



DESCRIPTION

The SE34063 is a monolithic control circuit containing the primary functions required for DC-to-DC converter. The device consists of an internal temperature compensated reference, comparator, controlled duty cycle oscillator with an active current limit circuit, driver and high current output switch. This was specifically designed to be incorporated in Step-up, and Step-down and Voltage-Inverting applications with a minimum number of external components.

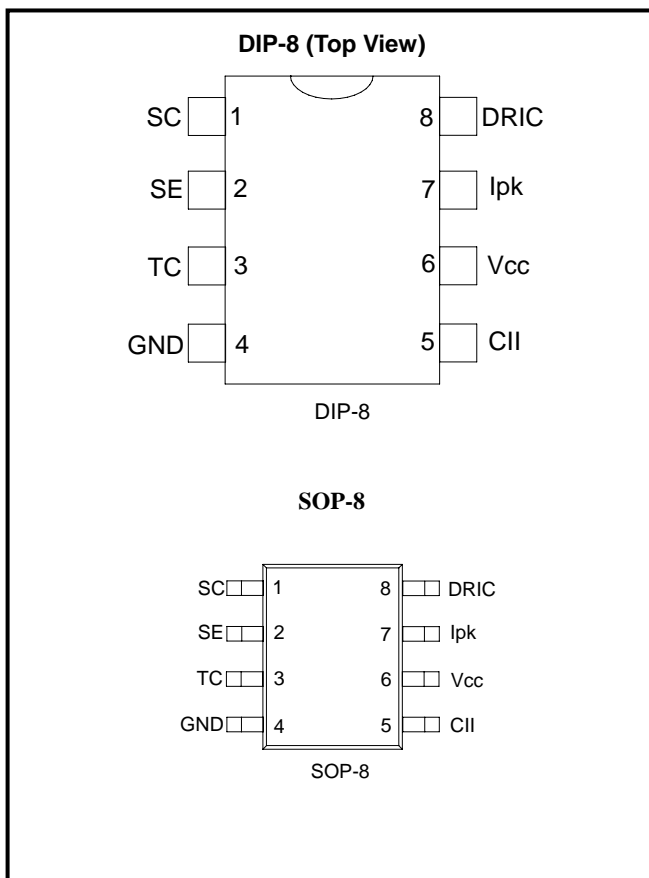
FEATURES

- Operation from 3.0V to 35V input
- Dip-8 Packages
- Low Standby Current
- Output Switch Current to 1.5A
- Output Voltage Adjustable
- Frequency Operation to 100KHz
- Precision 2% Reference

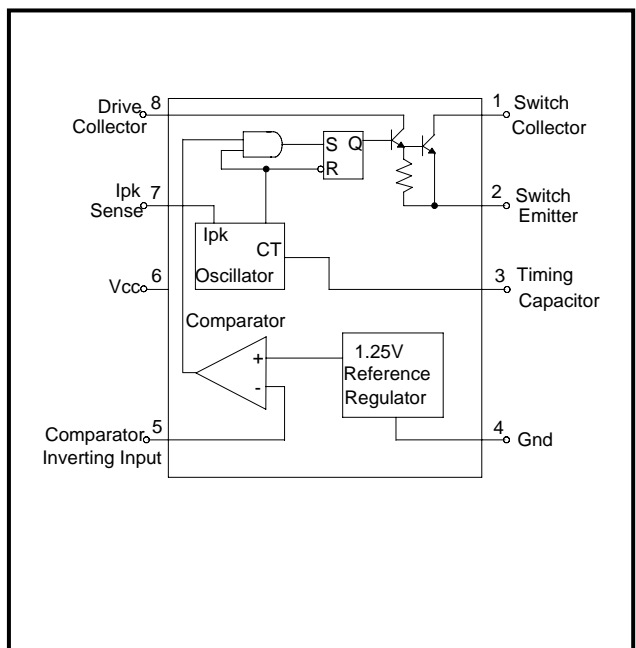
APPLICATION

- Battery charges
- Power supply adapter
- DC-to-DC converter, such as 12 to 5V.

