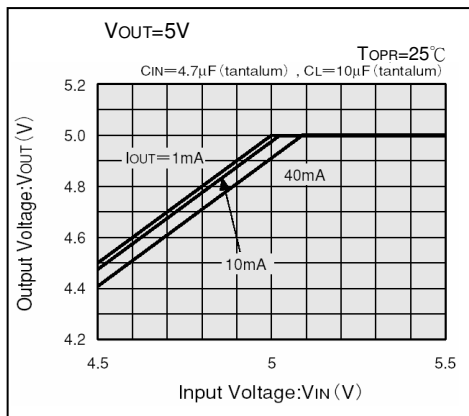


Characteristics Curve

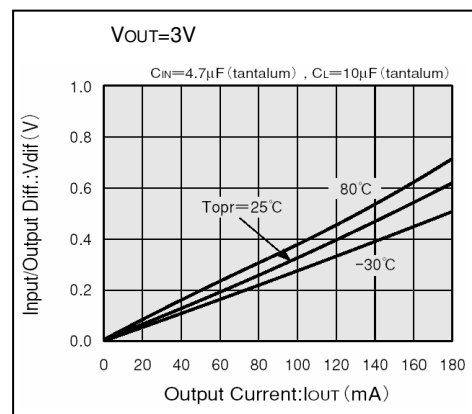
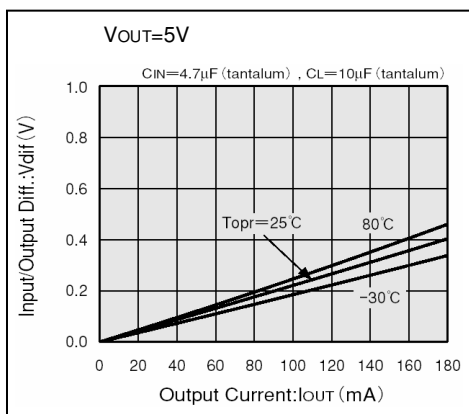
(1) Output Voltage vs. Output Current



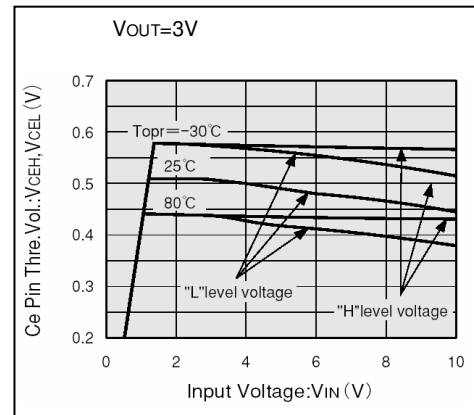
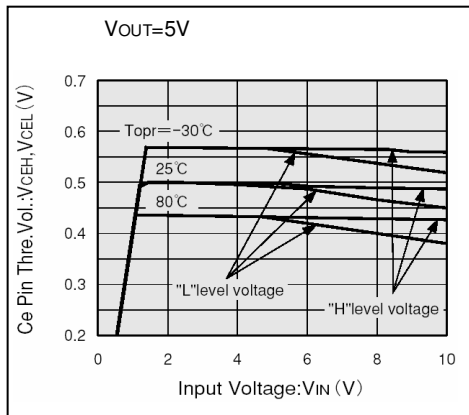
(2) Output Voltage vs. Input Voltage



