

ELM88xxxxA CMOS 300mA LDO Voltage regulator

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■General description

ELM88xxxxA is high current and low dropout(LDO) CMOS fixed voltage regulator. There are 2 types of CE selection for ELM88 series: non-chip enable function and “H”active. Thermal shutdown protective function and short circuit current limiter are included in the IC. The standard output voltages are 1.2V, 1.8V, 2.5V, 3.0V, 3.3V, 5.0V; ELM88 series can also be designed as semi-custom IC within the range of 0.8V to 5.0V by 0.1V step.

■Features

- Output voltage range : 0.8V to 5.0V (by 0.1V)
- Output current : Min.300mA
- Stand by current consumption : Typ.0.1μA
- Input stability : Typ.0.02%/V($I_{out}=40mA$)
- Load stability : Typ.5mV($1mA \leq I_{out} \leq 100mA$)
- Accuracy of output voltage : $\pm 2.0\%$ ($V_{out} > 1.5V$), $\pm 30mV$ ($V_{out} \leq 1.5V$)
- Input-output voltage difference : Typ.350mV($V_{out}=3.0V$, $I_{out}=300mA$)
- Short circuit current limiter : Typ.40mA($V_{out}=0V$)
- Thermal shutdown protection : Typ.165°C
- Chip enable pin : “H”active(ELM88xx3xA)
- Package : SOT-89, SOT-89-5, SOT-23, SOT-25, SC-70-5(SOT-353)

■Application

- Battery operated devices
- Camera and Video recorders
- Reference voltage source
- Portable electronics

■Maximum absolute ratings

Parameter	Symbol	Limit	Unit
Input voltage	V_{in}	$V_{ss}-0.3$ to 7.0	V
CE Input voltage	V_{ce}	$V_{ss}-0.3$ to $V_{in}+0.3$	V
Output voltage	V_{out}	$V_{ss}-0.3$ to $V_{in}+0.3$	V
Output current	I_{out}	600	mA
Power dissipation	P_d	500 (SOT-89)	mW
		500 (SOT-89-5)	
		250 (SOT-23)	
		250 (SOT-25)	
		150 (SC-70-5)(SOT-353)	
Operationg Temperature	T_{op}	-40 to +85	°C
Storage Temperature	T_{stg}	-55 to +125	°C

ELM88xxxxA CMOS 300mA LDO Voltage regulator

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■Selection guide

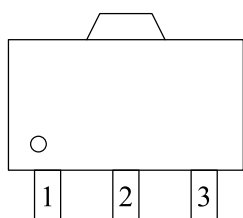
ELM88xxxxA-x

Symbol		
a, b	Output voltage	e.g. : 12: Vout=1.2V 18: Vout=1.8V 25: Vout=2.5V 30: Vout=3.0V 33: Vout=3.3V 50: Vout=5.0V
c	CE selection	1: No CE 3: CE="H"active
d	Package	A: SOT-89, SOT-89-5 B: SOT-23, SOT-25 C: SC-70-5(SOT-353)
e	Product version	A
f	Taping direction	S: Refer to PKG file N: Refer to PKG file

ELM88 x x x x A - x
 ↑ ↑ ↑ ↑ ↑ ↑
 a b c d e f

■Pin configuration

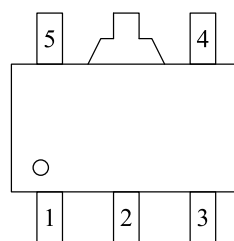
SOT-89(TOP VIEW)



ELM88xx1AA

Pin No.	Pin name
1	VSS
2	VIN
3	VOUT

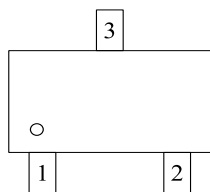
SOT-89-5(TOP VIEW)



ELM88xx3AA

Pin No.	Pin name
1	VSS
2	VIN
3	VOUT
4	NC
5	CE

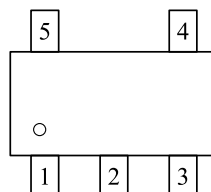
SOT-23(TOP VIEW)



ELM88xx1BA

Pin No.	Pin name
1	VSS
2	VOUT
3	VIN

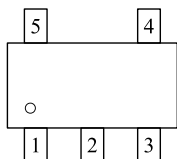
SOT-25(TOP VIEW)



ELM88xx3BA

Pin No.	Pin name
1	VSS
2	VIN
3	VOUT
4	NC
5	CE

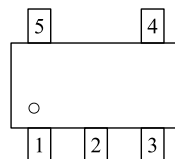
SC-70-5(TOP VIEW)



ELM88xx1CA

Pin No.	Pin name
1	NC
2	VIN
3	NC
4	VSS
5	VOUT

SC-70-5(TOP VIEW)



ELM88xx3CA

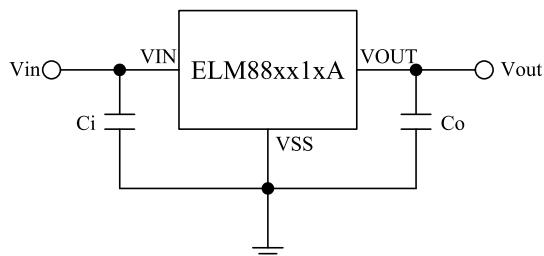
Pin No.	Pin name
1	VSS
2	VIN
3	VOUT
4	NC
5	CE

ELM88xxxxA CMOS 300mA LDO Voltage regulator

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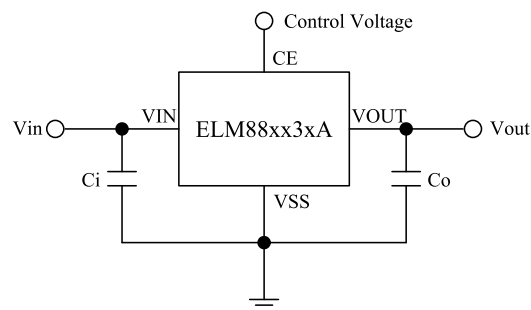
■Standard circuit

ELM88xx1xA



* Ci=1μF, Co=1μF or greater

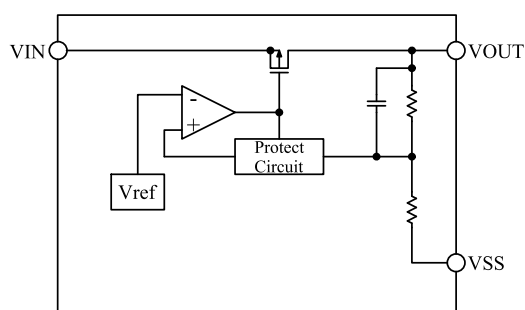
ELM88xx3xA



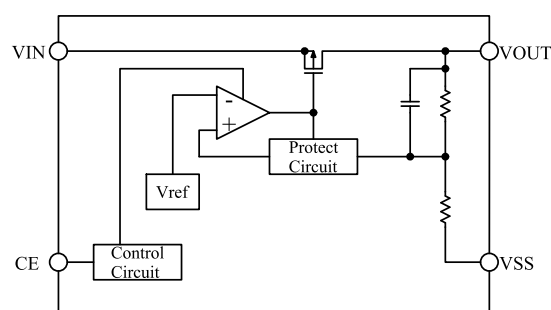
* Ci=1μF, Co=1μF or greater

■Block diagram

ELM88xx1xA



ELM88xx3xA



■Electrical characteristics (ELM88xx1xA)

Vout=1.2V(ELM88121xA), No CE pin

Top=25°C

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Output voltage	Vout	Vin=2.2V, Iout=40mA	1.170	1.200	1.230	V
Output current	Iout	Vin=3.0V	300			mA
Input stability	$\Delta V_{out}/\Delta V_{in}$	Iout=40mA, 1.7V≤Vin≤6.0V		0.05	0.20	%/V
Load stability	$\Delta V_{out}/\Delta I_{out}$	1mA≤Iout≤100mA, Vin=2.2V		5	20	mV
Input-Output voltage differential	Vdif	Iout=100mA		380	620	mV
Current consumption	Iss	Vin=2.2V, No-load		15	50	μA
Input voltage	Vin		1.4		6.0	V
Output voltage temperature coefficient	$\Delta V_{out}/\Delta T_{op}$	-40°C≤Top≤+85°C, Iout=40mA, Vin=2.2V		±100		ppm/°C
Short circuit current	Ilim	Vout=0V		40		mA
Ripple rejection ratio	RR	f=1kHz, Iout=40mA		60		dB
Thermal shutdown temperature	Tsd			165		°C
Output noise	Vno	BW=10Hz to 100kHz		30		μVrms

ELM88xxxxA CMOS 300mA LDO Voltage regulator

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Vout=1.8V(ELM88181xA), No CE pin

Top=25°C

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Output voltage	Vout	Vin=2.8V, Iout=40mA	1.764	1.800	1.836	V
Output current	Iout	Vin=3.0V	300			mA
Input stability	$\Delta V_{out}/\Delta V_{in}$	Iout=40mA, 2.3V≤Vin≤6.0V		0.02	0.20	%/V
Load stability	$\Delta V_{out}/\Delta I_{out}$	1mA≤Iout≤100mA, Vin=2.8V		5	20	mV
Input-Output voltage differential	Vdif	Iout=100mA		145	230	mV
Current consumption	Iss	Vin=2.8V, No-load		15	50	μA
Input voltage	Vin		1.4		6.0	V
Output voltage temperature coefficient	$\Delta V_{out}/\Delta T_{op}$	-40°C≤Top≤+85°C, Iout=40mA, Vin=2.8V		±100		ppm/°C
Short circuit current	Ilim	Vout=0V		40		mA
Ripple rejection ratio	RR	f=1kHz, Iout=40mA		60		dB
Thermal shutdown temperature	Tsd			165		°C
Output noise	Vno	BW=10Hz to 100kHz		30		μVrms

