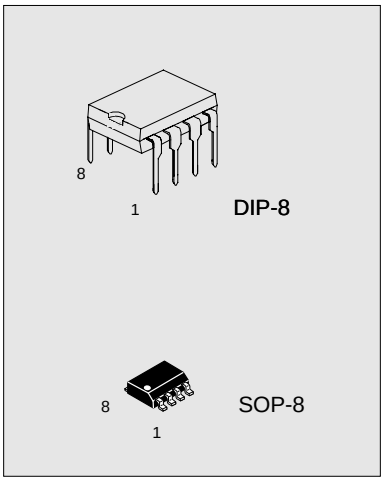
DC TO DC CONVERTER CONTROLLER

DESCRIPTION

The HK34063A is a monolithic regulator subsystem intended for use as DC to DC converter. This device contains a temperature compensated band-gap reference, a duty-cycle control oscillator, driver and high current output switch.

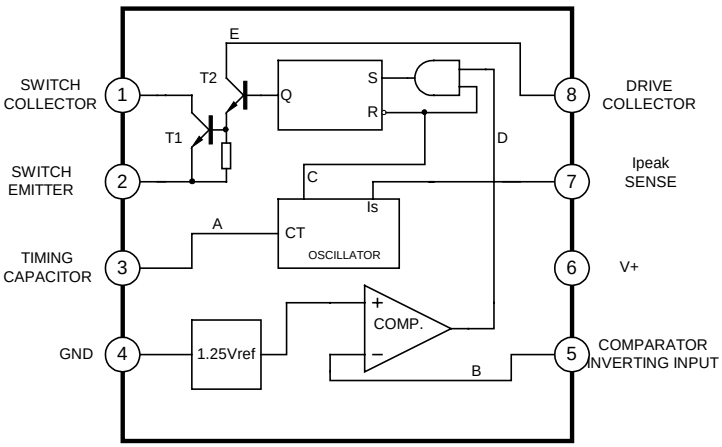
It can be used for step down, step-up or inverting switching regulators as well as for series pass regulators.



FEATURES

*Operation from 3.0V to 24V
*Short circuit current limiting
*Low standby current
*Output switch current of 0.8A without external transistors
*Frequency of operation from 100Hz to 100kHz
*Step-up, step-down or inverting switch regulators

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS(Ta=25°C)

Characteristic	Symbol	Value	Unit
Supply Voltage	Vcc	24	V
Comparator input voltage range	Vi(comp)	-0.3~+24	V
Switch collector voltage	Vc(sw)	24	V
Switch Emitter Voltage	Ve(sw)	24	V
Switch collector to emitter voltage	Vce(sw)	24	V
Driver collector Voltage	Vc(dr)	24	V
Switch current	Isw	0.8	A

ELECTRICAL CHARACTERISTICS(Ta=25°C)

(Vcc=5.0V,Ta=0~70°C, unless otherwise specified)

Characteristic	Symbol	Test Condition	Min	Typ.	Max	Unit
Oscillator						
Charging Current	Ichg	Vcc=5 to 24V,Ta=25°C	22	31	42	μA
Discharging Current	Idischg	Vcc=5 to 24V,Ta=25°C	140	190	260	μA
Oscillator Amplitude	Vosc	Ta=25°C		0.5		V
Discharge to charge current ratio	K	V7=Vcc,Ta=25°C	5.2	6.1	7.5	
Current limit sense voltage	Vsense	Ichg=Idischg Ta=25°C	250	300	350	mV
Output Switch						
Saturation voltage 1(note)	Vce(sat)1	Isw=0.80A Vc(driver)=Vc(sw)		0.95	1.3	V
Saturation voltage 2(note)	Vce(sat)2	Isw=0.80A Vc(driver)=50mA		0.45	0.7	V
DC current Gain(note)	Gi(DC)	Isw=0.80A Vce=5.0V,Ta=25°C	50	180		
Collector off state crrent(note)	C(off)	Vce=24V,Ta=25°C		10	100	nA
Comparator						
Threshold Voltage	Vth		1.21	1.24	1.29	V
Threshold voltage line regulation	Vth	Vcc=3~24V		2.0	5.0	mV
Input Bias current	Ibias	Vi=0V		50	400	nA
Total Device						
Supply current	Icc	Vcc=5~24V Ct=0.001 V7=Vcc Vc>Vth Pin2=GND		2.7	4.5	mA

NOTE:

Output switch tests are performed under pulsed conditions to minimize power dissipation.

APPLICATION CIRCUIT

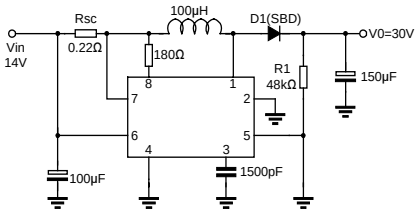


Fig.1 Step-up Application

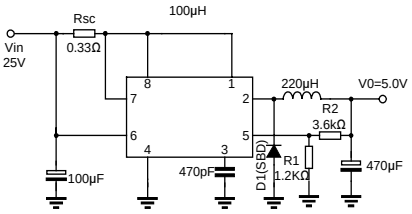


Fig.2 Step-down Application

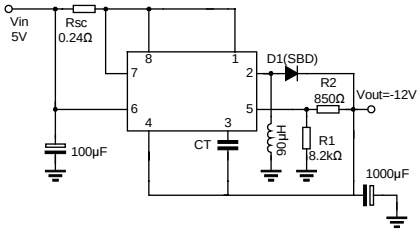


Fig.3 Inverting Application