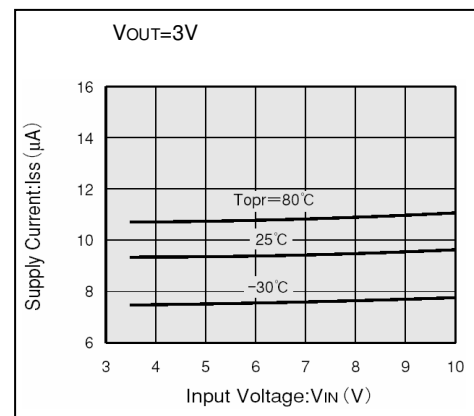
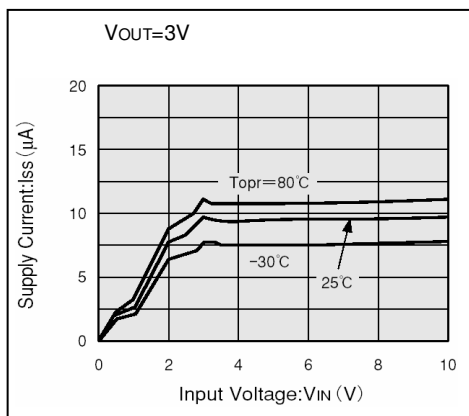
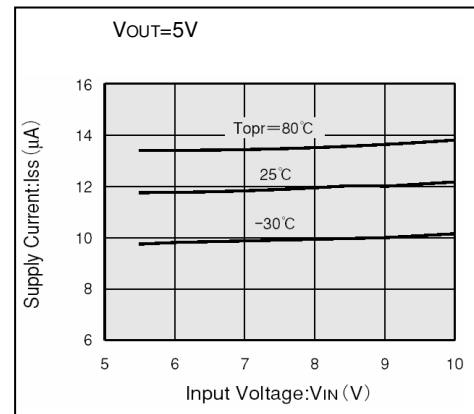
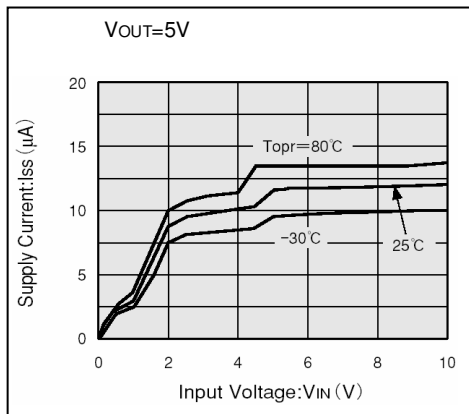
(3) Input/Output Voltage Differential vs. Output Current



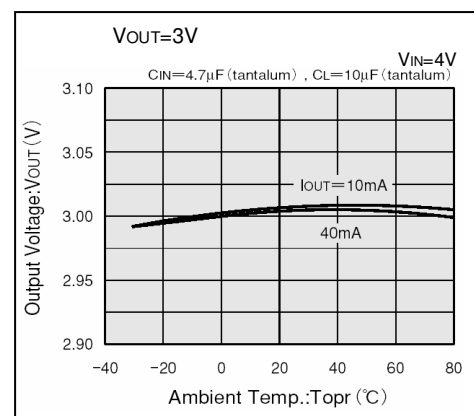
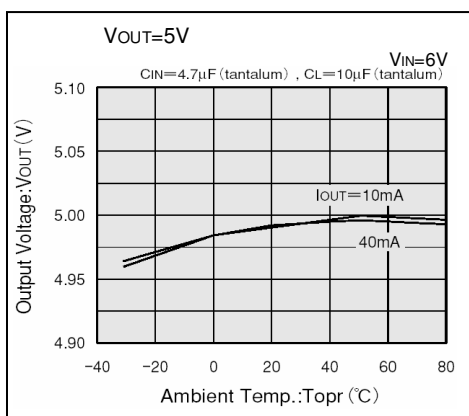
(4) CE Pin Threshold Voltage vs. Input Voltage