Vout=2.5V(ELM88251xA), No CE pin

Top=25°C

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Output voltage	Vout	Vin=3.5V, Iout=40mA	2.450	2.500	2.550	V
Output current	Iout	Vin=3.5V	300			mA
Input stability	$\Delta V_{out}/\Delta V_{in}$	Iout=40mA, 3.0V≤Vin≤6.0V		0.02	0.20	%/V
Load stability	$\Delta V_{out}/\Delta I_{out}$	1mA≤Iout≤100mA, Vin=3.5V		5	20	mV
Input-Output voltage differential	Vdif	Iout=100mA		120	190	mV
Current consumption	Iss	Vin=3.5V, No-load		15	50	μA
Input voltage	Vin		1.4		6.0	V
Output voltage temperature coefficient	$\Delta V_{out}/\Delta T_{op}$	-40°C≤Top≤+85°C, Iout=40mA, Vin=3.5V		±100		ppm/°C
Short circuit current	Ilim	Vout=0V		40		mA
Ripple rejection ratio	RR	f=1kHz, Iout=40mA		60		dB
Thermal shutdown temperature	Tsd			165		°C
Output noise	Vno	BW=10Hz to 100kHz		30		μVrms

Vout=3.0V(ELM88301xA), No CE pin

Top=25°C

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Output voltage	Vout	Vin=4.0V, Iout=40mA	2.940	3.000	3.060	V
Output current	Iout	Vin=4.0V	300			mA
Input stability	$\Delta V_{out}/\Delta V_{in}$	Iout=40mA, 3.5V≤Vin≤6.0V		0.02	0.20	%/V
Load stability	$\Delta V_{out}/\Delta I_{out}$	1mA≤Iout≤100mA, Vin=4.0V		5	20	mV
Input-Output voltage differential	Vdif	Iout=100mA		110	175	mV
Current consumption	Iss	Vin=4.0V, No-load		15	50	μA
Input voltage	Vin		1.4		6.0	V
Output voltage temperature coefficient	$\Delta V_{out}/\Delta T_{op}$	-40°C≤Top≤+85°C, Iout=40mA, Vin=4.0V		±100		ppm/°C
Short circuit current	Ilim	Vout=0V		40		mA
Ripple rejection ratio	RR	f=1kHz, Iout=40mA		60		dB
Thermal shutdown temperature	Tsd			165		°C
Output noise	Vno	BW=10Hz to 100kHz		30		μVrms

ELM88xxxxA CMOS 300mA LDO Voltage regulator

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Vout=3.3V(ELM88331xA), No CE pin

Top=25°C

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Output voltage	Vout	Vin=4.3V, Iout=40mA	3.234	3.300	3.366	V
Output current	Iout	Vin=4.3V	300			mA
Input stability	$\Delta V_{out}/\Delta V_{in}$	Iout=40mA, $3.8V \leq V_{in} \leq 6.0V$		0.02	0.20	%/V
Load stability	$\Delta V_{out}/\Delta I_{out}$	$1mA \leq I_{out} \leq 100mA$, Vin=4.3V		5	20	mV
Input-Output voltage differential	Vdif	Iout=100mA		110	175	mV
Current consumption	Iss	Vin=4.3V, No-load		15	50	μA
Input voltage	Vin		1.4		6.0	V
Output voltage temperature coefficient	$\Delta V_{out}/\Delta T_{op}$	$-40^{\circ}C \leq T_{op} \leq +85^{\circ}C$, Iout=40mA, Vin=4.3V		±100		ppm/°C
Short circuit current	Ilim	Vout=0V		40		mA
Ripple rejection ratio	RR	f=1kHz, Iout=40mA		60		dB
Thermal shutdown temperature	Tsd			165		°C
Output noise	Vno	BW=10Hz to 100kHz		30		μVrms

Vout=5.0V(ELM88501xA), No CE pin

Top=25°C

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Output voltage	Vout	Vin=6.0V, Iout=40mA	4.900	5.000	5.100	V
Output current	Iout	Vin=6.0V	300			mA
Input stability	$\Delta V_{out}/\Delta V_{in}$	Iout=40mA, $5.5V \leq V_{in} \leq 6.0V$		0.02	0.20	%/V
Load stability	$\Delta V_{out}/\Delta I_{out}$	$1mA \leq I_{out} \leq 100mA$, Vin=6.0V		5	20	mV
Input-Output voltage differential	Vdif	Iout=100mA		100	160	mV
Current consumption	Iss	Vin=6.0V, No-load		15	50	μA
Input voltage	Vin		1.4		6.0	V
Output voltage temperature coefficient	$\Delta V_{out}/\Delta T_{op}$	$-40^{\circ}C \leq T_{op} \leq +85^{\circ}C$, Iout=40mA, Vin=6.0V		±100		ppm/°C
Short circuit current	Ilim	Vout=0V		40		mA
Ripple rejection ratio	RR	f=1kHz, Iout=40mA		60		dB
Thermal shutdown temperature	Tsd			165		°C
Output noise	Vno	BW=10Hz to 100kHz		30		μVrms

ELM88xxxxA CMOS 300mA LDO Voltage regulator

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■Electrical characteristics (ELM88xx3xA)

Vout=1.2V(ELM88123xA), CE="H"active

Top=25°C

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Output voltage	Vout	Vin=2.2V, Iout=40mA	1.170	1.200	1.230	V
Output current	Iout	Vin=3.0V	300			mA
Input stability	$\Delta V_{out}/\Delta V_{in}$	Iout=40mA, $1.7V \leq V_{in} \leq 6.0V$		0.05	0.20	%/V
Load stability	$\Delta V_{out}/\Delta I_{out}$	$1mA \leq I_{out} \leq 100mA$, Vin=2.2V		5	20	mV
Input-Output voltage differential	Vdif	Iout=100mA		380	620	mV
Current consumption	Iss	Vin=2.2V, No-load		15	50	μA
Stand-by current consumption	Istandby	Vin=2.2V, Vce=0			0.5	μA
Input voltage	Vin		1.4		6.0	V
CE input voltage High	Vceh	Vin=6.0V	1.8		Vin	V
CE input voltage Low	Vcel	Vin=1.4V	0.0		0.2	V
CE input current High	Iceh	Vce=Vin=6.0V	-0.2	0.0	0.2	μA
CE input current Low	Icel	Vce=Vss, Vin=6.0V	-0.2	0.0	0.2	
Output voltage temperature coefficient	$\Delta V_{out}/\Delta T_{op}$	-40°C ≤ Top ≤ +85°C Iout=40mA, Vin=2.2V		±100		ppm/°C
Short circuit current	Ilim	Vout=0V		40		mA
Ripple rejection ratio	RR	f=1kHz, Iout=40mA		60		dB
Thermal shutdown temperature	Tsd			165		°C
Output noise	Vno	BW=10Hz to 100kHz		30		μVrms

Vout=1.8V(ELM88183xA), CE="H"active

Top=25°C

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Output voltage	Vout	Vin=2.8V, Iout=40mA	1.764	1.800	1.836	V
Output current	Iout	Vin=3.0V	300			mA
Input stability	$\Delta V_{out}/\Delta V_{in}$	Iout=40mA, $2.3V \leq V_{in} \leq 6.0V$		0.02	0.20	%/V
Load stability	$\Delta V_{out}/\Delta I_{out}$	$1mA \leq I_{out} \leq 100mA$, Vin=2.8V		5	20	mV
Input-Output voltage differential	Vdif	Iout=100mA		145	230	mV
Current consumption	Iss	Vin=2.8V, No-load		15	50	μA
Stand-by current consumption	Istandby	Vin=2.8V, Vce=0			0.5	μA
Input voltage	Vin		1.4		6.0	V
CE input voltage High	Vceh	Vin=6.0V	1.8		Vin	V
CE input voltage Low	Vcel	Vin=1.4V	0.0		0.2	V
CE input current High	Iceh	Vce=Vin=6.0V	-0.2	0.0	0.2	μA
CE input current Low	Icel	Vce=Vss, Vin=6.0V	-0.2	0.0	0.2	
Output voltage temperature coefficient	$\Delta V_{out}/\Delta T_{op}$	-40°C ≤ Top ≤ +85°C Iout=40mA, Vin=2.8V		±100		ppm/°C
Short circuit current	Ilim	Vout=0V		40		mA
Ripple rejection ratio	RR	f=1kHz, Iout=40mA		60		dB
Thermal shutdown temperature	Tsd			165		°C
Output noise	Vno	BW=10Hz to 100kHz		30		μVrms

ELM88xxxxA CMOS 300mA LDO Voltage regulator

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Vout=2.5V(ELM88253xA), CE="H" active

