

# KA3882C/3C

## Current Mode PWM Controller

### Features

- Low start current 0.2mA (Typ.)
- Operating range up to 500KHz
- Cycle by cycle current limiting
- Under voltage lock out with hysteresis
- Short shutdown delay time: Typ. 100ns
- High current totem-pole output
- Output swing limiting: 22V

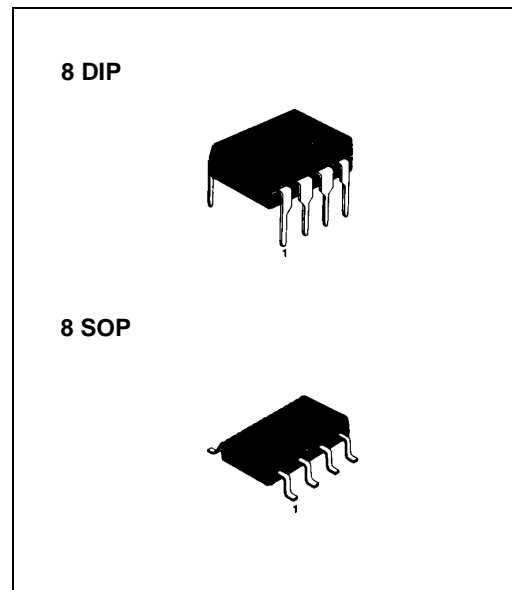
### Description

The KA3882C/3C are fixed PWM controller for Off-Line and DC to DC converter applications. The internal circuits include UVLO, low start up current circuit, temperature compensated reference, high gain error amplifier, current sensing comparator, and high current totem-pole output for driving a POWER MOSFET. Also KA 3882C/3C provide low start up current below 0.3mA and short shutdown delay time typ. 100ns.

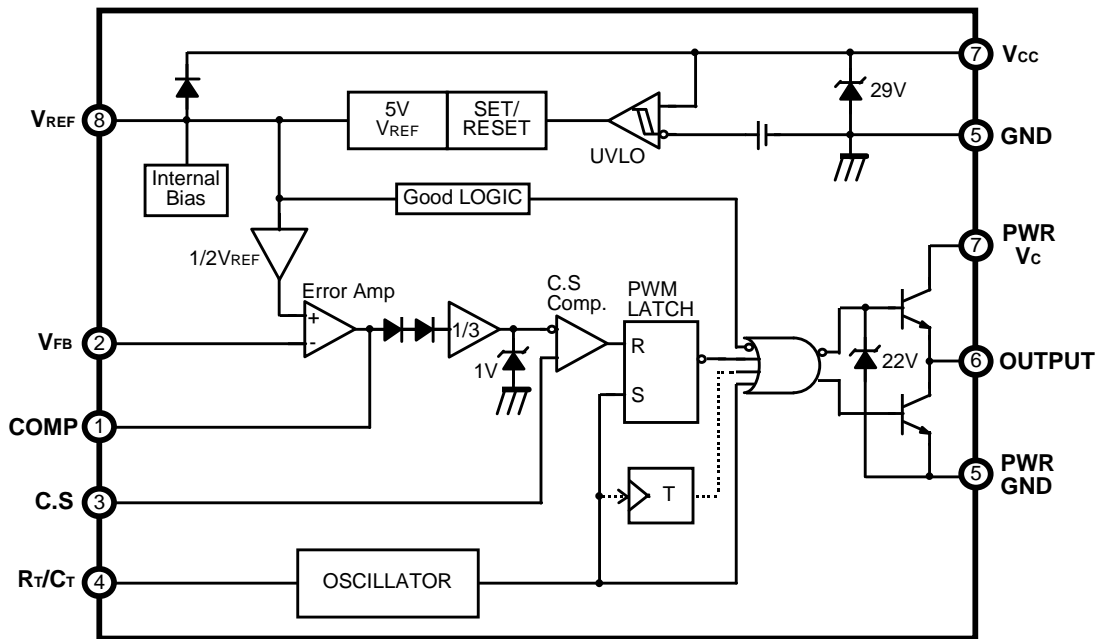
The KA3882C has UVLO threshold of 16V(on) and 10V(off).

The KA3883 is 8.4V(on) and 7.6V(off).

The KA3882 and KA3883 can operate within 100% duty cycle.