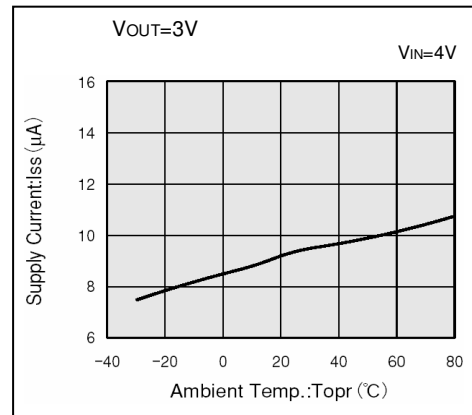
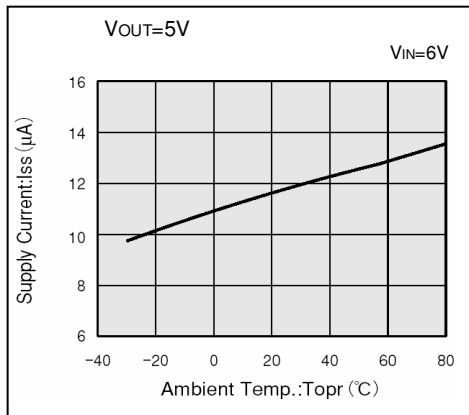
(5) Supply Current vs. Input Voltage



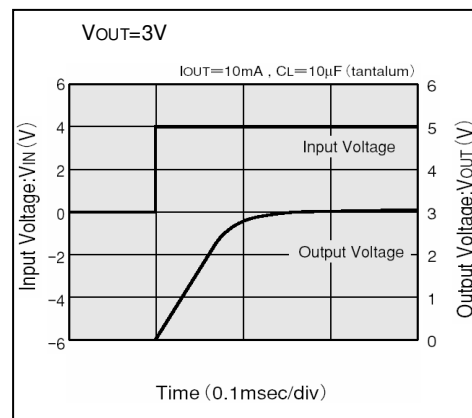
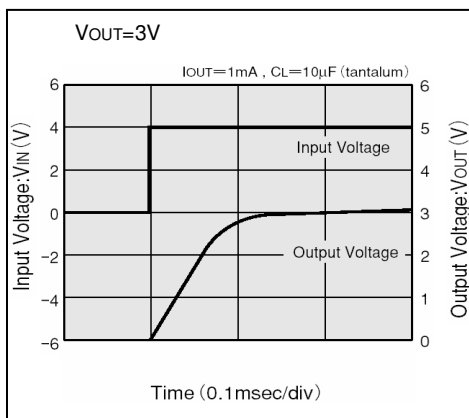
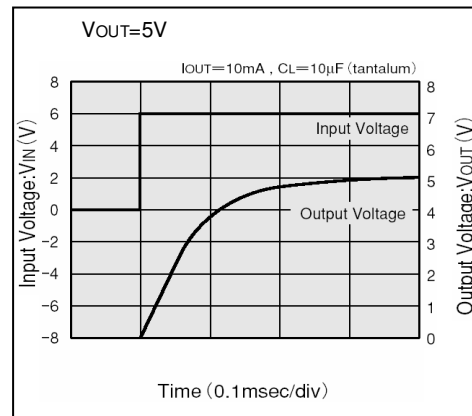
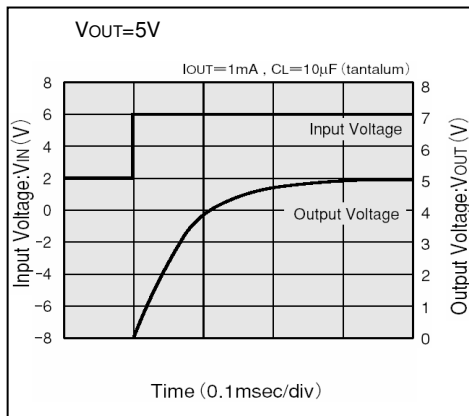
(6) Output Voltage vs. Ambient Temperature