Top=25°C

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Output voltage	Vout	Vin=3.5V, Iout=40mA	2.450	2.500	2.550	V
Output current	Iout	Vin=3.5V	300			mA
Input stability	$\Delta V_{out}/\Delta V_{in}$	Iout=40mA, $3.0V \leq V_{in} \leq 6.0V$		0.02	0.20	%/V
Load stability	$\Delta V_{out}/\Delta I_{out}$	$1mA \leq I_{out} \leq 100mA$, Vin=3.5V		5	20	mV
Input-Output voltage differential	Vdif	Iout=100mA		120	190	mV
Current consumption	Iss	Vin=3.5V, No-load		15	50	μA
Stand-by current consumption	Istandby	Vin=3.5V, Vce=0			0.5	μA
Input voltage	Vin		1.4		6.0	V
CE input voltage High	Vceh	Vin=6.0V	1.8		Vin	V
CE input voltage Low	Vcel	Vin=1.4V	0.0		0.2	V
CE input current High	Iceh	Vce=Vin=6.0V	-0.2	0.0	0.2	μA
CE input current Low	Icel	Vce=Vss, Vin=6.0V	-0.2	0.0	0.2	
Output voltage temperature coefficient	$\Delta V_{out}/\Delta T_{op}$	-40°C ≤ Top ≤ +85°C Iout=40mA, Vin=3.5V		±100		ppm/°C
Short circuit current	Ilim	Vout=0V		40		mA
Ripple rejection ratio	RR	f=1kHz, Iout=40mA		60		dB
Thermal shutdown temperature	Tsd			165		°C
Output noise	Vno	BW=10Hz to 100kHz		30		μVrms

Vout=3.0V(ELM88303xA), CE="H" active

Top=25°C

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Output voltage	Vout	Vin=4.0V, Iout=40mA	2.940	3.000	3.060	V
Output current	Iout	Vin=4.0V	300			mA
Input stability	$\Delta V_{out}/\Delta V_{in}$	Iout=40mA, $3.5V \leq V_{in} \leq 6.0V$		0.02	0.20	%/V
Load stability	$\Delta V_{out}/\Delta I_{out}$	$1mA \leq I_{out} \leq 100mA$, Vin=4.0V		5	20	mV
Input-Output voltage differential	Vdif	Iout=100mA		110	175	mV
Current consumption	Iss	Vin=4.0V, No-load		15	50	μA
Stand-by current consumption	Istandby	Vin=4.0V, Vce=0			0.5	μA
Input voltage	Vin		1.4		6.0	V
CE input voltage High	Vceh	Vin=6.0V	1.8		Vin	V
CE input voltage Low	Vcel	Vin=1.4V	0.0		0.2	V
CE input current High	Iceh	Vce=Vin=6.0V	-0.2	0.0	0.2	μA
CE input current Low	Icel	Vce=Vss, Vin=6.0V	-0.2	0.0	0.2	
Output voltage temperature coefficient	$\Delta V_{out}/\Delta T_{op}$	-40°C ≤ Top ≤ +85°C, Iout=40mA, Vin=4.0V		±100		ppm/°C
Short circuit current	Ilim	Vout=0V		40		mA
Ripple rejection ratio	RR	f=1kHz, Iout=40mA		60		dB
Thermal shutdown temperature	Tsd			165		°C
Output noise	Vno	BW=10Hz to 100kHz		30		μVrms

ELM88xxxxA CMOS 300mA LDO Voltage regulator

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Vout=3.3V(ELM88333xA), CE="H" active

Top=25°C

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Output voltage	Vout	Vin=4.3V, Iout=40mA	3.234	3.300	3.366	V
Output current	Iout	Vin=4.3V	300			mA
Input stability	$\Delta V_{out}/\Delta V_{in}$	Iout=40mA, $3.8V \leq V_{in} \leq 6.0V$		0.02	0.20	%/V
Load stability	$\Delta V_{out}/\Delta I_{out}$	$1mA \leq I_{out} \leq 100mA$, Vin=4.3V		5	20	mV
Input-Output voltage differential	Vdif	Iout=100mA		110	175	mV
Current consumption	Iss	Vin=4.3V, No-load		15	50	μA
Stand-by current consumption	Istandby	Vin=4.3V, Vce=0			0.5	μA
Input voltage	Vin		1.4		6.0	V
CE input voltage High	Vceh	Vin=6.0V	1.8		Vin	V
CE input voltage Low	Vcel	Vin=1.4V	0.0		0.2	V
CE input current High	Iceh	Vce=Vin=6.0V	-0.2	0.0	0.2	μA
CE input current Low	Icel	Vce=Vss, Vin=6.0V	-0.2	0.0	0.2	
Output voltage temperature coefficient	$\Delta V_{out}/\Delta T_{op}$	$-40^{\circ}C \leq T_{op} \leq +85^{\circ}C$, Iout=40mA, Vin=4.3V		±100		ppm/°C
Short circuit current	Ilim	Vout=0V		40		mA
Ripple rejection ratio	RR	f=1kHz, Iout=40mA		60		dB
Thermal shutdown temperature	Tsd			165		°C
Output noise	Vno	BW=10Hz to 100kHz		30		μVrms

Vout=5.0V(ELM88503xA), CE="H" active

Top=25°C

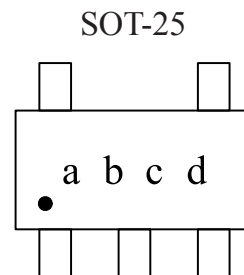
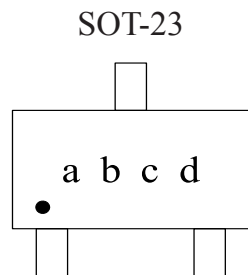
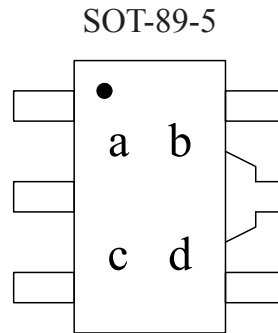
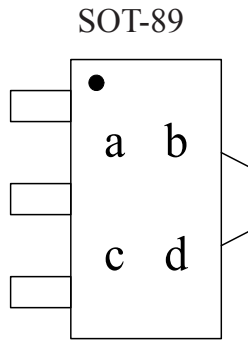
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Output voltage	Vout	Vin=6.0V, Iout=40mA	4.900	5.000	5.100	V
Output current	Iout	Vin=6.0V	300			mA
Input stability	$\Delta V_{out}/\Delta V_{in}$	Iout=40mA, $5.5V \leq V_{in} \leq 6.0V$		0.02	0.20	%/V
Load stability	$\Delta V_{out}/\Delta I_{out}$	$1mA \leq I_{out} \leq 100mA$, Vin=6.0V		5	20	mV
Input-Output voltage differential	Vdif	Iout=100mA		100	160	mV
Current consumption	Iss	Vin=6.0V, No-load		15	50	μA
Stand-by current consumption	Istandby	Vin=6.0V, Vce=0			0.5	μA
Input voltage	Vin		1.4		6.0	V
CE input voltage High	Vceh	Vin=6.0V	1.8		Vin	V
CE input voltage Low	Vcel	Vin=1.4V	0.0		0.2	V
CE input current High	Iceh	Vce=Vin=6.0V	-0.2	0.0	0.2	μA
CE input current Low	Icel	Vce=Vss, Vin=6.0V	-0.2	0.0	0.2	
Output voltage temperature coefficient	$\Delta V_{out}/\Delta T_{op}$	$-40^{\circ}C \leq T_{op} \leq +85^{\circ}C$, Iout=40mA, Vin=6.0V		±100		ppm/°C
Short circuit current	Ilim	Vout=0V		40		mA
Ripple rejection ratio	RR	f=1kHz, Iout=40mA		60		dB
Thermal shutdown temperature	Tsd			165		°C
Output noise	Vno	BW=10Hz to 100kHz		30		μVrms

ELM88xxxxA CMOS 300mA LDO Voltage regulator

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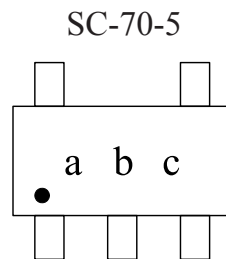
■Marking

- SOT-89, SOT-23 package : ELM88xx1xA
- SOT-89-5, SOT-25 package : ELM88xx3xA(with CE)



