

ELM98xxxxC CMOS 电压稳压器

https://www.elm-tech.com

■概要

ELM98xxxxC 是 CMOS 电压稳压器。该 IC 由基准电压源、误差信号放大器、短路保护电路、过热保护电路、输出电压设定电阻等构成。输出电压控制精度高。标准产品的输出电压有 1.8V、3.3V、5.0V 和 12.0V 可供选择。并且在 1.2V ~ 15.0V 的范围内，可根据顾客的需求以 0.1V 为间隔单位进行设计变更。

■特点

- 输出电压范围 : 1.2V ~ 15.0V (调整电压以 0.1V 为间隔单位)
- 输入电压范围 : 2.2V ~ 18.0V
- 消耗电流 : Typ. 4.0μA (ELM98033xC)
- 输入稳定度 : Typ. 0.05%/V (I_{out}=50mA)
- 负荷稳定度 : Typ. 5mV (1mA ≤ I_{out} ≤ 50mA)
- 输出电压精确度 : ± 2.0%
- 输出电压温度系数 : ± 100ppm/°C
- 短路限制电路 : Typ. 30mA (V_{out}=0V)
- 过热保护电路 : Typ. 160°C
- 封装 : SOT-89, SOT-25, SOT-23

■用途

- 电池供电设备
- 基准电源电压
- 录像机
- 掌上电脑
- 照相机

■绝对最大额定值

项目	记号	规格范围				单位
输入电压	V _{in}	20				V
输出电压	V _{out}	V _{SS} -0.3 ~ V _{in} +0.3				V
输出电流	I _{out}	200 ^(*1)				mA
容许功耗 (Ta=25°C)	Pd	SOT-89	500 ^(*2)	SOT-23	250 ^(*2)	mW
			1000 ^(*3)		500 ^(*3)	
		SOT-25	250 ^(*2)			
			600 ^(*3)			
工作温度	T _{op}	-40 ~ +85				°C
保存温度	T _{stg}	-55 ~ +125				°C

* 1. 输出电流不要超出最大容许的规格范围;

* 2. 未安装, 只是 IC 时的值;

* 3. 实际安装在玻璃环氧双面电路板 (EIJ/JEDEC 标准尺寸: 76.2mm × 114.3mm × 1.6mm) 时的值。
铜箔的厚度为 35 μm, 铜箔面积比率表面为 20%、背面为 100%。

■产品型号构成

ELM98xxxxC-x

记号	项目	描述
a, b, c	输出电压	例) 018: V _{out} =1.8V, 033: V _{out} =3.3V 050: V _{out} =5.0V, 120: V _{out} =12.0V
d	外形封装	A: SOT-89 (ELM98xxxAC) B: SOT-23 (ELM98xxxBC) 1B: SOT-25 (ELM98xxx1BC)
e	产品版本	C
f	包装卷带中 IC 引脚置向	S、N: 参考封装资料

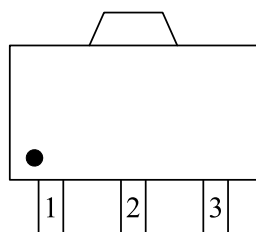
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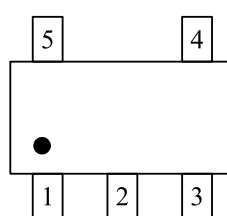
■ 引脚配置图

SOT-89(俯视图)



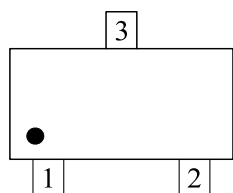
引脚编号	引脚名称
ELM98xxxAC	
1	VSS
2	VIN
3	VOUT

SOT-25(俯视图)



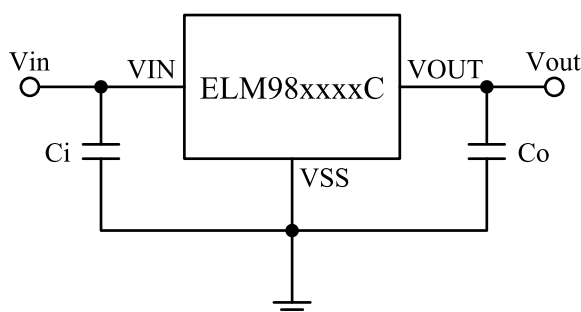
引脚编号	引脚名称
ELM98xxx1BC	
1	VIN
2	VSS
3	NC
4	NC
5	VOUT

SOT-23(俯视图)



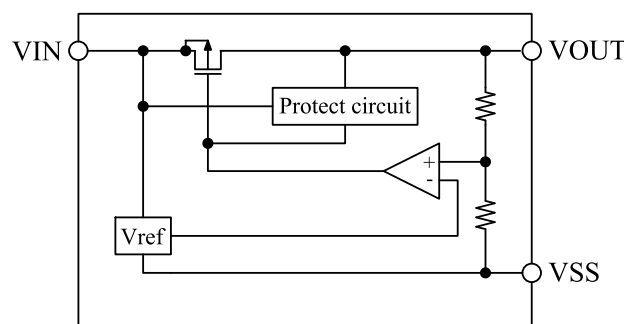
引脚编号	引脚名称
ELM98xxxBC	
1	VSS
2	VOUT
3	VIN

■ 标准电路图



* 对于Ci 和Co, 为使其能长时间稳定动作, 建议使用1.0 μ F 以上的陶瓷电容器。

■ 电路框图



■ 电特性

Vout=1.8V(ELM98018xC)

Top=25°C

项目	记号	条件	最小值	典型值	最大值	单位
输出电压	Vout	Vin=3.8V, Iout=1mA	1.764	1.800	1.836	V
输出电流	Iout	Vin=2.4V	20			mA
输入稳定度	$\Delta V_{out} / \Delta V_{in}$	Iout=20mA, 2.8V \leq Vin \leq 18.0V		0.050	0.275	%/V
负荷稳定度	$\Delta V_{out} / \Delta I_{out}$	1mA \leq Iout \leq 50mA, Vin=3.8V		5	20	mV
输入/输出电压差	Vdif	Iout=10mA		200	380	mV
消耗电流	Iss	Vin=3.8V, No-load	0.4	3.0	7.0	μ A
输入电压	Vin		2.2		18.0	V
纹波抑制比	RR	Vin=3.8V, Iout=10mA, f=100Hz		65		dB
短路电流	Ishort	Vin=3.8V, Vout=0V		30		mA
热关断温度	Tsd			160		°C
输出电压温度系数	$\Delta V_{out} / \Delta T_{op}$	Top=-40°C ~ +85°C Vin=3.8V, Iout=1mA		± 100		ppm/°C

