

1.5A, Step Down Switching Regulator

General Description

The ASD34063 Series is a monolithic control circuit containing the primary functions required for DC-to-DC converters. These devices consist of an internal temperature compensated reference, comparator, controlled duty cycle oscillator. With an active current limit circuit, driver and high current output switch. This series of devices were specifically designed to be incorporated in Step-Down, Step-Up, and Voltage-Inverting applications with a minimum number of external components.

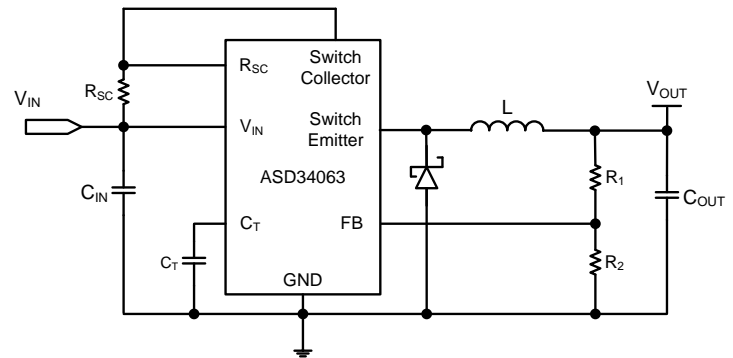
Features

- V_{IN} range: 3.0 – 40V
- Low standby current
- Output switch current up to 1.5A
- Adjustable output voltage
- Programmable switching frequency
- Excellent load regulation
- Current limit protection
- Thermal shutdown protection
- -40°C to +85°C temperature range
- Available in SOIC-8 package

Applications

- Point of load
- Consumer
- Industrial

Typical Application

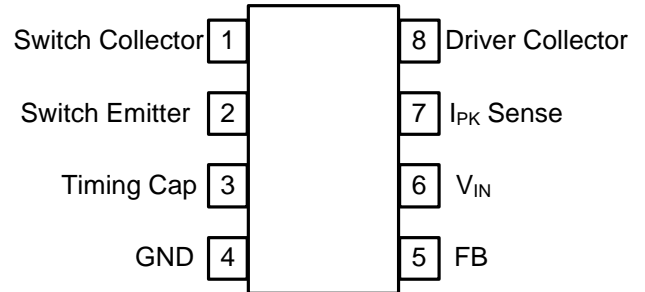


Pin Description

Pin #	Description
1	Switch Collector node
2	Switch Emitter node
3	Timing Cap
4	Ground
5	Feedback pin.
6	Input supply voltage.
7	Current sense
8	Driver collector

Pin Configuration

(Top View)



Absolute Maximum Ratings ⁽¹⁾

Maximum Input Supply Voltage	-0.3V to 40V
Feedback Voltage (FB)	-0.3V to 40V
Switch Collector Voltage	-0.3V to 40V
Switch Emitter Voltage	-0.3V to 40V
Driver Collector Voltage	-0.3V to 40V
Driver Collector Current	100mA
Switch Current	1.5A

Recommended Operating Conditions

Input Voltage	3.0 to 40V
Ambient Operating Temperature.....	-40°C to +85°C

Thermal Information ⁽²⁾

SOIC-8 θ_{JA}	100°C/W
Storage Temperature Range	-65 to 150°C
Junction Temperature	+150°C

Electrical Characteristics

UNLESS OTHERWISE NOTED: $V_{IN}=12V$; $V_{OUT}=5V$; TYPICAL VALUES ARE $T_A=25^\circ C$

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Switching frequency	F_{OSC}	$V_{FB}=GND$; $C_T=1.0nF$	24	33	42	kHz
Charging current	I_{CHG}	$V_{IN}=5V - 40V$	24	33	42	μA
Discharge current	I_{DISCHG}	$V_{IN}=5V - 40V$	140	220	260	μA
Discharge to charge current ratio	I_{DISCHG} / I_{CHG}	$I_{PK}=V_{IN}$	5.2	6.5	7.5	-
Current sense voltage	$V_{IPK(SENSE)}$	$I_{DISCHG} = I_{CHG}$	250	300	350	mV
Saturation Voltage	$V_{CE(SAT)}$	$I_{OUT}=1.0A$		1.0	1.3	V
Saturation Voltage	$V_{CE(SAT)}$	$I_{OUT} = 1.0 A$, $R_{pin8} = 82\Omega$ to V_{IN} , Forced $\beta = 20$		0.45	0.7	V
DC current gain	h_{FE}	$I_{OUT} = 1.0 A$, $V_{CE} = 5.0$	50	75		
Collector off state current	$I_{C(off)}$	$V_{CE}=40V$		40	100	μA
Feedback Voltage	V_{FB}		1.225	1.25	1.275	V
Line regulation		$V_{IN}=3V - 40V$		1.4	5.0	mV
Feedback input bias current	I_{FB}			-20	-400	nA
Supply current	I_{IN}	$V_{IN}= 5.0 - 40V$, $C_T=1.0 nF$, Pin7= V_{IN} pin 5>> V_{FB} , Pin 2 = GND, remaining pins open			4.0	mA

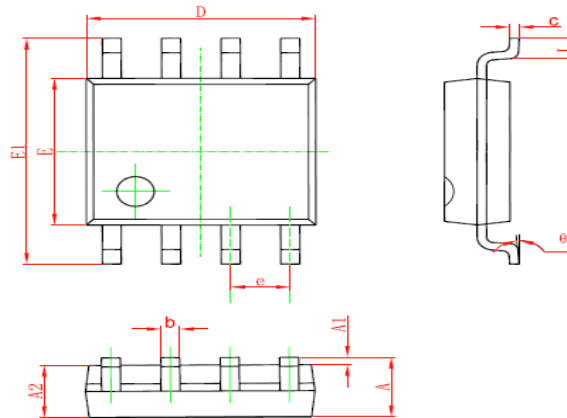
Notes:

1. Stresses above those listed in Absolute Maximum Ratings may cause permanent damage to the device.
2. Measured on approximately 1" square of 1oz copper
3. The ASD34063 is guaranteed to meet performance specifications over the -40°C to +125°C operating temperature range and is assured by design, characterization, and correlation with statistical process control.
4. Low duty cycle pulse testing with Kelvin connection required.

Ordering Information

Device	Package	Output Voltage	Packing Method & Quantity
ASD34063M8	SOIC-8	Adj	2500 Tape & Reel

Outline Drawing and Landing Pattern – SOIC-8



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270 (BSC)		0.050 (BSC)	
L	0.400	1.270	0.016	0.050
θ	0° - 8°		0° - 8°	

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