a to d : Assembly lot No. ——
A to Z (I, O, X excepted) and 0 to 9

- SC-70-5 package : ELM88xxxCA



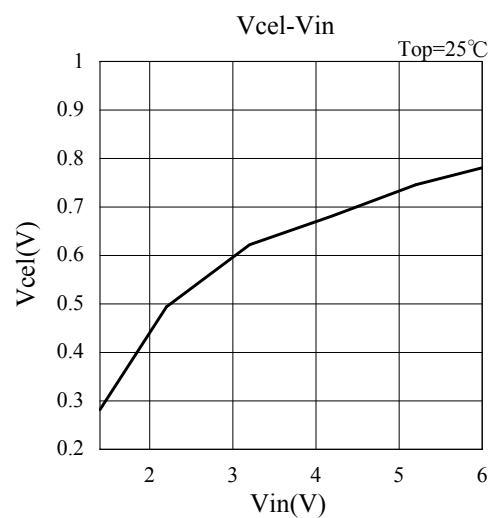
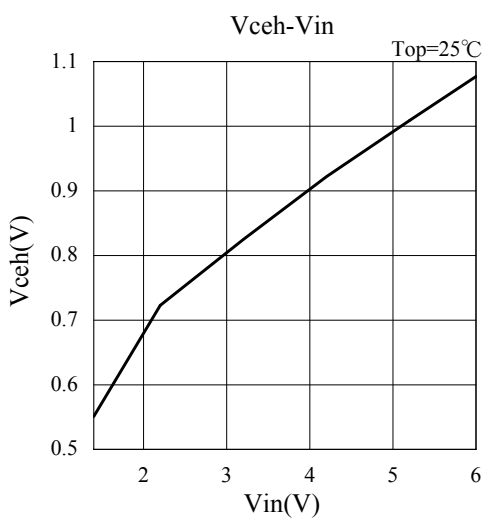
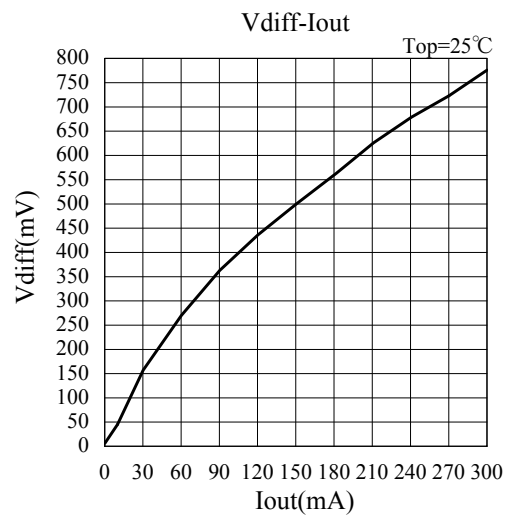
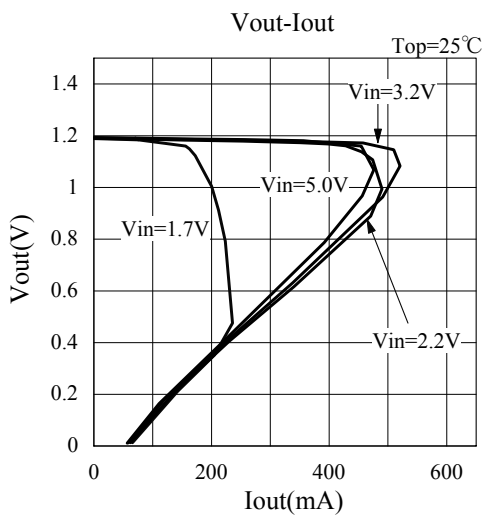
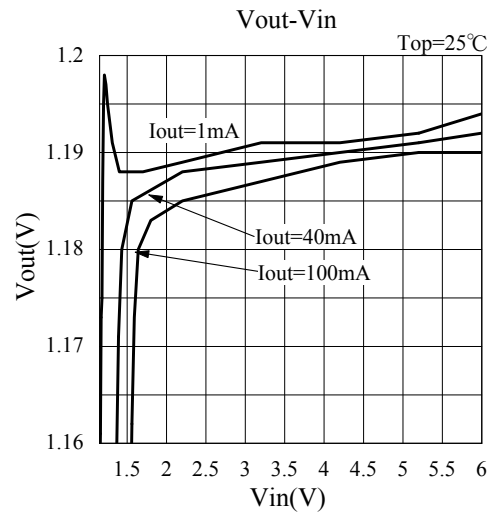
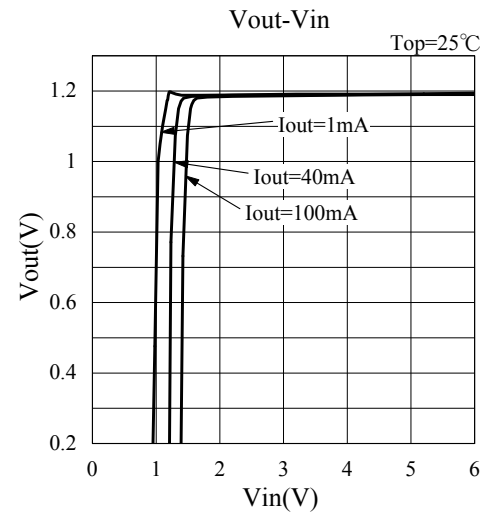
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ELM88xxxxA CMOS 300mA LDO Voltage regulator

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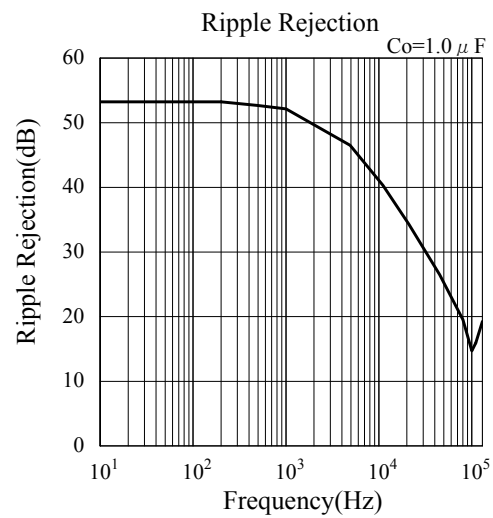
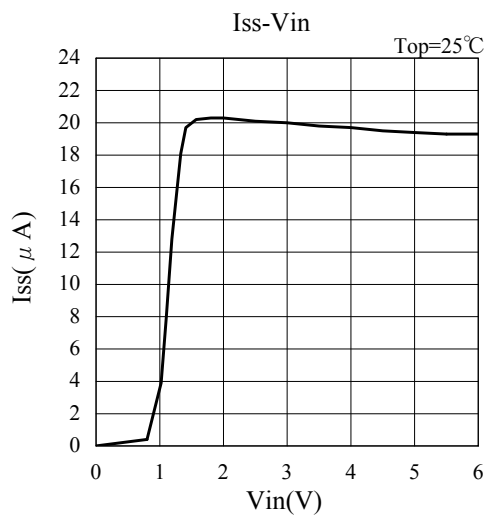
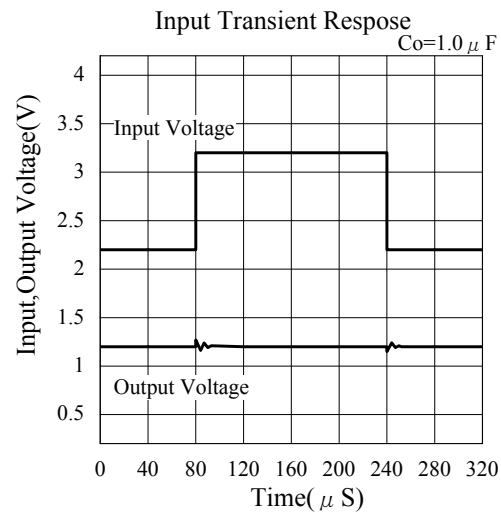
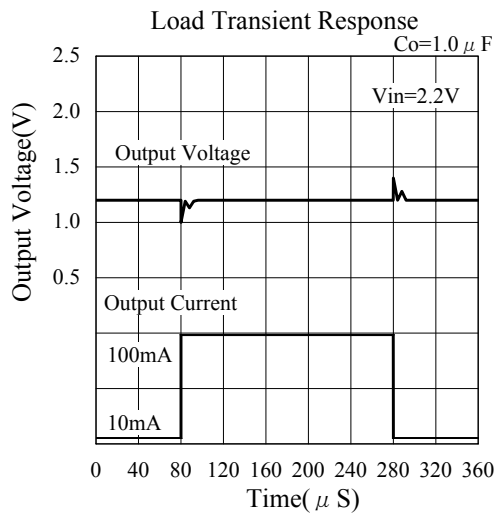
■ Typical characteristics

- 1.2V Vout unit (ELM8812xxA)