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V_{out}=3.3V(ELM98033xC)

T_{op}=25°C

项目	记号	条件	最小值	典型值	最大值	单位
输出电压	V _{out}	V _{in} =5.3V, I _{out} =1mA	3.234	3.300	3.366	V
输出电流	I _{out}	V _{in} =3.9V	55			mA
输入稳定度	$\Delta V_{out}/\Delta V_{in}$	I _{out} =50mA, 4.3V ≤ V _{in} ≤ 18.0V		0.050	0.275	%/V
负荷稳定度	$\Delta V_{out}/\Delta I_{out}$	1mA ≤ I _{out} ≤ 50mA, V _{in} =5.3V		5	20	mV
输入/输出电压差	V _{dif}	I _{out} =10mA		75	145	mV
消耗电流	I _{ss}	V _{in} =5.3V, No-load	1.0	4.0	8.0	μA
输入电压	V _{in}		2.2		18.0	V
纹波抑制比	RR	V _{in} =5.3V, I _{out} =10mA, f=100Hz		65		dB
短路电流	I _{short}	V _{in} =5.3V, V _{out} =0V		30		mA
热关断温度	T _{sd}			160		°C
输出电压温度系数	$\Delta V_{out}/\Delta T_{op}$	T _{op} =-40°C~+85°C V _{in} =5.3V, I _{out} =1mA		± 100		ppm/°C

V_{out}=5.0V(ELM98050xC)

T_{op}=25°C

项目	记号	条件	最小值	典型值	最大值	单位
输出电压	V _{out}	V _{in} =7.0V, I _{out} =1mA	4.900	5.000	5.100	V
输出电流	I _{out}	V _{in} =5.6V	70			mA
输入稳定度	$\Delta V_{out}/\Delta V_{in}$	I _{out} =50mA, 6.0V ≤ V _{in} ≤ 18.0V		0.050	0.275	%/V
负荷稳定度	$\Delta V_{out}/\Delta I_{out}$	1mA ≤ I _{out} ≤ 50mA, V _{in} =7.0V		5	20	mV
输入/输出电压差	V _{dif}	I _{out} =10mA		65	110	mV
消耗电流	I _{ss}	V _{in} =7.0V, No-load	1.0	4.0	9.0	μA
输入电压	V _{in}		2.2		18.0	V
纹波抑制比	RR	V _{in} =7.0V, I _{out} =10mA, f=100Hz		65		dB
短路电流	I _{short}	V _{in} =7.0V, V _{out} =0V		30		mA
热关断温度	T _{sd}			160		°C
输出电压温度系数	$\Delta V_{out}/\Delta T_{op}$	T _{op} =-40°C~+85°C V _{in} =7.0V, I _{out} =1mA		± 100		ppm/°C

V_{out}=12.0V(ELM98120xC)

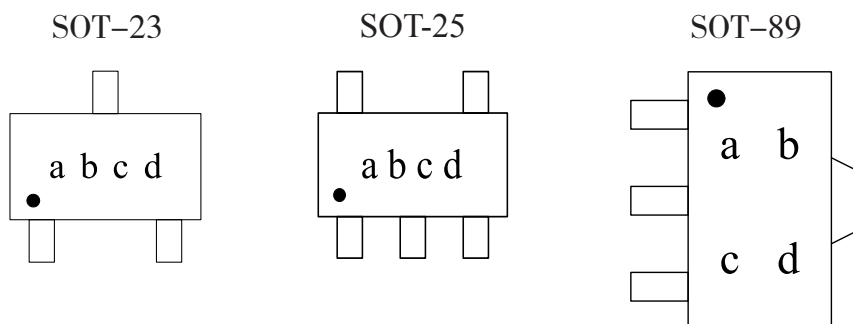
T_{op}=25°C

项目	记号	条件	最小值	典型值	最大值	单位
输出电压	V _{out}	V _{in} =14.0V, I _{out} =1mA	11.760	12.000	12.240	V
输出电流	I _{out}	V _{in} =12.6V	85			mA
输入稳定度	$\Delta V_{out}/\Delta V_{in}$	I _{out} =50mA, 13.0V ≤ V _{in} ≤ 18.0V		0.050	0.275	%/V
负荷稳定度	$\Delta V_{out}/\Delta I_{out}$	1mA ≤ I _{out} ≤ 50mA, V _{in} =14.0V		5	20	mV
输入/输出电压差	V _{dif}	I _{out} =10mA		55	95	mV
消耗电流	I _{ss}	V _{in} =14.0V, No-load	1.0	4.5	11.0	μA
输入电压	V _{in}		2.2		18.0	V
纹波抑制比	RR	V _{in} =14.0V, I _{out} =10mA, f=100Hz		60		dB
短路电流	I _{short}	V _{in} =14.0V, V _{out} =0V		30		mA
热关断温度	T _{sd}			160		°C
输出电压温度系数	$\Delta V_{out}/\Delta T_{op}$	T _{op} =-40°C~+85°C V _{in} =14.0V, I _{out} =1mA		± 100		ppm/°C

