

KA3843AC

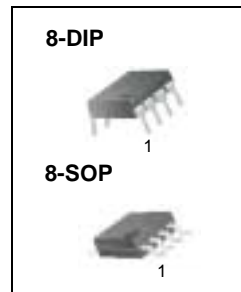
SMPS Controller

Features

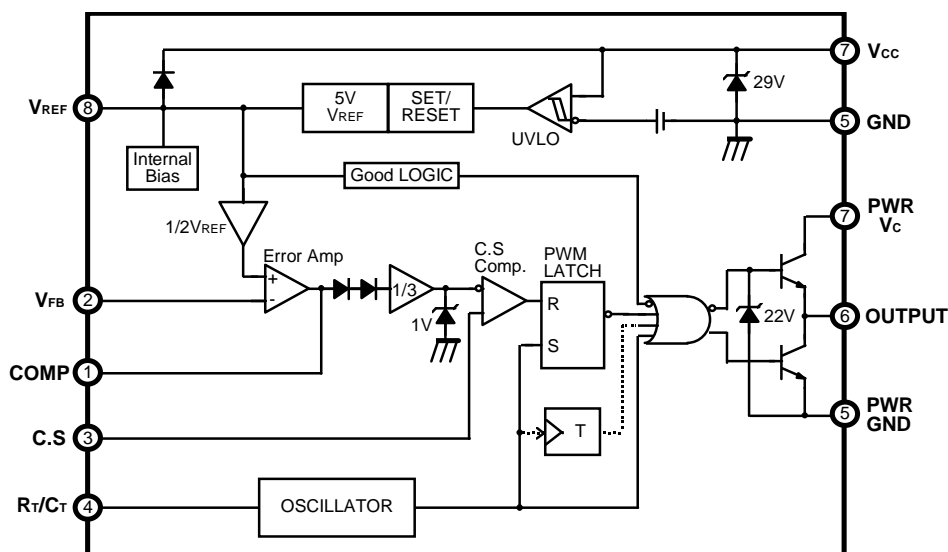
- Low start current 0.2mA (typ)
- Operating range up to 500kHz
- Cycle by cycle current limiting
- Under voltage lock out with hysteresis
- Short shutdown delay time: typ.100ns
- High current totem-pole output
- Output swing limiting: 22V

Description

The KA3843AC 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 KA3843AC provide low start up current below 0.3mA and short shutdown delay time typ. 100ns. The KA3843AC is 8.4V(on) and 7.6V(off). The KA3843AC can operate within 100% duty cycle.



Internal Block Diagram



Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Supply voltage	V _{CC}	30	V
Output current	I _O	+1	A
Analog inputs (pin2, 3)	V _{I(ANA)}	-0.3 to 6.3	V
Error amp. output sink current	I _{SINK(EA)}	10	mA
Power dissipation	PD	1	W

Electrical Characteristics

(V_{CC} = 15V, R_T = 10KW, C_T = 3.3nF, T_A = 0°C to +70°C ,Unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
REFERENCE SECTION						
Output voltage	V _{REF}	T _J = 25°C, I _O = 1mA	4.9	5.0	5.1	V
Line regulation	R _{Line}	V _{CC} = 12V to 25V	-	6	20	mV
Load regulation	R _{LOAD}	I _O = 1mA to 20mA	-	6	25	mV
Output short circuit	I _{SC}	T _a = 25°C	-	-100	-180	mA
OSILLATOR SECTION						
Initial accuracy	F _O SC	T _J = 25°C	47	52	57	kHz
Voltage stability	ST _V	V _{CC} = 12V to 25V	-	0.2	1	%
Amplitude	V _O SC	V _{PIN4} , peak to peak	-	1.7	-	V
Discharge current	I _D ISCHG	T _J = 25°C	7.8	8.3	8.8	mA
CURRENT SENSE SECTION						
Gain	G _V	(Note2, 3)	2.85	3	3.15	V/V
Maximum input signal	V _I (MAX)	V _{PIN1} = 5V(Note2)	0.9	1.0	1.1	V
PSRR	PSRR	V _{CC} = 12V to 25V (Note1, 2)	-	70	-	dB
Input bias current	I _B IAS	V _{SENSE} =0V	-	-2	-10	uA
Delay to output	T _D	V _{PIN3} = 0 V to 2V (Note1)	-	100	200	ns

Notes:

1. These parameters, although guaranteed, are not 100% tested in production.
2. Parameter measured at trip point of latch with V_{FB} = 0V.