ELM88xxxxA CMOS 300mA LDO Voltage regulator

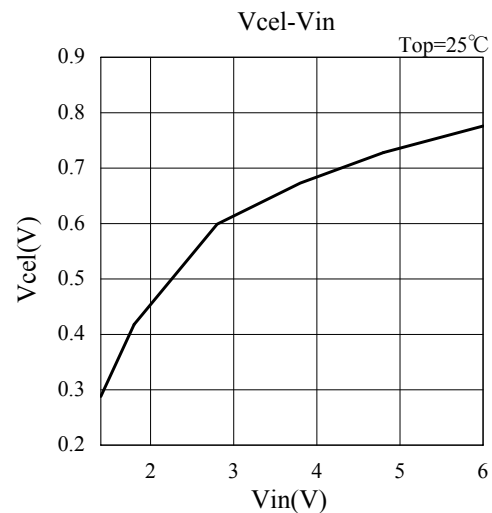
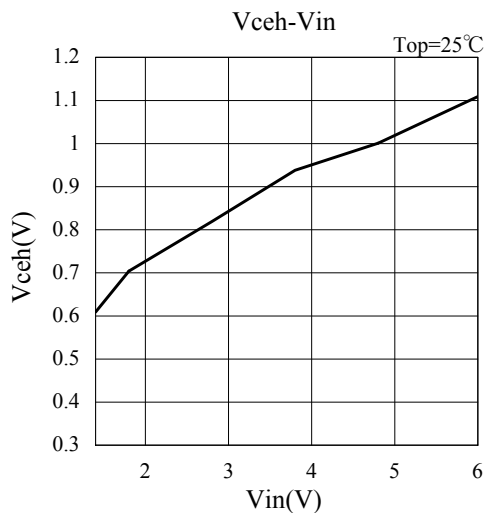
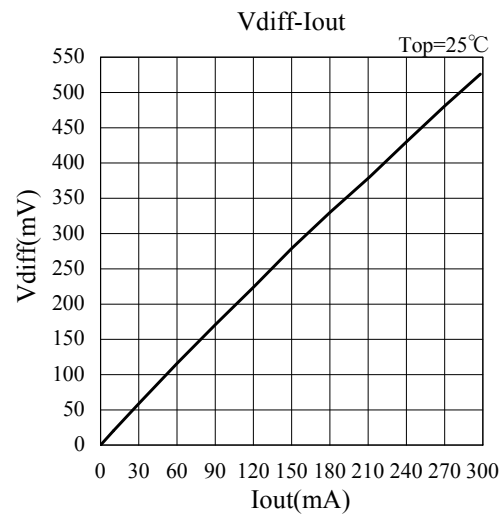
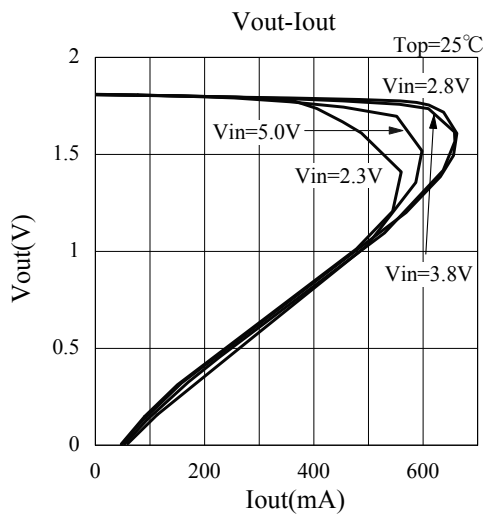
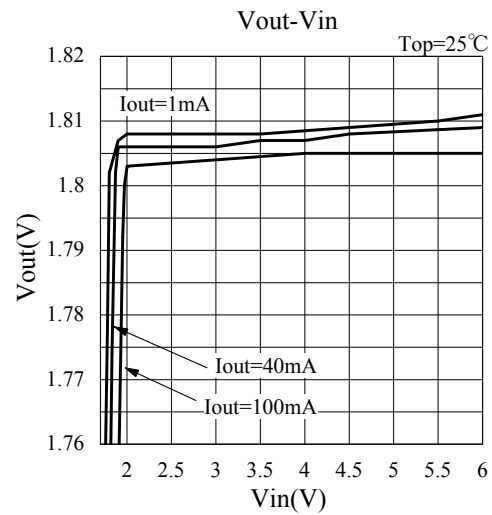
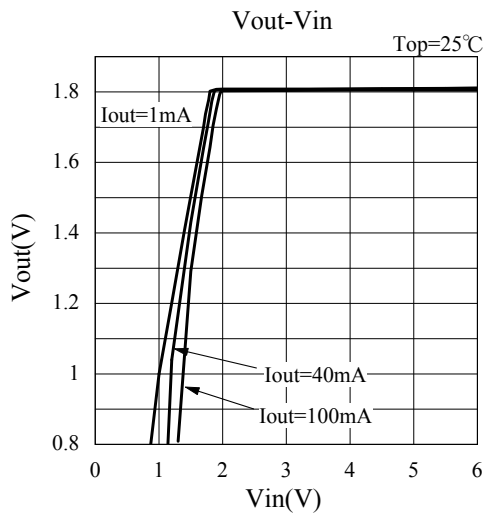
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ELM88xxxxA CMOS 300mA LDO Voltage regulator

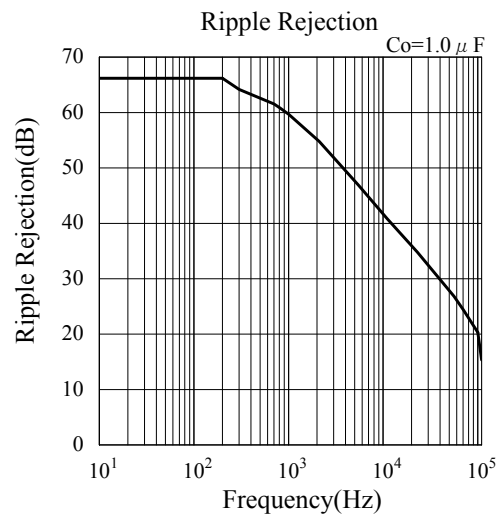
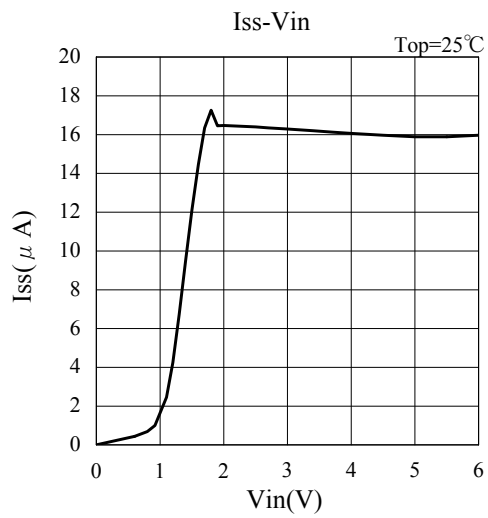
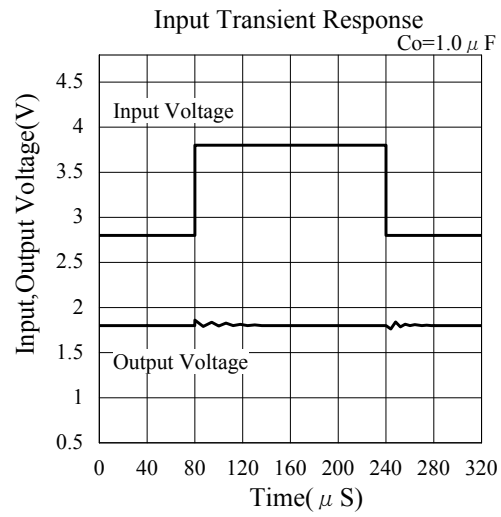
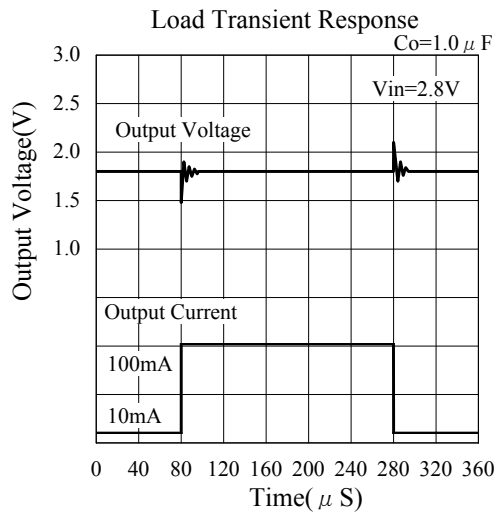
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- 1.8V Vout unit (ELM8818xxA)