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■封装印字说明



a, b: 输出电压范围和封装种类

记号	输出电压范围 (V)	封装	记号	输出电压范围 (V)	封装
6W	1.2 to 4.0	SOT-89	75	10.1 to 13.0	SOT-23
6Y	4.1 to 7.0	SOT-89	76	13.1 to 15.0	SOT-23
6Z	7.1 to 10.0	SOT-89	7G	1.2 to 4.0	SOT-25
70	10.1 to 13.0	SOT-89	7H	4.1 to 7.0	SOT-25
71	13.1 to 15.0	SOT-89	7J	7.1 to 10.0	SOT-25
72	1.2 to 4.0	SOT-23	7K	10.1 to 13.0	SOT-25
73	4.1 to 7.0	SOT-23	7L	13.1 to 15.0	SOT-25
74	7.1 to 10.0	SOT-23			

c: 输出电压

记号	输出电压 (V)					记号	输出电压 (V)				
1		4.1	7.1	10.1	13.1	F	2.6	5.6	8.6	11.6	14.6
2	1.2	4.2	7.2	10.2	13.2	G	2.7	5.7	8.7	11.7	14.7
3	1.3	4.3	7.3	10.3	13.3	H	2.8	5.8	8.8	11.8	14.8
4	1.4	4.4	7.4	10.4	13.4	J	2.9	5.9	8.9	11.9	14.9
5	1.5	4.5	7.5	10.5	13.5	K	3.0	6.0	9.0	12.0	15.0
6	1.6	4.6	7.6	10.6	13.6	L	3.1	6.1	9.1	12.1	
7	1.7	4.7	7.7	10.7	13.7	M	3.2	6.2	9.2	12.2	
8	1.8	4.8	7.8	10.8	13.8	N	3.3	6.3	9.3	12.3	
9	1.9	4.9	7.9	10.9	13.9	P	3.4	6.4	9.4	12.4	
0	2.0	5.0	8.0	11.0	14.0	Q	3.5	6.5	9.5	12.5	
A	2.1	5.1	8.1	11.1	14.1	R	3.6	6.6	9.6	12.6	
B	2.2	5.2	8.2	11.2	14.2	S	3.7	6.7	9.7	12.7	
C	2.3	5.3	8.3	11.3	14.3	T	3.8	6.8	9.8	12.8	
D	2.4	5.4	8.4	11.4	14.4	U	3.9	6.9	9.9	12.9	
E	2.5	5.5	8.5	11.5	14.5	V	4.0	7.0	10.0	13.0	

d: 生产组装批号

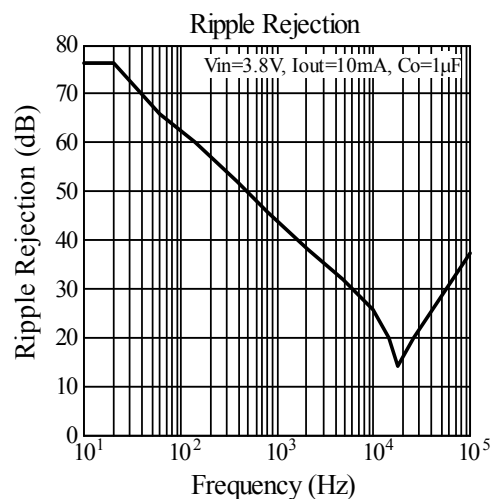
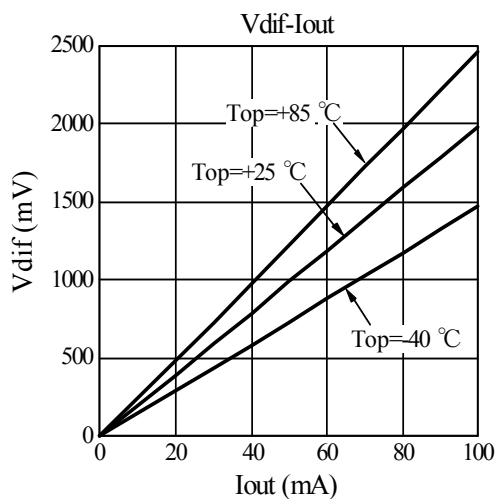
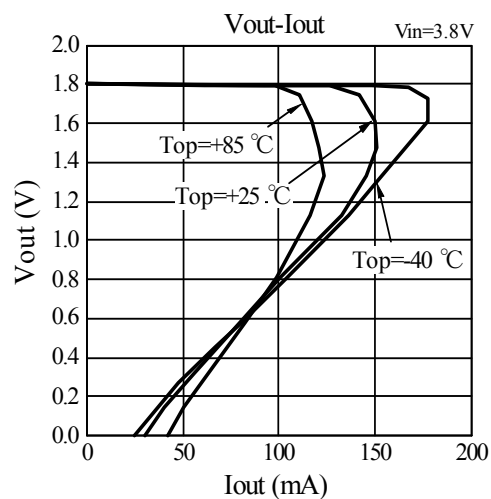
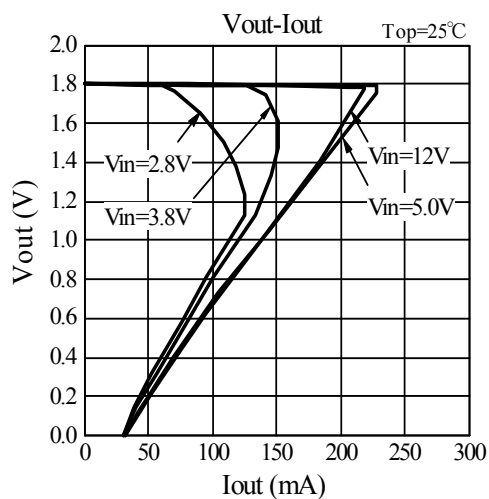
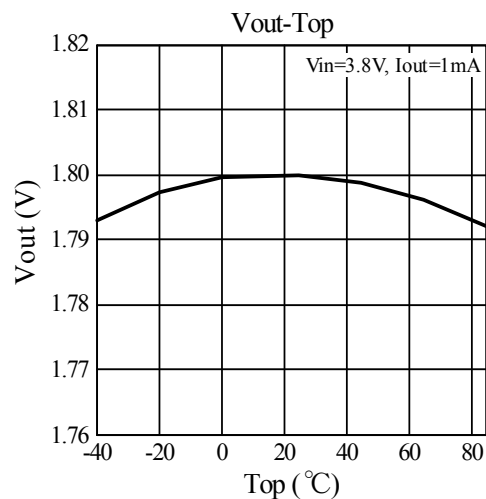
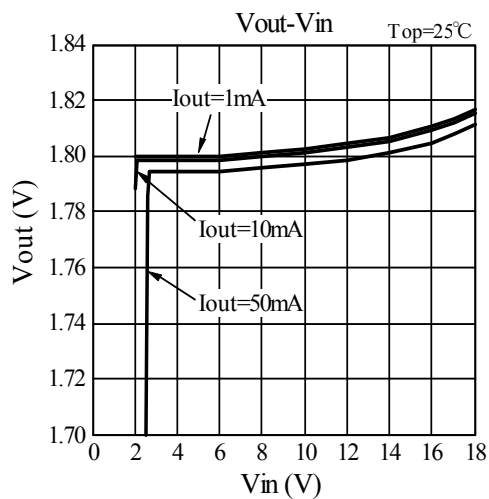
记号
0 ~ 9 和 A ~ Z (I, O, X 除外) 反复使用