PIN CONFIGURATIONS



BLOCK DIAGRAM





Absolute Maximum Ratings

- Power Supply Voltage ----- 35V
- Comparator Input Voltage Range ----- -0.3 to +35V
- Switch Collector Voltage ----- 35V
- Switch Emitter Voltage (V_{pin1}=35V) ----- 35V
- Switch Collector to Emitter Voltage ----- 35V
- Driver Collector Voltage ----- 35V
- Driver Collector Current ----- 100mA
- Switch Current ----- 1.5A
- Power Dissipation and Thermal Characteristics
 - Plastic Package
 - T_A = 25°C ----- 1.25W
 - Thermal Resistance ----- 100°C/W
- Operating Junction Temperature ----- +150°C
- Operating Ambient Temperature Range ----- 0 to +70°C
- Storage Temperature Range ----- -65 to +150°C

Electrical Characteristics

(V_{cc}=5.0V, T_A=25°C, C_T=1nF, unless otherwise specified.)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
1.25V Reference						
Reference Voltage	V _{ref}	V _{cc} =5V-25V	1.225	1.25	1.275	V
Comparator						
Threshold Voltage	V _{th}		1.225	1.25	1.275	V
Output Switch (Note)						
Saturation Voltage, Darlington Connection	V _{ce(sat)}	I _{sw} =1.0A, Pin1, 8 connected	-	1.0	1.3	V
Saturation Voltage, Darlington Connection	V _{ce(sat)}	I _{sw} =1.0A, R _{pin8} =82Ω to V _{cc} , Forced β=20	-	0.45	0.7	V
DC Current Gain	H _{fe}	I _{sw} =1.0A, V _{ce} =5.0V	50	75	-	-
Collector Off-State Current	I _{c(off)}	V _{ce} =35V	-	0.01	100	μA
Oscillator						
Frequency	f _{osc}	V _{pin5} =0V	24	33	42	kHz
Charge Current	I _{chg}	V _{cc} =5.0v to 35V	24	35	42	μA
Discharge Current	I _{dischg}	V _{cc} =5.0v to 35V	140	220	260	μA
Discharge to Charge Current Ratio	I _{dischg} /I _{chg}	Pin7 to V _{cc}	5.2	6.5	7.5	-
Current Limit Sense Voltage	V _{ipk(sence)}	I _{chg} =I _{dischg}	250	300	350	mV
Total Device						
Supply Current	I _{cc}	(V _{cc} =5 to 35V, Pin7=V _{cc} , V _{pin5} >V _{th} , Pin2=GND, the others open)	-	-	4.0	mA

Note: Low duty cycle pulse techniques are used during test to maintain junction temperature as close to ambient temperature as possible.

Preliminary and all contents are subject to change without prior notice.

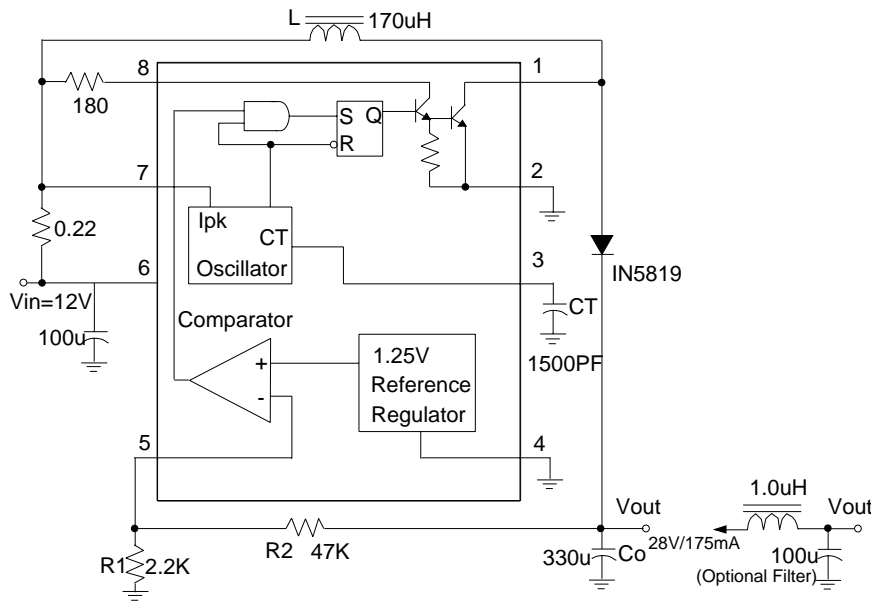


TYPICAL APPLICATION CIRCUIT

Step-Up Converter

Parameter	Test Conditions	Type	Unit
Line Regulation	Vin=8V to 16V, Io=175mA	30±0.05%	mV
Load Regulation	Vin=12V, Io=75mA to 175mA	10±0.017%	mV
Output Ripple	Vin=12V, Io=175mA	400	mVp-p
Efficiency	Vin=12V, Io=175mA	87.7%	-
Output Ripple with Optional Filter	Vin=12V, Io=175mA	40	mVp-p