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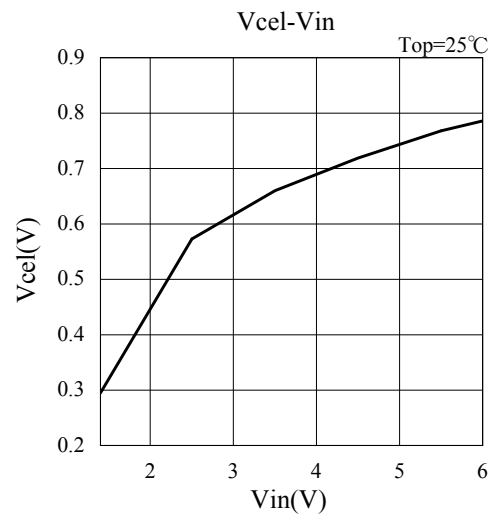
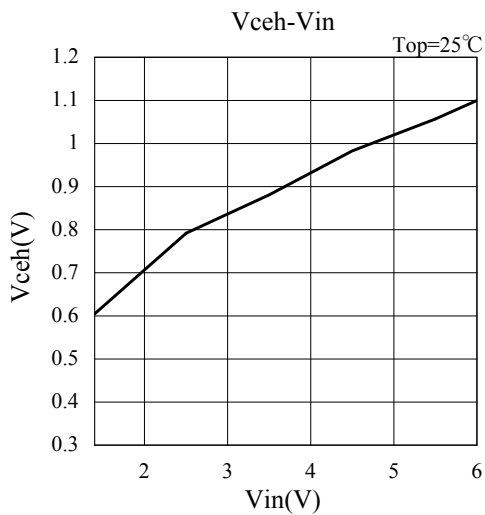
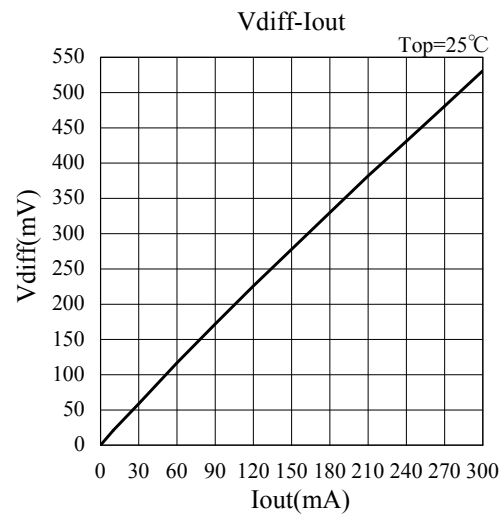
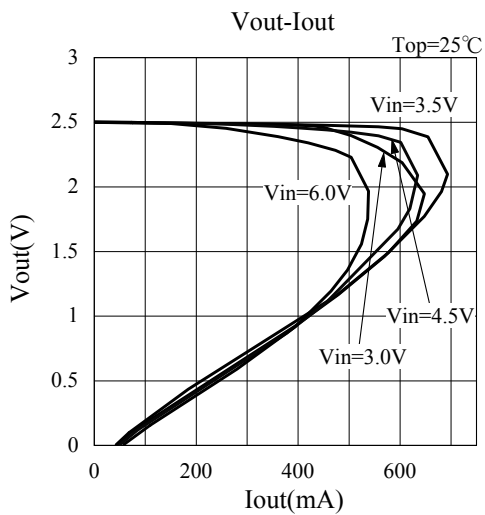
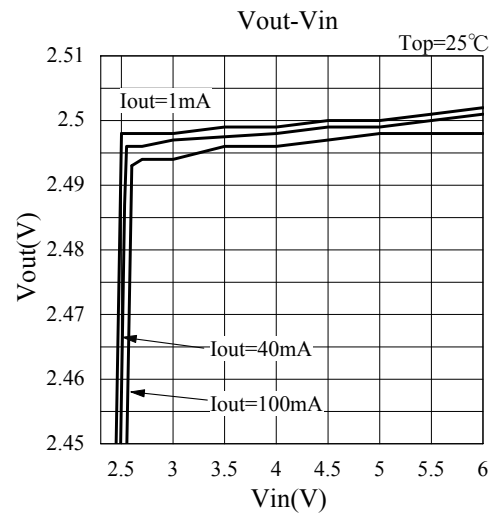
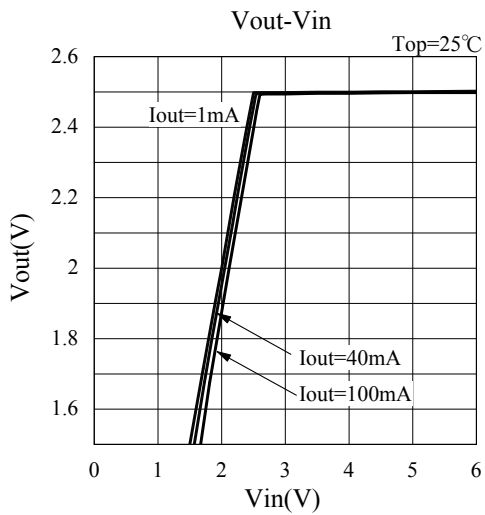
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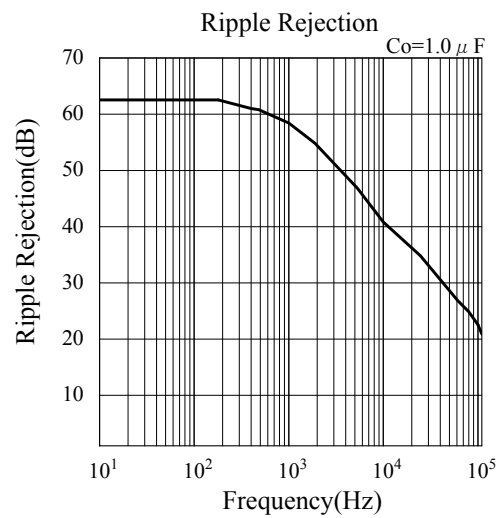
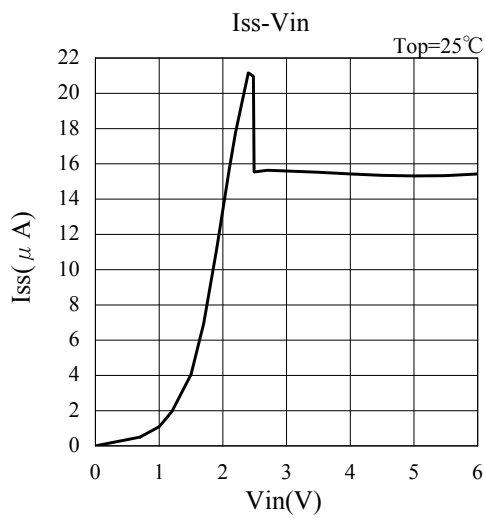
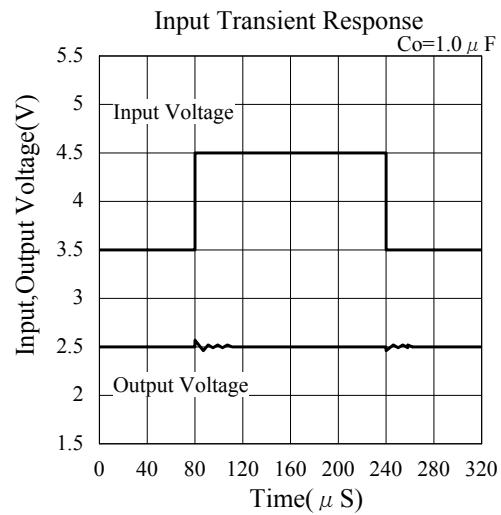
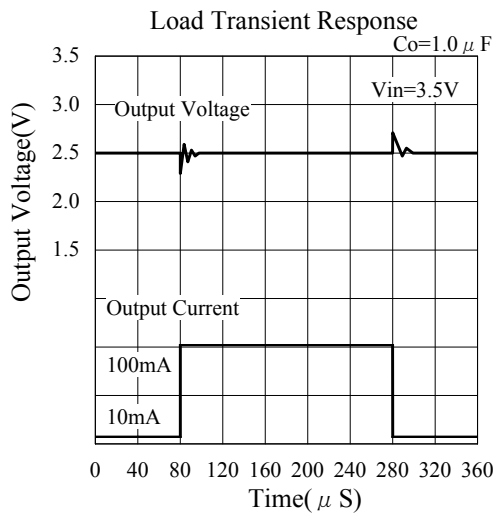
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- 2.5V Vout unit (ELM8825xxA)