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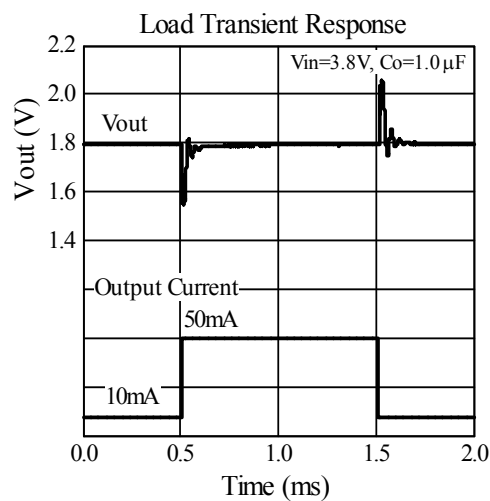
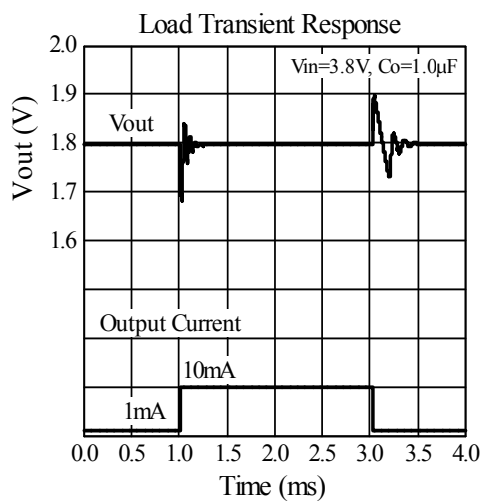
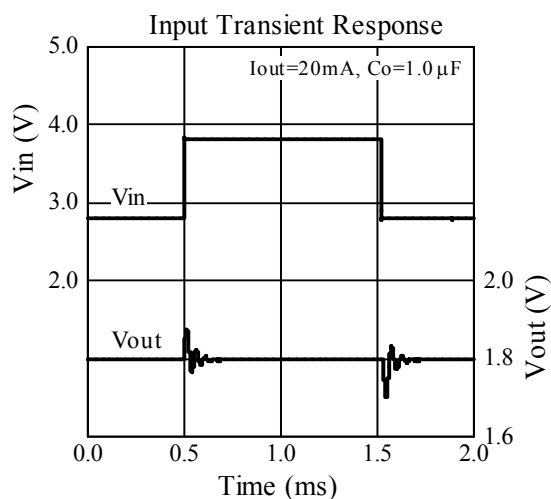
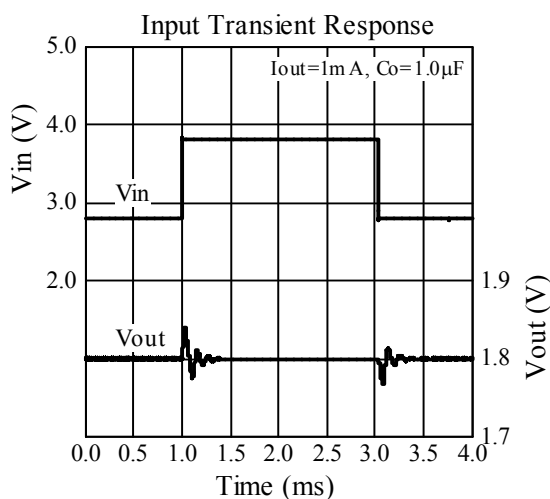
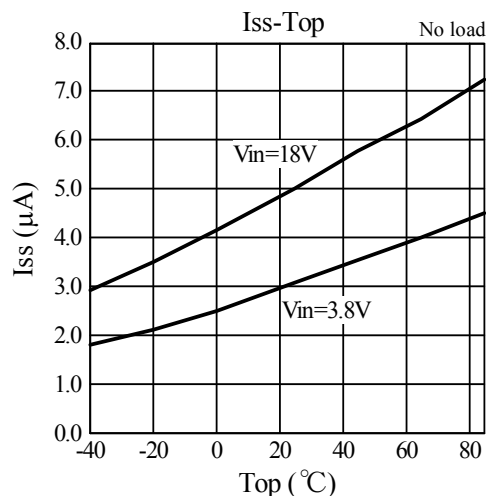
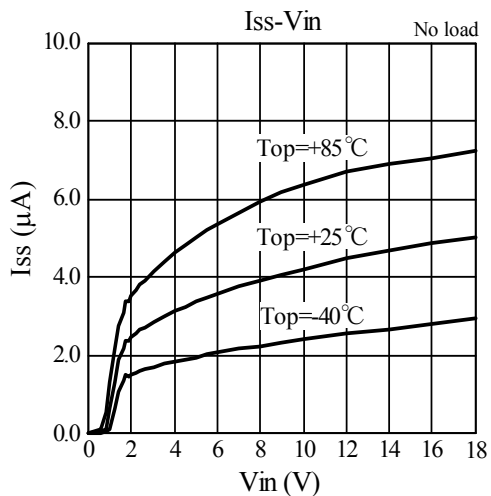
■ 典型性能特性曲线图

• $V_{out}=1.8V$ (ELM98018xC)