3. Gain defined as: $G_V = \frac{\Delta V_{COMP}}{\Delta V_{SENSE}}$; $0 \leq V_{SENSE} \leq 0.8V$

Electrical Characteristics (Continued)

(VCC = 15V, RT = 10KW, CT = 3.3nF, TA = 0°C to +70°C, Unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
ERROR AMPLIFIER SECTION						
Input voltage	VI	VPIN1 = 2.5V	2.42	2.50	2.58	V
Input bias current	IBIAS	VFB=0V	-	-0.3	-2	uA
Open loop gain	GVO	VO = 2V to 4V (Note1)	65	90	-	dB
Unity gain bandwidth	GBW	TJ= 25°C (Note1)	0.7	1	-	MHz
PSRR	PSRR	VCC = 12V to 25V (Note1)	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 Vref	-	0.7	1.1	V
OUTPUT SECTION						
Output Low Level	VOL	ISINK = 20mA	-	0.1	0.4	V
		ISINK = 200mA	-	1.5	2.2	V
Output high level	VOH	ISOURCE = 20mA	13	13.5	-	V
		ISOURCE = 200mA	12	13.5	-	V
Rise time	tR	TJ = 25°C, C1 = 1nF (Note1)	-	40	100	ns
Fall time	tF	TJ = 25°C, C1 = 1nF (Note1)	-	40	100	ns
Output voltage swing limit	VOLIM	VCC = 27V, C1 = 1nF	-	22	-	V
UNDER VOLTAGE LOCKOUT SECTION						
Start threshold	VTH	KA3882E	15	16	17	V
		KA3883E	7.8	8.4	9.0	V
Min. operating voltage (after turn on)	VTL	KA3882E	9	10	11	V
		KA3883E	7.0	7.6	8.2	V
PWM SECTION						
Maximum duty cycle	DMAX	KA3882E/KA3883E	94	96	100	%
Minimum duty cycle	DMIN	-	-	-	0	%
TOTAL STANDBY CURRENT						
Start-up current	IST	-	-	0.2	0.4	mA
Operating supply current	ICC	VPIN2 = VPIN3 = 0V	-	11	17	mA
VCC zener voltage	VZ	ICC = 25mA	-	29	-	V

* Adjust VCC above the start threshold before setting at 15V

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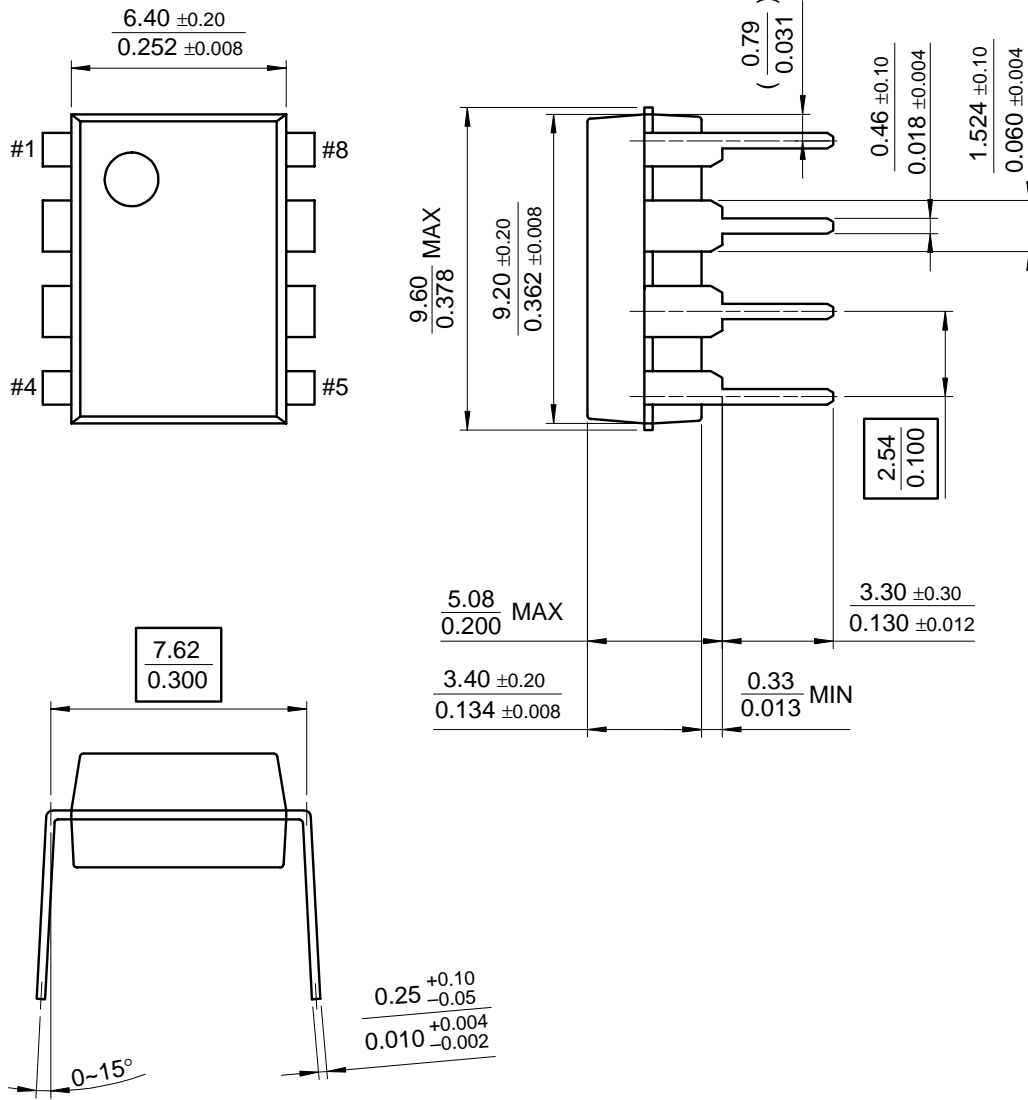
3. Gain defined as: $G_V = \frac{\Delta V_{COMP}}{\Delta V_{SENSE}}$; $0 \leq V_{SENSE} \leq 0.8V$