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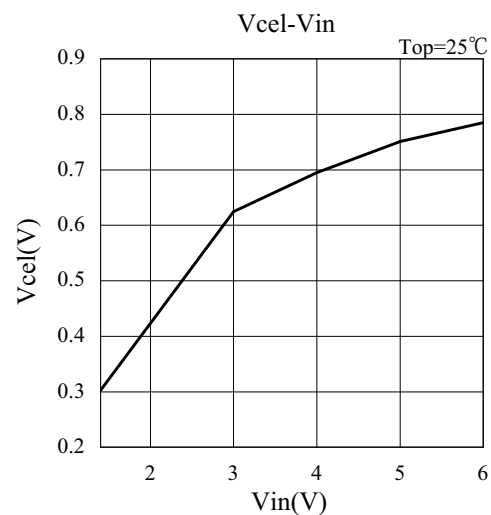
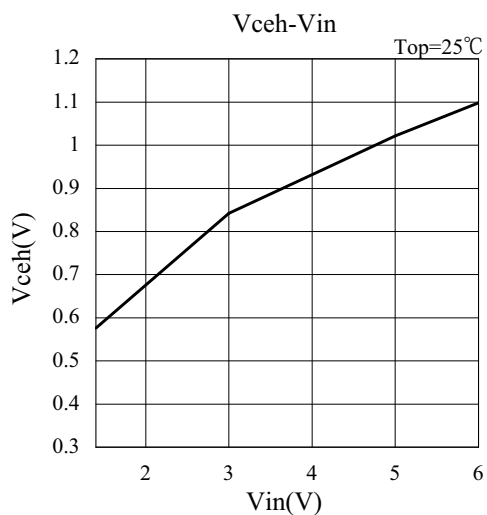
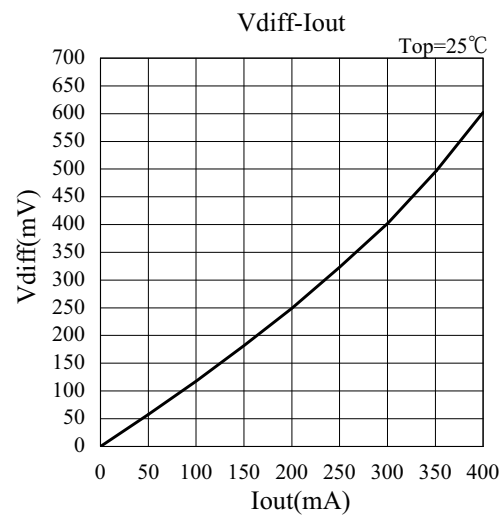
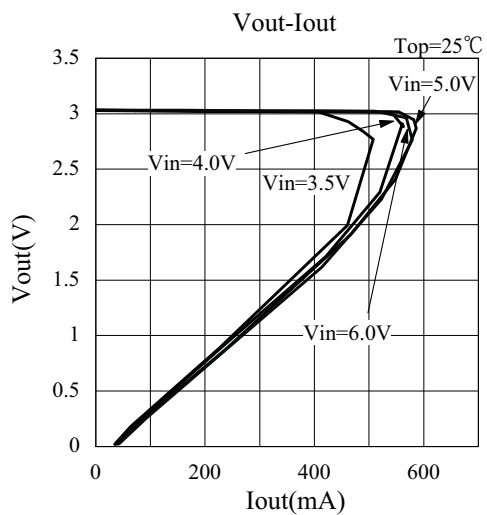
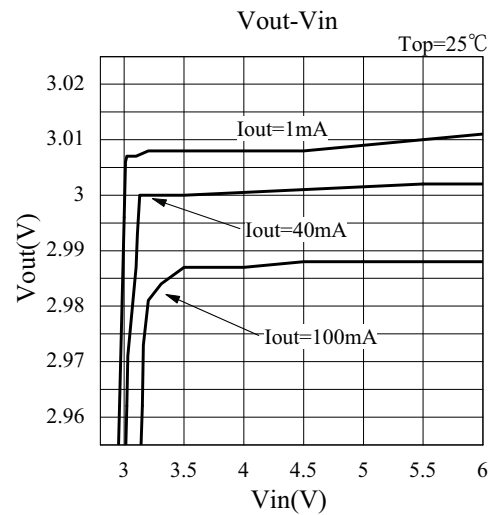
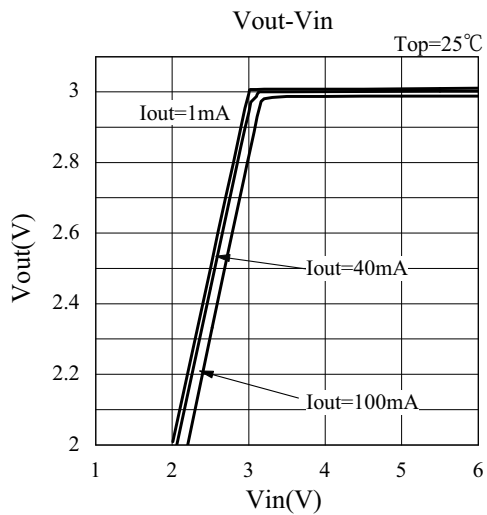
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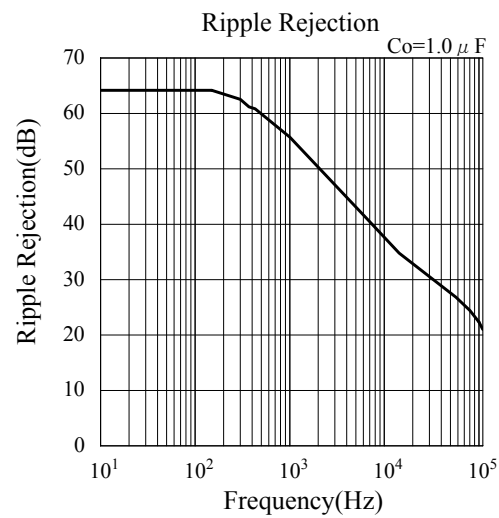
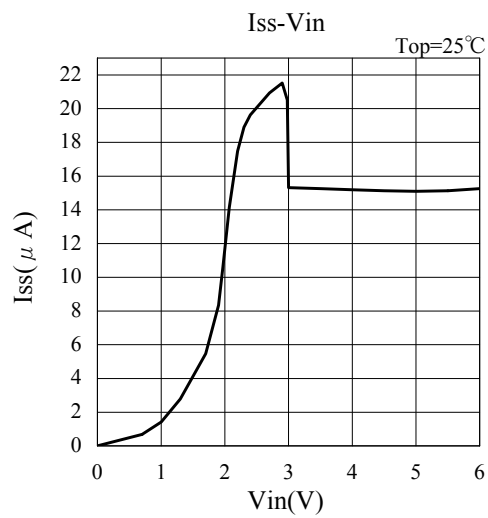
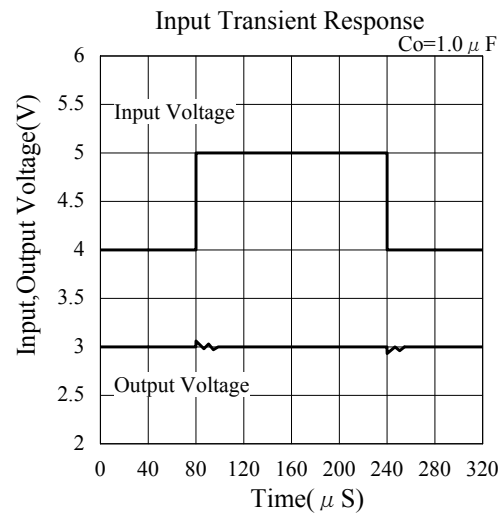
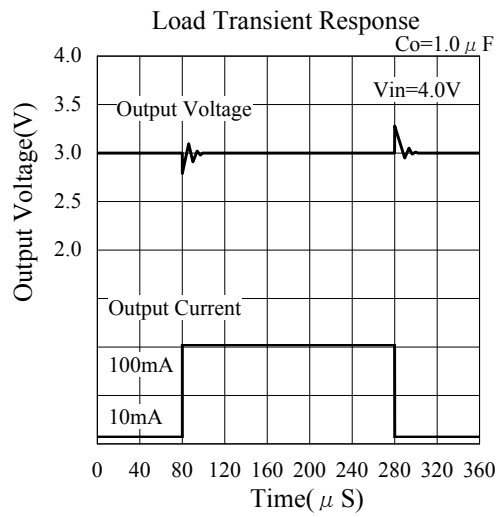
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- 3.0V Vout unit (ELM8830xxA)



ELM88xxxxA CMOS 300mA LDO Voltage regulator

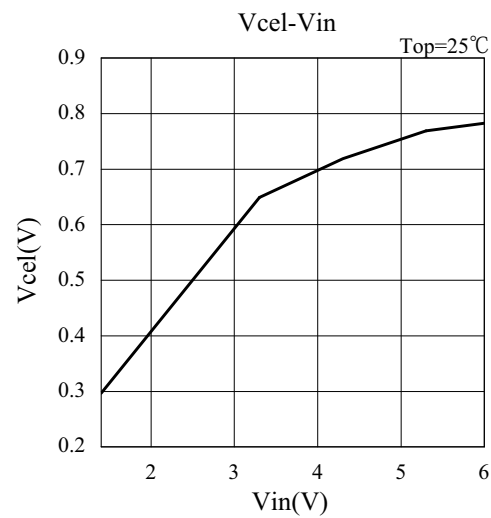
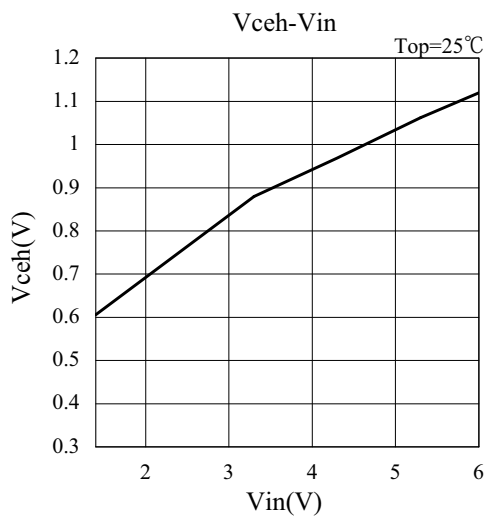
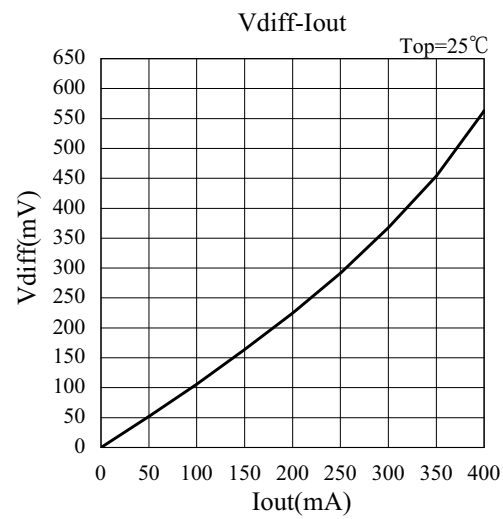
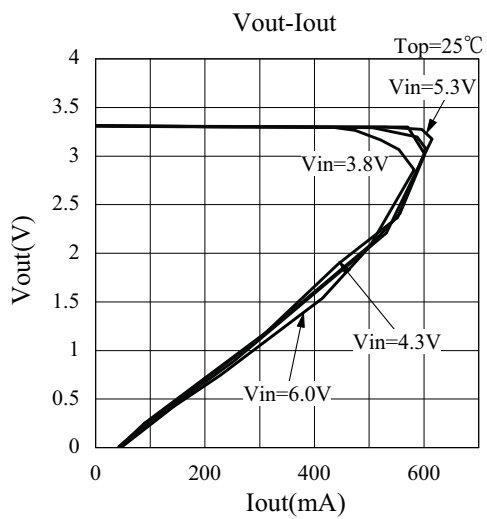
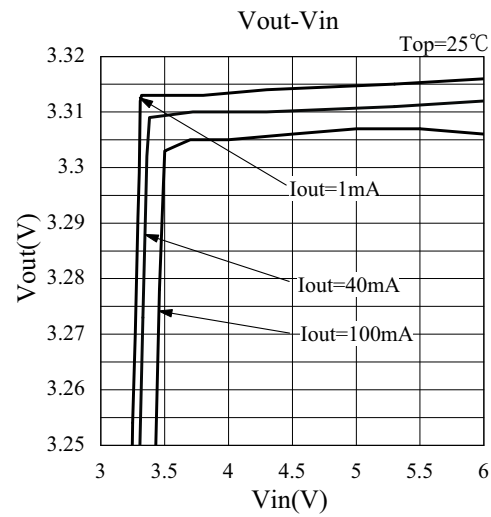
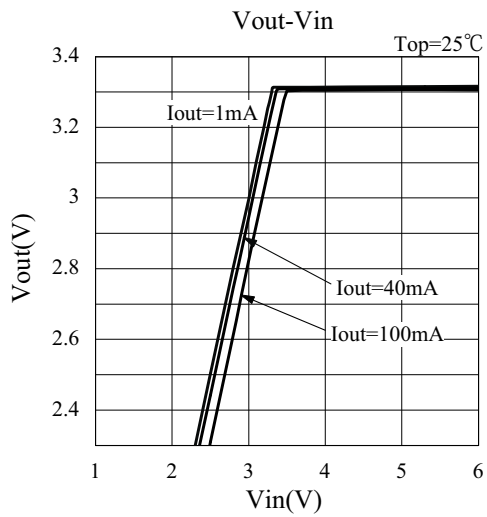
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ELM88xxxxA CMOS 300mA LDO Voltage regulator