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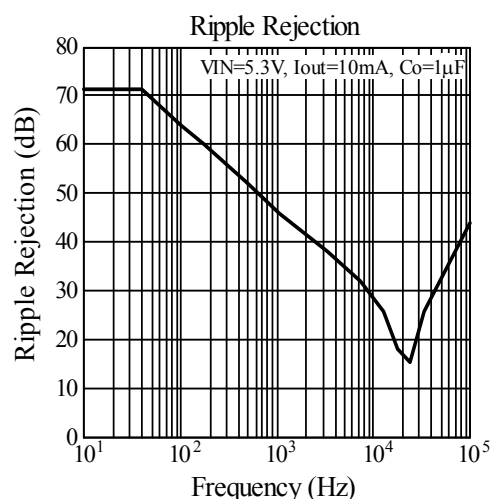
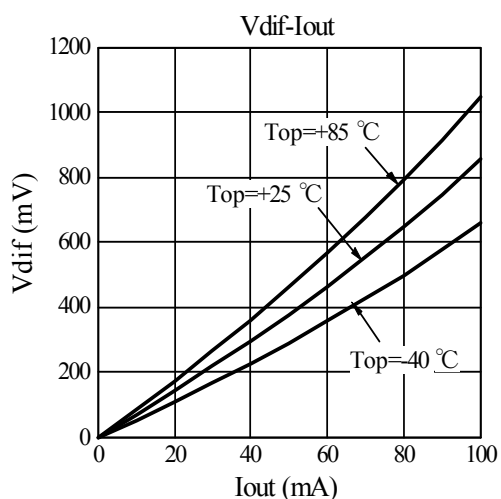
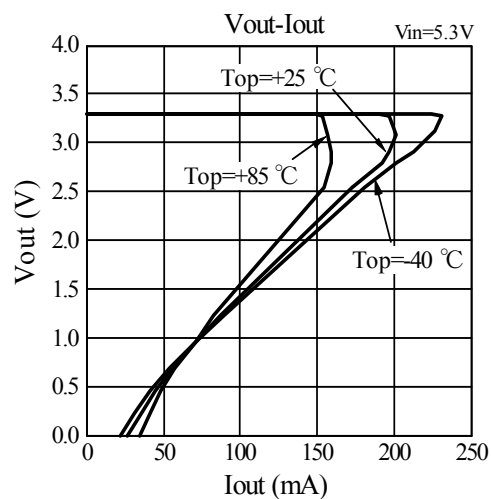
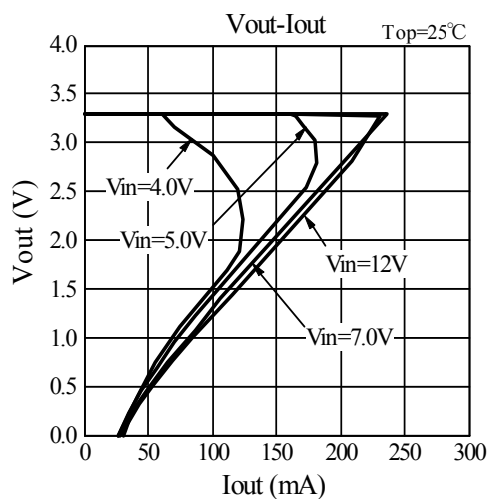
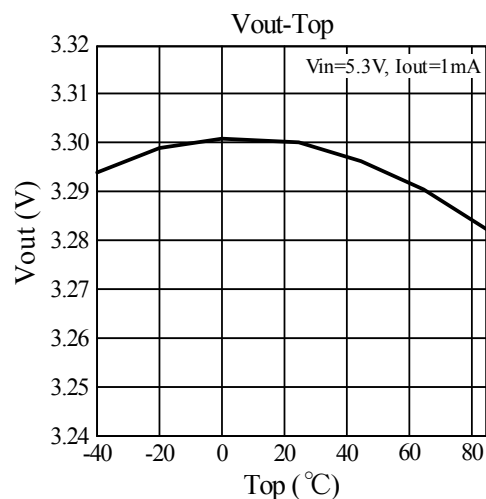
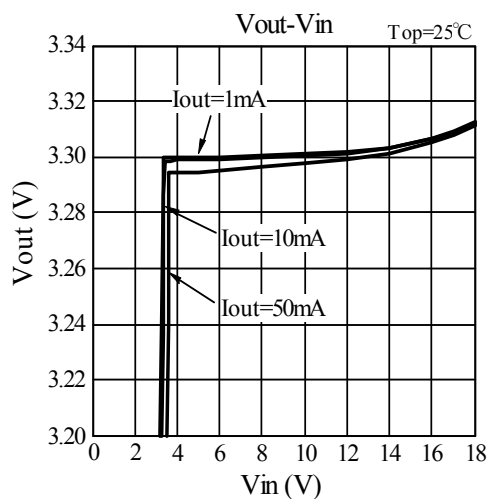
