MC34063A/MC33063A

SMPS Controller

Features

- Operation from 3.0 to 40V input
- Short circuit current limiting
- Low standby current
- Output switch current of 1.5A without external transistors
- Output voltage adjustable
- Frequency of operation from 100Hz to 100KHz
- Step up, Step down or inverting switching regulators

Description

The MC34063A/MC33063A is a monolithic regulator sub system intended for use as DC to DC converter. This device contains a temperature compensated bandgap 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.

8-DIP

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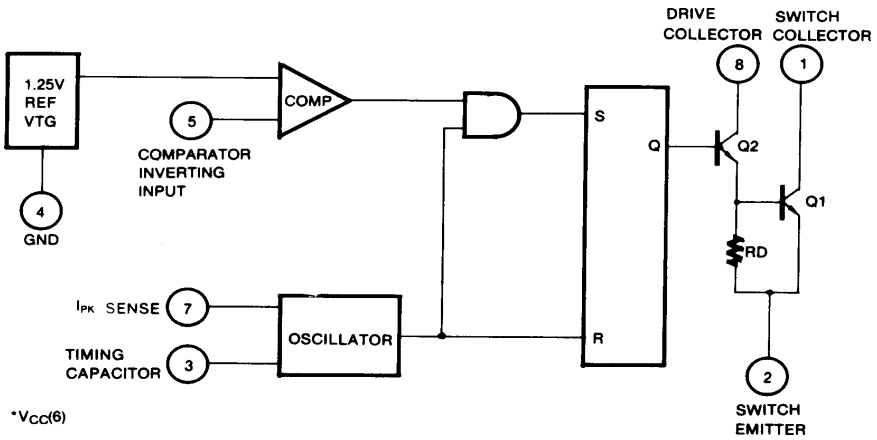
8-SOP

1

Internal Block Diagram



Rev. 1.0.2

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Supply Voltage	V_{CC}	40	V
Comparator Input Voltage Range	$V_{I(COMP)}$	- 0.3 ~ + 40	V
Switch Collector Voltage	$V_{C(SW)}$	40	V
Switch Emitter Voltage	$V_{E(SW)}$	40	V
Switch Collector To Emitter Voltage	$V_{CE(SW)}$	40	V
Driver Collector Voltage	$V_{C(DR)}$	40	V
Switch Current	I_{SW}	1.5	A
Storage Temperature Range	T_{STG}	- 65 ~ + 150	°C

Electrical Characteristics

(V_{CC} = 5.0V, T_A = 0°C to +70°C for the MC34063, T_A= -40°C to the +85°C for the MC33063, unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
OSCILLATOR						
Charging Current	I_{CHG}	V_{CC} = 5 to 40V T_A = 25°C	22	31	42	µA
Discharging Current	I_{DISCHG}	V_{CC} = 5 to 40V T_A = 25°C	140	190	260	µA
Oscillator Amplitude	$V_{(OSC)}$	T_A = 25°C	-	0.5	-	V
Discharge To Charge Current Ratio	K	V_7 = V_{CC} , T_A = 25°C	5.2	6.1	7.5	-
Current Limit Sense Voltage	$V_{SENSE(C.L)}$	I_{CHG} = I_{DISCHG} T_A = 25°C	250	300	350	mV
OUTPUT SWITCH						
Saturation Voltage 1 (Note)	$V_{CE(SAT)}1$	I_{SW} = 1.0A V_C(driver) = V_C(SW)	-	0.95	1.3	V
Saturation Voltage 2 (Note)	$V_{CE(SAT)}2$	I_{SW} = 1.0A, V_C(driver) = 50mA	-	0.45	0.7	V
DC Current Gain (Note)	$G_{I(DC)}$	I_{SW} = 1.0A, V_{CE} = 5.0V, T_A = 25°C	50	180	-	-
Collector off State Current (Note)	$I_{C(OFF)}$	V_{CE} = 40V, T_A = 25°C	-	0.01	100	µA
COMPARATOR						
Threshold Voltage	V_{TH}	-	1.21	1.24	1.29	V
Threshold Voltage Line Regulation	ΔV_{TH}	V_{CC} = 3 to 40V	-	2.0	5.0	mV
Input Bias Current	I_{BIAS}	V_I = 0V	-	50	400	nA
TOTAL DEVICE						
Supply Current MC34063	I_{CC}	V_{CC} = 5 to 40V C_T = 0.001uF V_7 = V_{CC}, V_5>V_{TH} pin2 = GND	-	-	4.0	mA
MC33063			-	-	5.0	

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

Typical Performance Characteristics

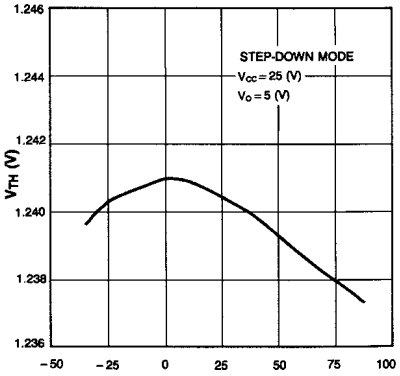


Figure 1. Temperature Drift (V_{TH})