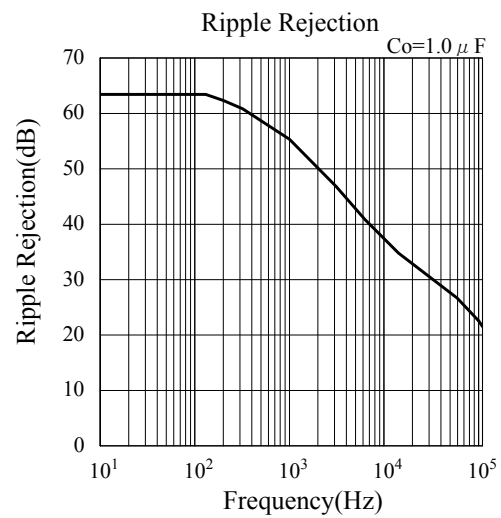
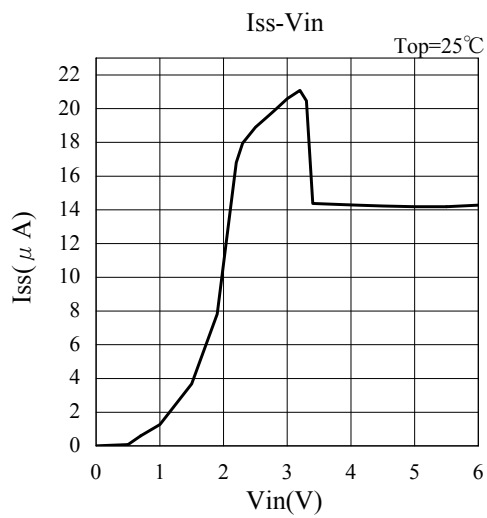
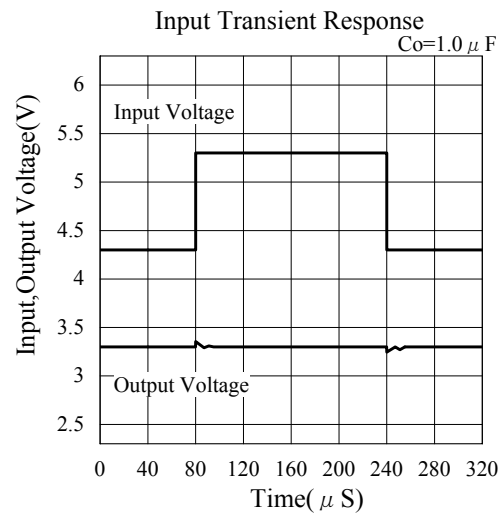
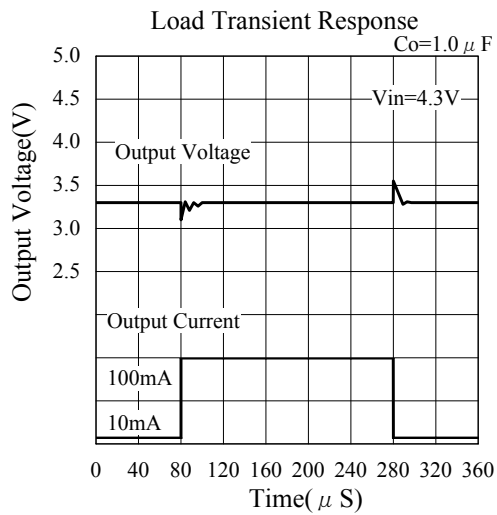
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- 3.3V Vout unit (ELM8833xxA)



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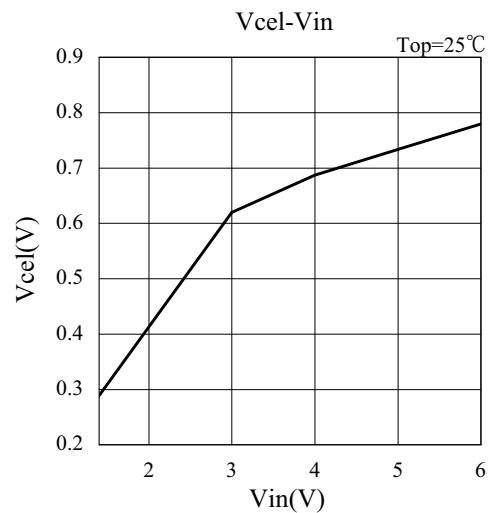
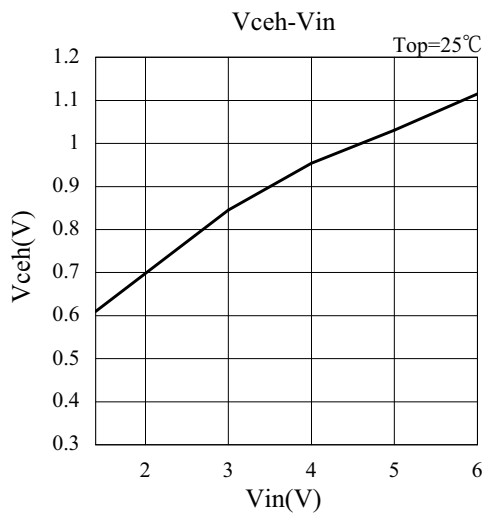
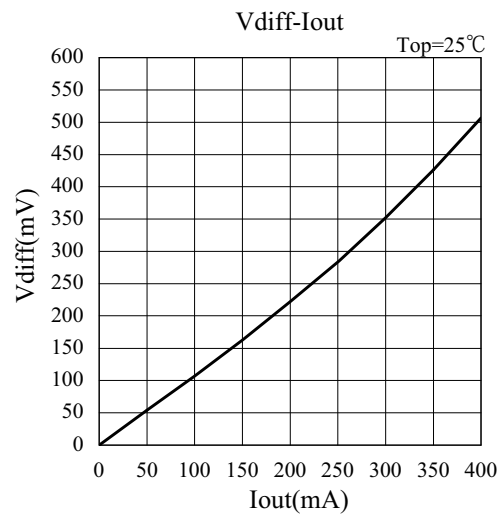
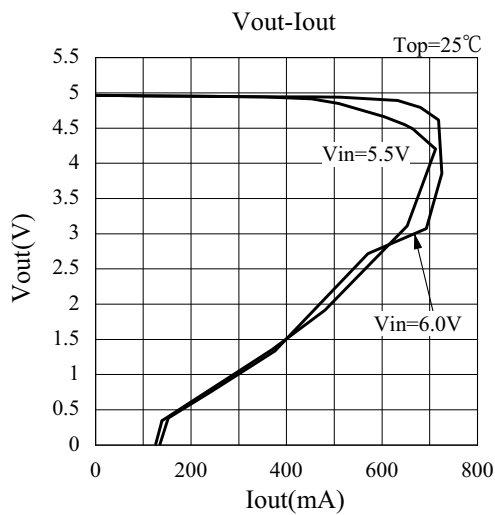
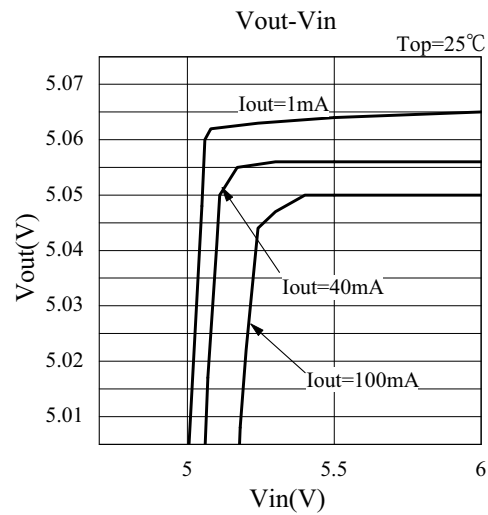
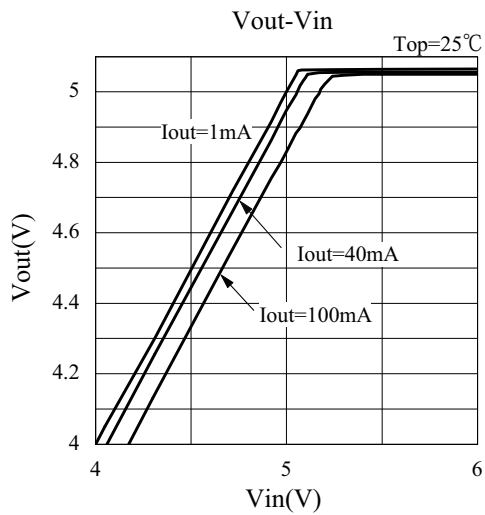
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- 5.0V Vout unit (ELM8850xxA)



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