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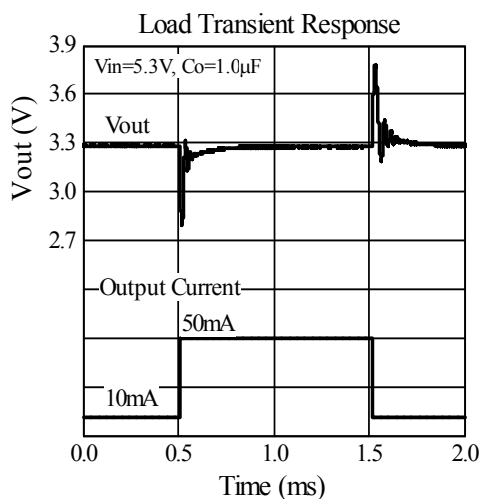
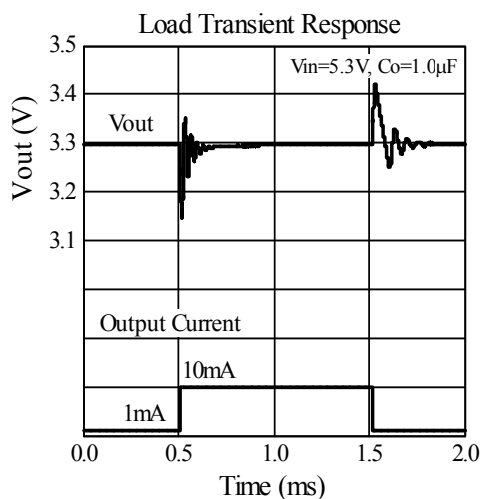
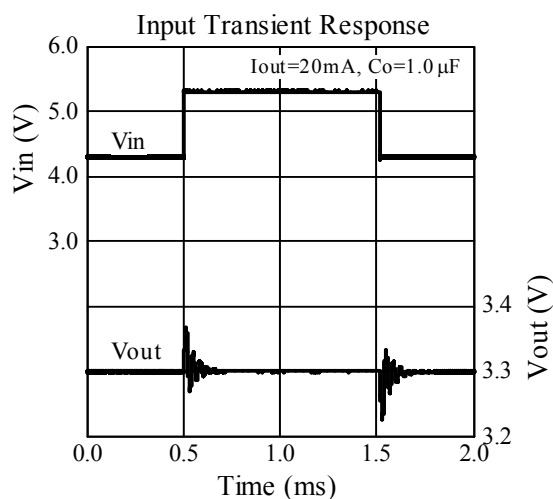
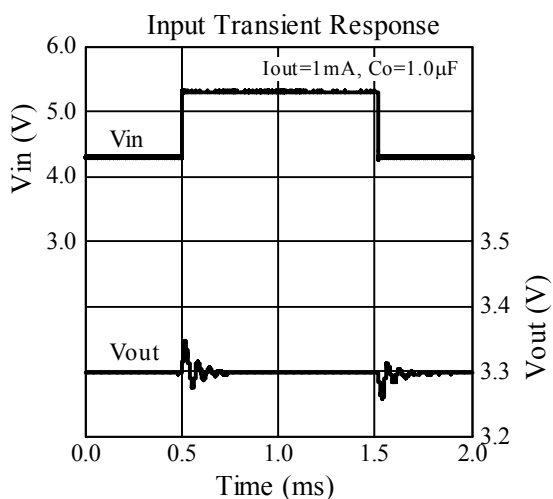
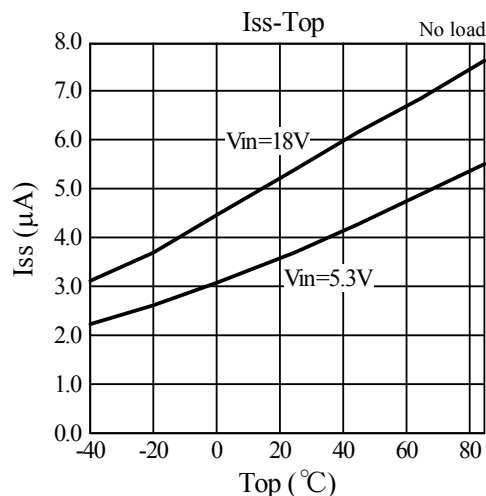
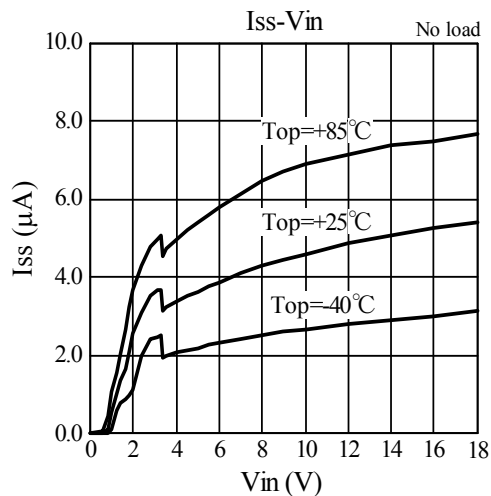
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• $V_{out}=3.3V$ (ELM98033xC)