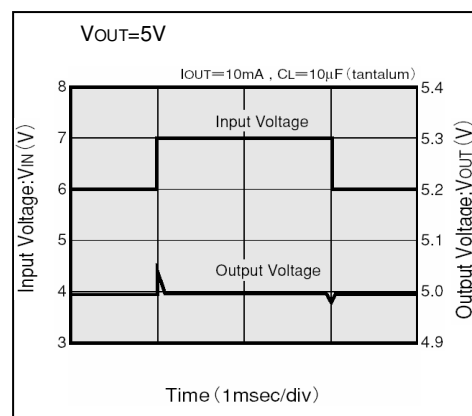
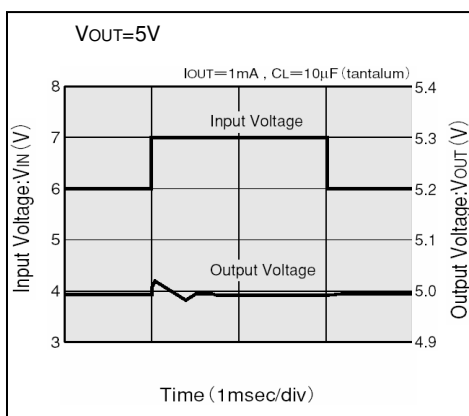
(7) Supply Current vs. Ambient Temperature



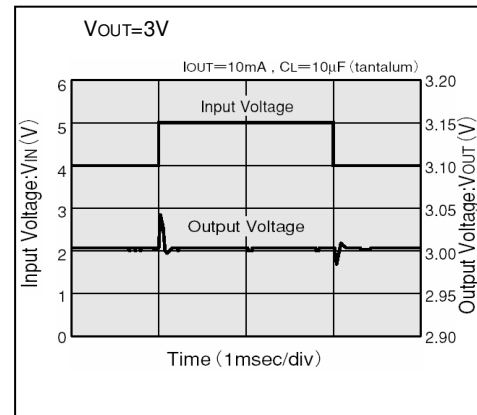
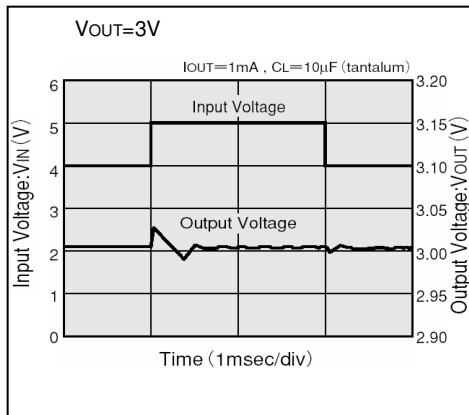
(8) Input Transient Response 1



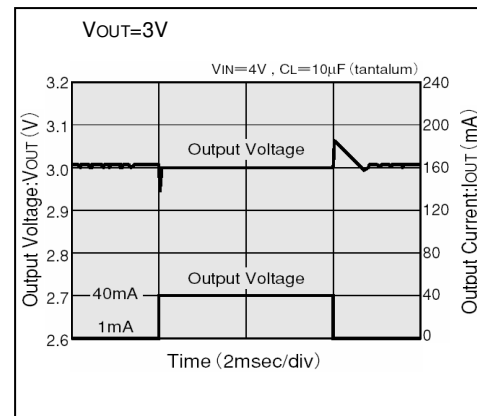
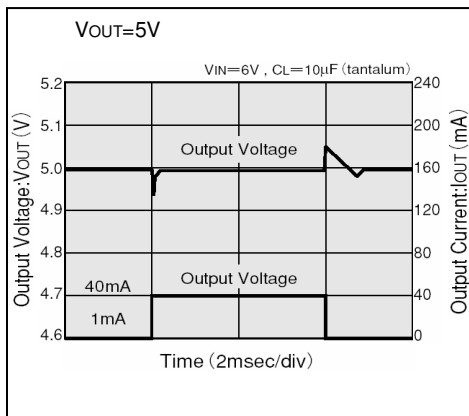
(9) Input Transient Response 2