# Internal Block Diagram



SMPS Controller

## Absolute Maximum Rating

Parameter	Symbol	Value	Unit
Supply voltage	VCC	30	V
Output current	IO	+1	A
Analog inputs (Pin2, 3)	VI(ANA)	-0.3 ~ 6.3	V
Error amp. output sink current	ISINK(EA)	10	mA
Power dissipation	PD	1	W

## Electrical Characteristics

(VCC=15V, RT=10KΩ, CT=3.3nF, Ta=0°C ~ +85°C, unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>REFERENCE SECTION</b>						
Output voltage	VREF	TJ=25°C, IO=1mA	4.9	5.0	5.1	V
Line regulation	ΔVREF	VCC=12V to 25V	-	6	20	mV
Load regulation	ΔVREF	IO=1mA to 20mA	-	6	25	mV
Output short circuit	ISC	Ta=25°C	-	-100	-180	mA
<b>OSILLATOR SECTION</b>						
Initial accuracy	FOSC	TJ=25°C	47	52	57	KHz
Voltage stability	STV	VCC=12V to 25V	-	0.2	1	%
Amplitude	VOSC	VPIN4, Peak to Peak	-	1.7	-	V
Discharge current	IDISCHG	TJ=25°C, Pin4=2V	7.8	8.3	8.8	mA
<b>CURRENT SENSE SECTION</b>						
Gain <sup>note2, 3</sup>	GV	-	2.85	3	3.15	V/V
Maximum input signal <sup>note2</sup>	VI(MAX)	VPIN1=5V	0.9	1.0	1.1	V
PSRR <sup>note1, 2</sup>	PSRR	VCC=12V to 25V	-	70	-	dB
Input bias current	IBIAS	-	-	-2	-10	μA
Delay to output <sup>note1</sup>	TD	VPIN3=0V to 2V	-	100	200	ns
<b>ERROR AMPLIFIER SECTION</b>						
Input voltage	VI	TPIN1=2.5V	2.42	2.50	2.58	V
Input bias current	IBIAS	-	-	-0.3	-2	μA
Open loop gain <sup>note1</sup>	GVO	VO=2V to 4V	65	90	-	dB
Unity gain bandwidth <sup>note1</sup>	GBW	TJ=25°C	0.7	1	-	MHz
PSRR <sup>note1</sup>	PSRR	VCC=12V to 25V	60	70	-	dB
Output sink current	ISINK	VPIN2=2.7V, VPIN1=1.1V	2	6	-	mA
Output source current	ISOURCE	VPIN2=2.3V, VPIN1=5.0V	-0.5	-0.8	-	mA
Output high voltage	VOH	VPIN2=2.3V, R1=15KΩ to GND	5	6	-	V
Output low voltage	VOL	VPIN2=2.7V, R1=15KΩ to Pin8	-	0.8	1.1	V

## Electrical Characteristics (Continued)

(V<sub>CC</sub>=15V, R<sub>T</sub>=10KΩ, C<sub>T</sub>=3.3nF, T<sub>a</sub>=0°C ~ +85°C, unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>OUTPUT SECTION</b>						
Output low level	VOL	I <sub>SINK</sub> =20mA	-	0.1	0.4	V
		I <sub>SINK</sub> =200mA	-	1.5	2.2	V
Output high level	VOH	I <sub>SOURCE</sub> =20mA	13	13.5	-	V
		I <sub>SOURCE</sub> =200mA	12	13.5	-	V
Rise time <sup>note1</sup>	t <sub>R</sub>	T <sub>J</sub> =25°C, C <sub>1</sub> =1nF	-	40	100	V
Fall time <sup>note1</sup>	t <sub>F</sub>	T <sub>J</sub> =25°C, C <sub>1</sub> =1nF	-	40	100	ns
Output voltage swing limit	VOLIM	V <sub>CC</sub> =27V, C <sub>1</sub> =1nF	-	22	-	ns
<b>UNDER VOLTAGE LOCKOUT SECTION</b>						
Start threshold	V <sub>TH</sub>	KA3882C	15	16	17	V
		KA3883C	7.8	8.4	9.0	V
Min. operating voltage (After turn on)	V <sub>T</sub> L	KA3882C	9	10	11	V
		KA3883C	7.0	7.6	8.2	V
<b>PWM SECTION</b>						
Maximum duty cycle	D <sub>MAX</sub>	KA3882/3	94	-96	100	V
Minimum duty cycle	D <sub>MIN</sub>	-	-	-	0	V
<b>TOTAL STANDBY CURRENT</b>						
Start-up current	I <sub>ST</sub>	-	-	0.2	0.4	mA
Operating supply current	I <sub>CC</sub>	V <sub>PIN2</sub> =V <sub>PIN3</sub> =0V	-	11	17	mA
V <sub>CC</sub> zener voltage	V <sub>Z</sub>	I <sub>CC</sub> =25mA	-	29	-	V

Adjust V<sub>CC</sub> above the start threshold before setting at 15V

### Notes;

1. These parameters, although guaranteed, are not 100% tested in production.
2. Parameter measured at trip point of latch with V<sub>2</sub>=0V.
3. Gain defined as:  $G_V = \Delta V_{PIN1} / \Delta V_{PIN3}$  (V<sub>PIN3</sub>=0V to 0.8V)

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## Ordering Information

Device	Package	Operating Temperature
KA388X	8 DIP	0 ~ +85°C
KA388DX	8 SOP	

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