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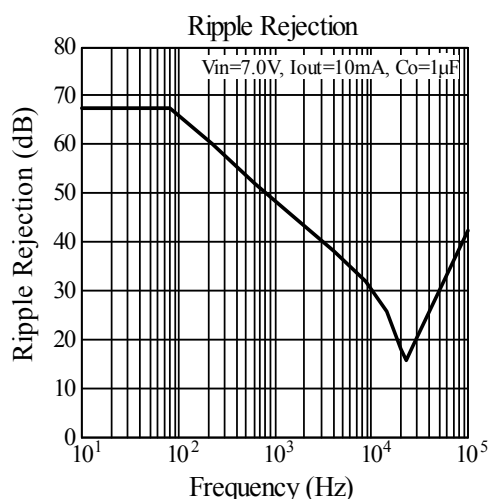
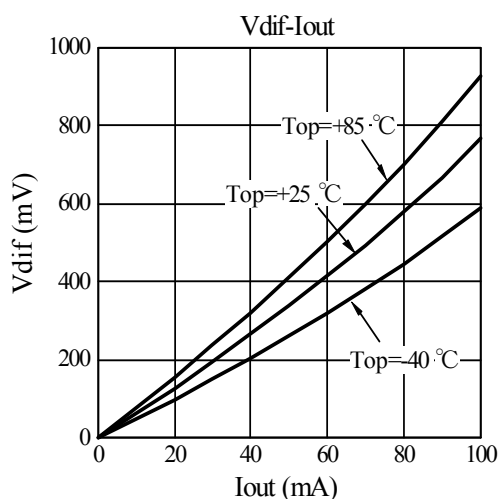
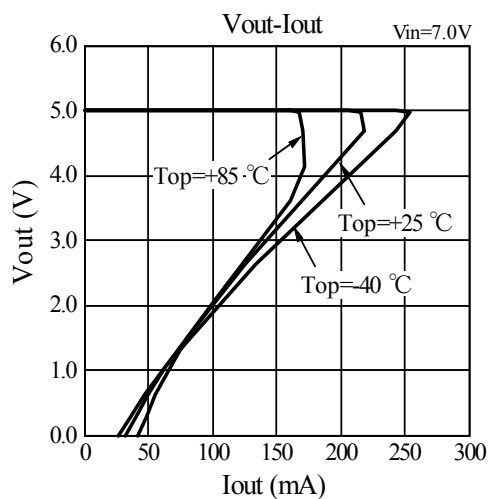
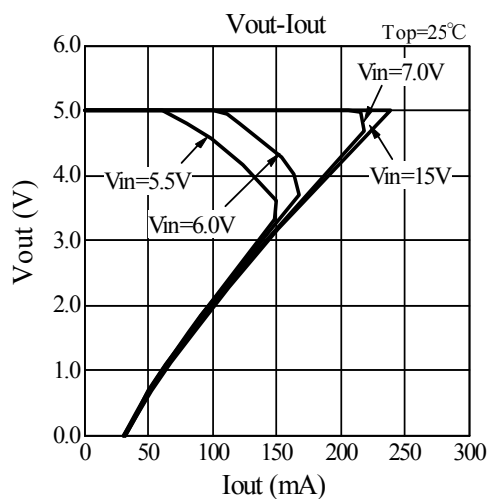
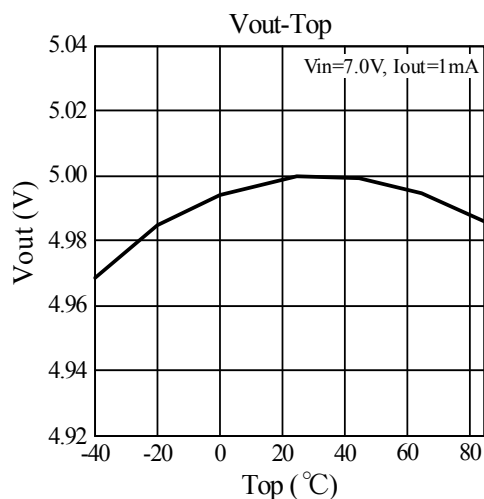
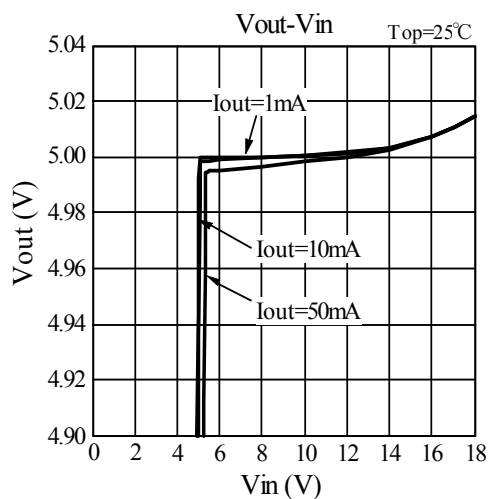
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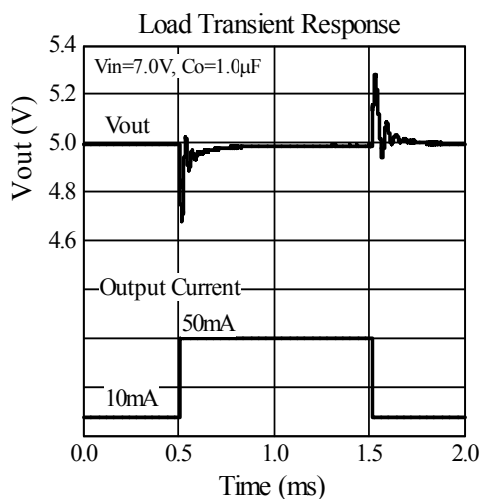
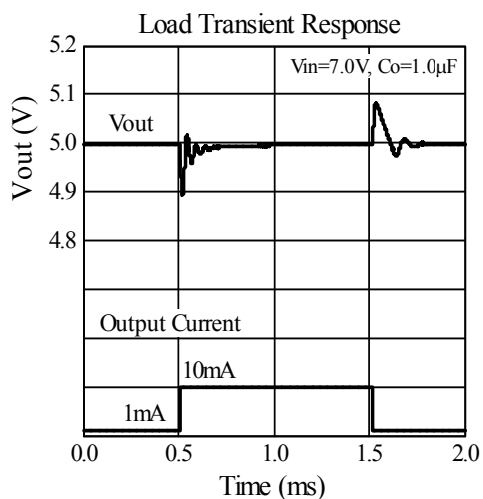
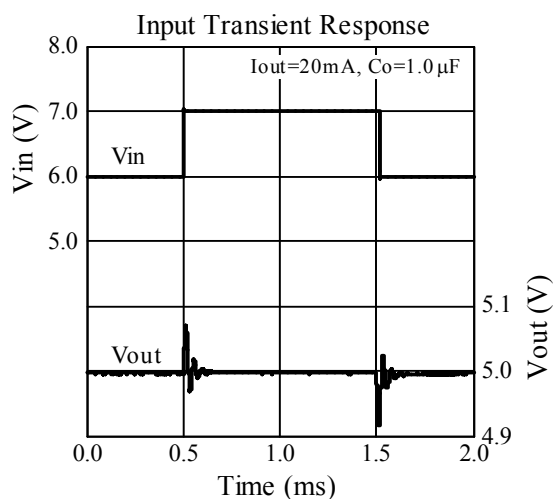
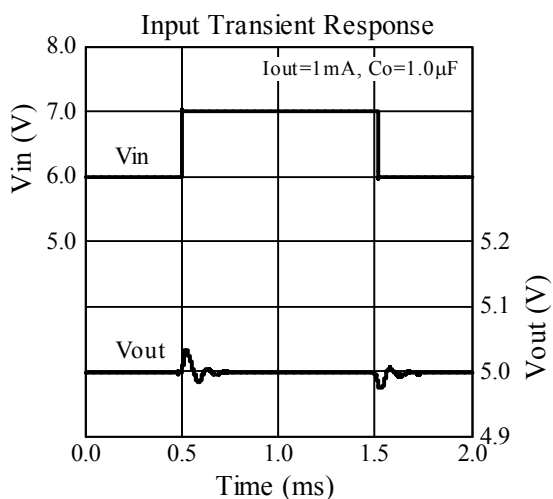
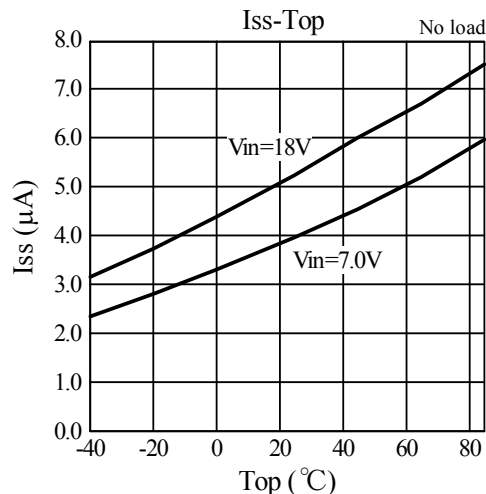
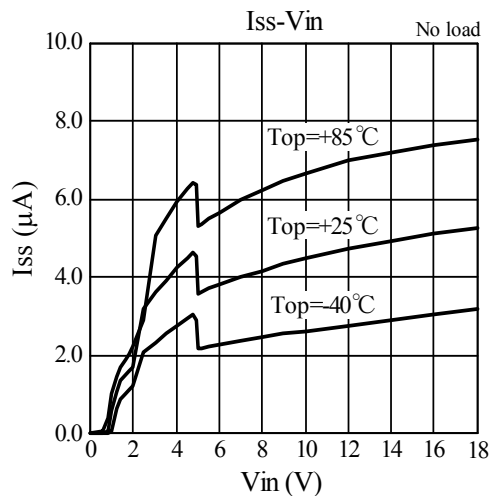
<https://www.elm-tech.com>