CIRCUIT



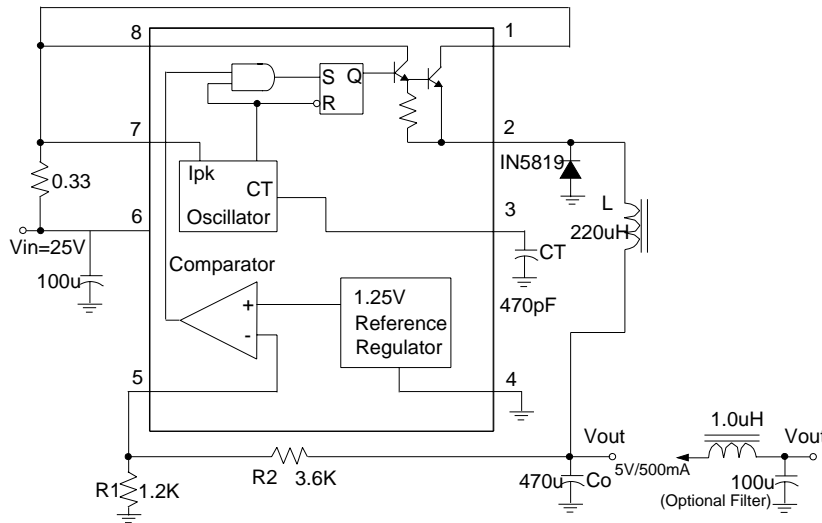
Step-Down Converter

Parameter	Test Conditions	Type	Unit
Line Regulation	Vin=15V to 25V, Io=500mA	12±0.12%	mV
Load Regulation	Vin=25V, Io=50mA to 500mA	3.0±0.03%	mV
Output Ripple	Vin=25V, Io=500mA	120	mVp-p
Efficiency	Vin=25V, Io=500mA	83.7%	-
Short Circuit Current	Vin=25V, RL=0.1Ω	1.1	A
Output Ripple with Optional Filter	Vin=25V, Io=500mA	40	mVp-p

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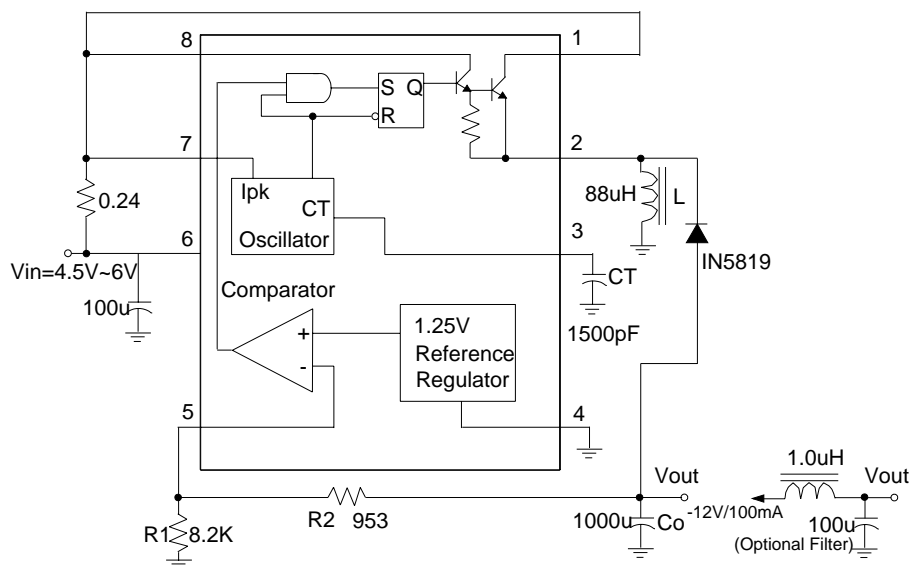
CIRCUIT



Voltage Inverting Converter

Parameter	Test Conditions	Type	Unit
Line Regulation	$V_{in}=4.5V$ to $6.0V$, $I_o=100mA$	$3.0 \pm 0.012\%$	mV
Load Regulation	$V_{in}=5V$, $I_o=10mA$ to $100mA$	$0.022 \pm 0.09\%$	mV
Output Ripple	$V_{in}=5V$, $I_o=100mA$	500	mVp-p
Efficiency	$V_{in}=5V$, $I_o=100mA$	62.2%	-
Short Circuit Current	$V_{in}=5V$, $R_L=0.1 \Omega$	0.91	A
Output Ripple with Optional Filter	$V_{in}=5V$, $I_o=100mA$	70	mVp-p