Mechanical Dimensions

Package

Dimensions in millimeters

8-DIP

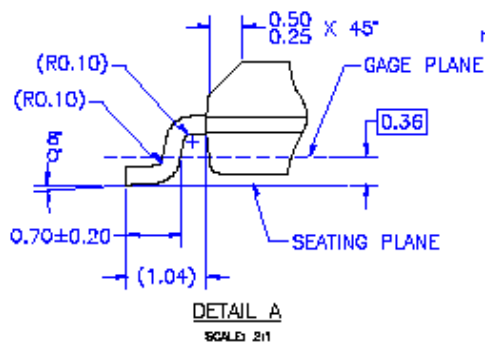
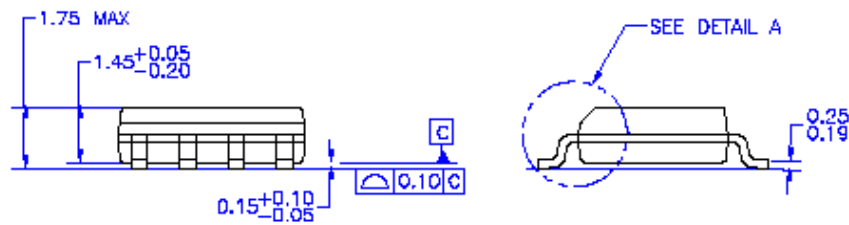
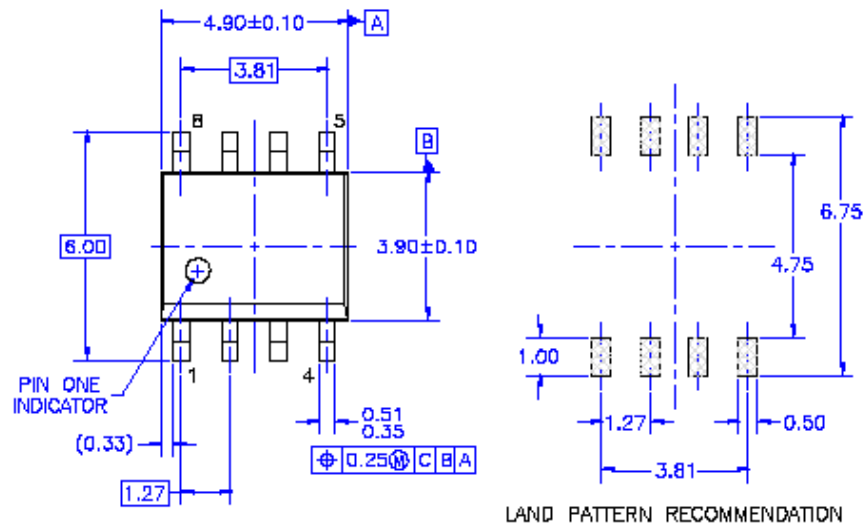


Mechanical Dimensions (Continued)

Package

Dimensions in millimeters

8-SOP



Ordering Information

Product Number	Package	Operating Temperature
KA3843AC	8-DIP	0 ~ +70°C
KA3843ACD	8-SOP	

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KA3843A

SMPS Controller

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General description

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Product	Product status	Pb-free Status	Pricing*	Package type	Leads	Packing method
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KA3843ACS	Full Production	 Full Production	\$0.445	DIP	8	RAIL
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* Fairchild 1,000 piece Budgetary Pricing

** A sample button will appear if the part is available through Fairchild's on-line samples program. If there is no sample button, please contact a [Fairchild distributor](#) to obtain samples



Indicates product with Pb-free second-level interconnect. For more information [click here](#).

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Product
KA3843ACS

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