• $V_{out}=5.0V(ELM98050xC)$



ELM98xxxxC CMOS 电压稳压器

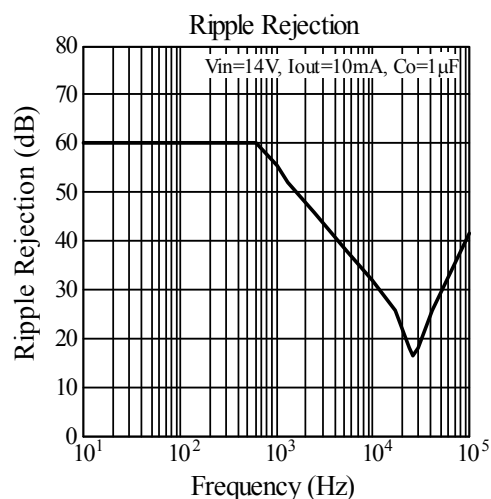
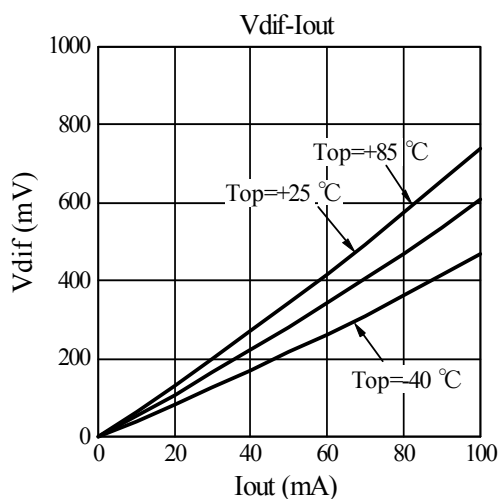
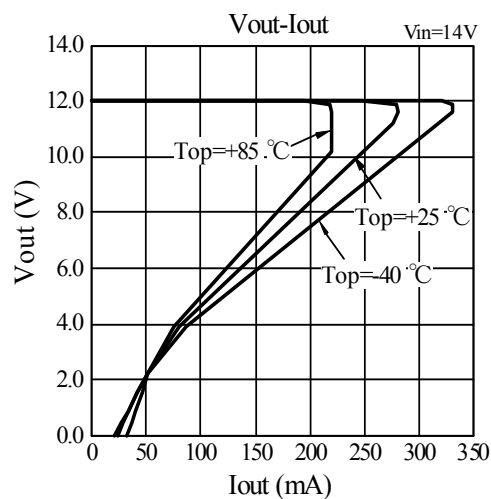
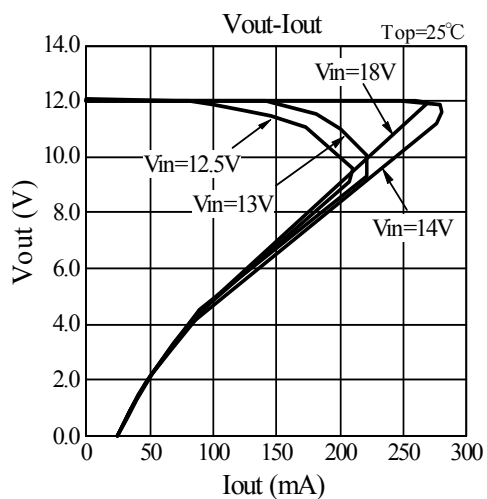
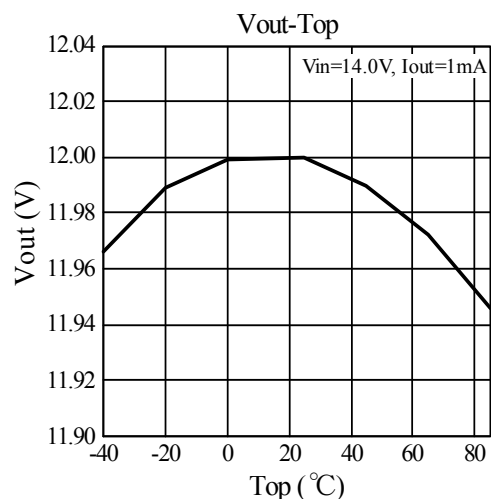
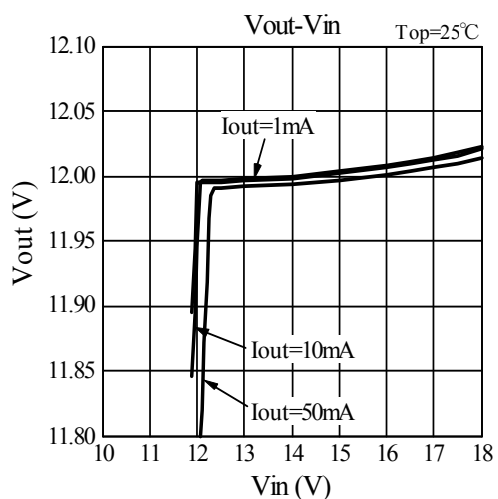
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• $V_{out}=12.0V$ (ELM98120xC)



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