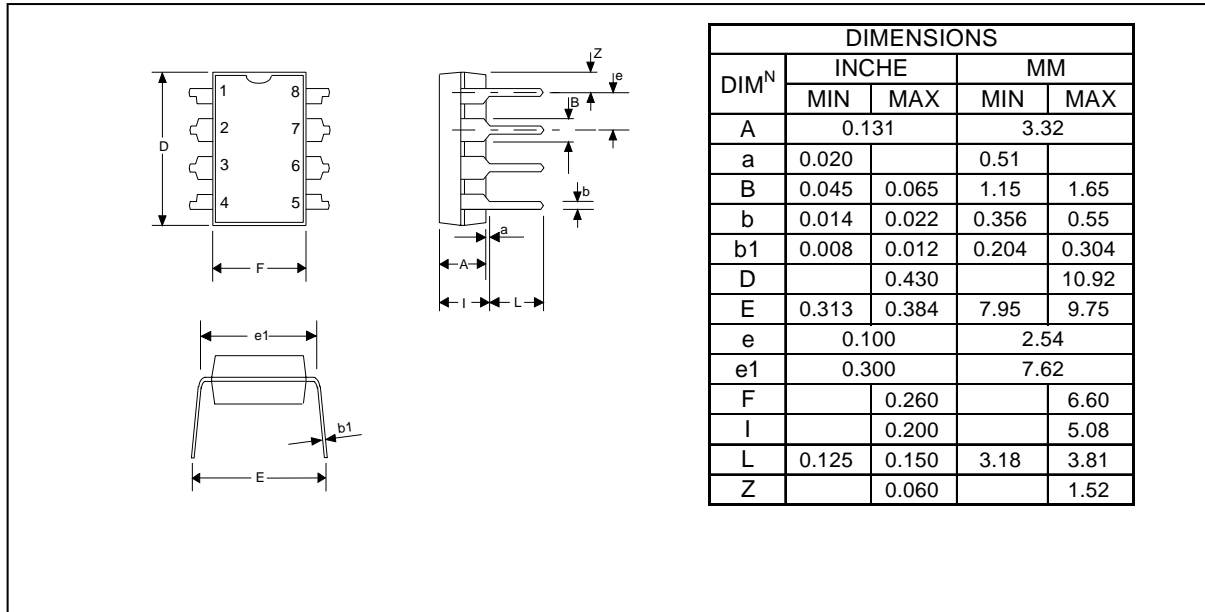
CIRCUIT



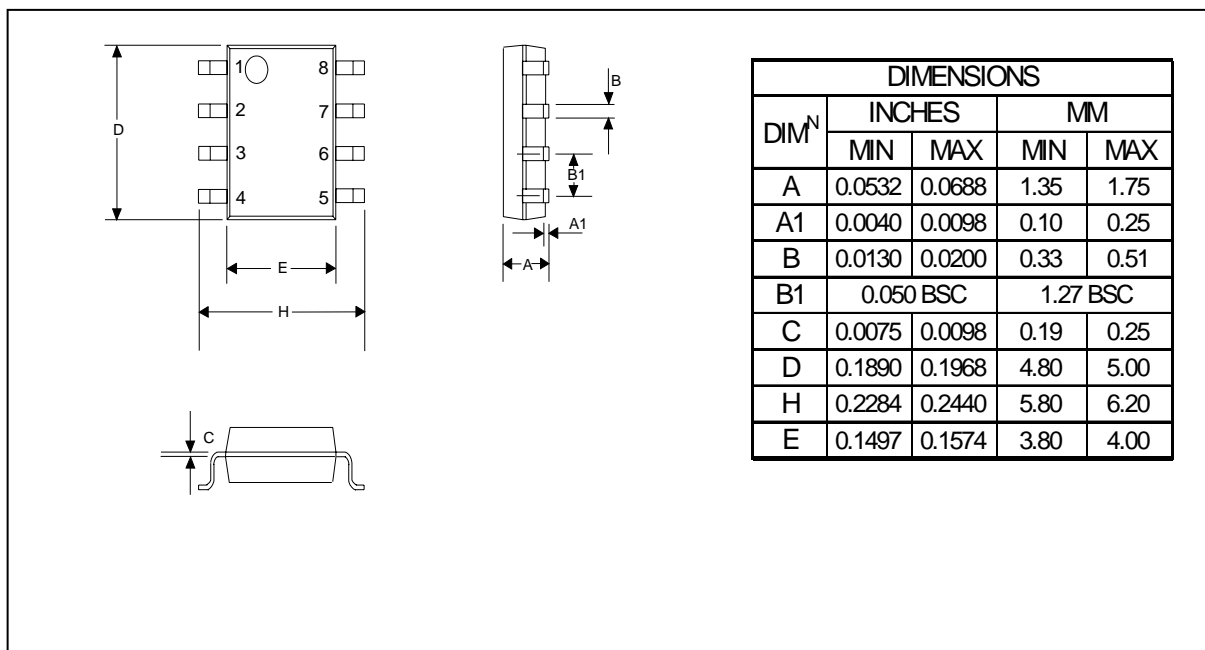
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OUTLINE DRAWING DIP-8



OUTLINE DRAWING SOP-8



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