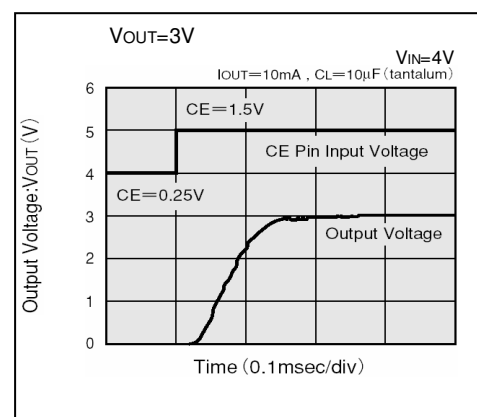
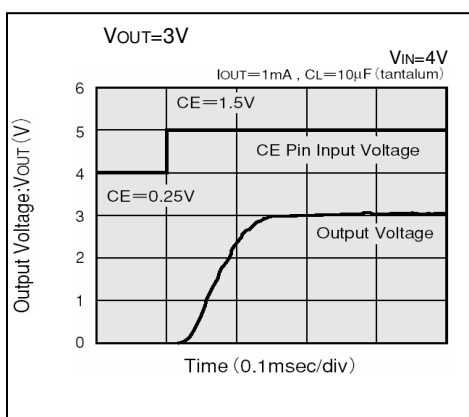
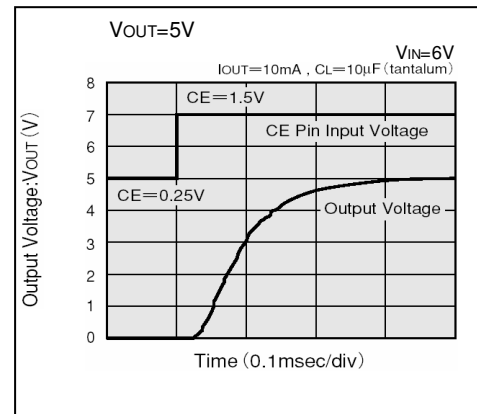
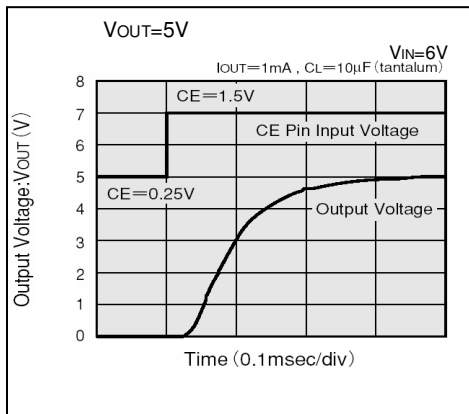
(9) Input Transient Response 2



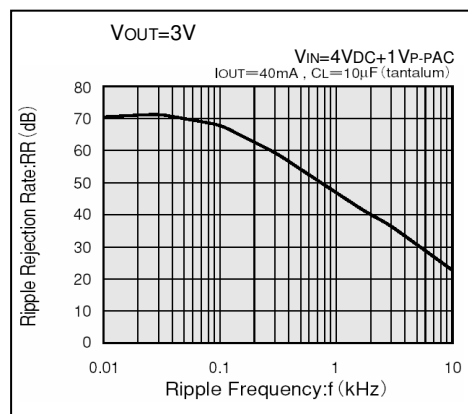
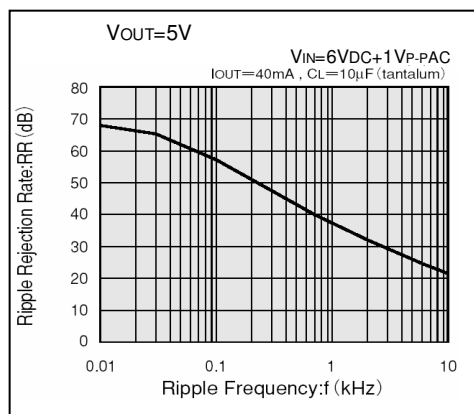
(10) Load Transient Response



(11) CE Pin Transient Response



(12) Ripple Rejection Rate

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