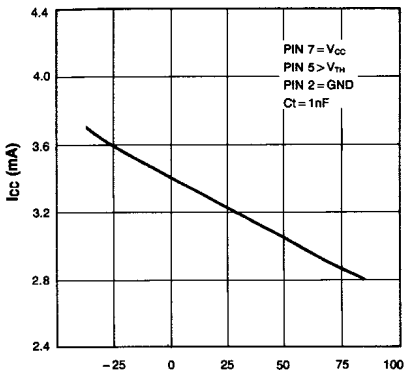
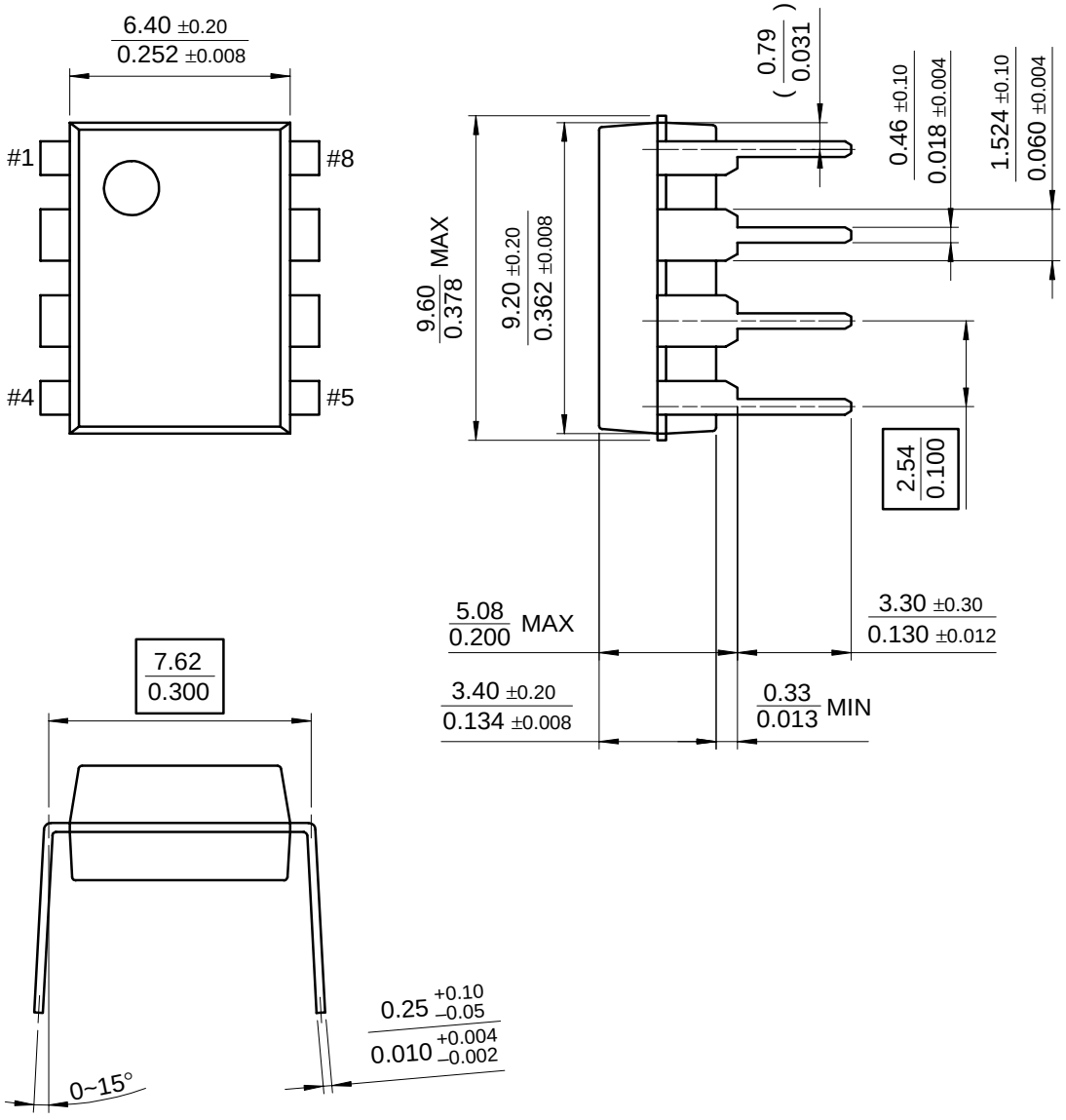


Figure 2. Temperature Drift (I_{OC})

Mechanical Dimensions

Package

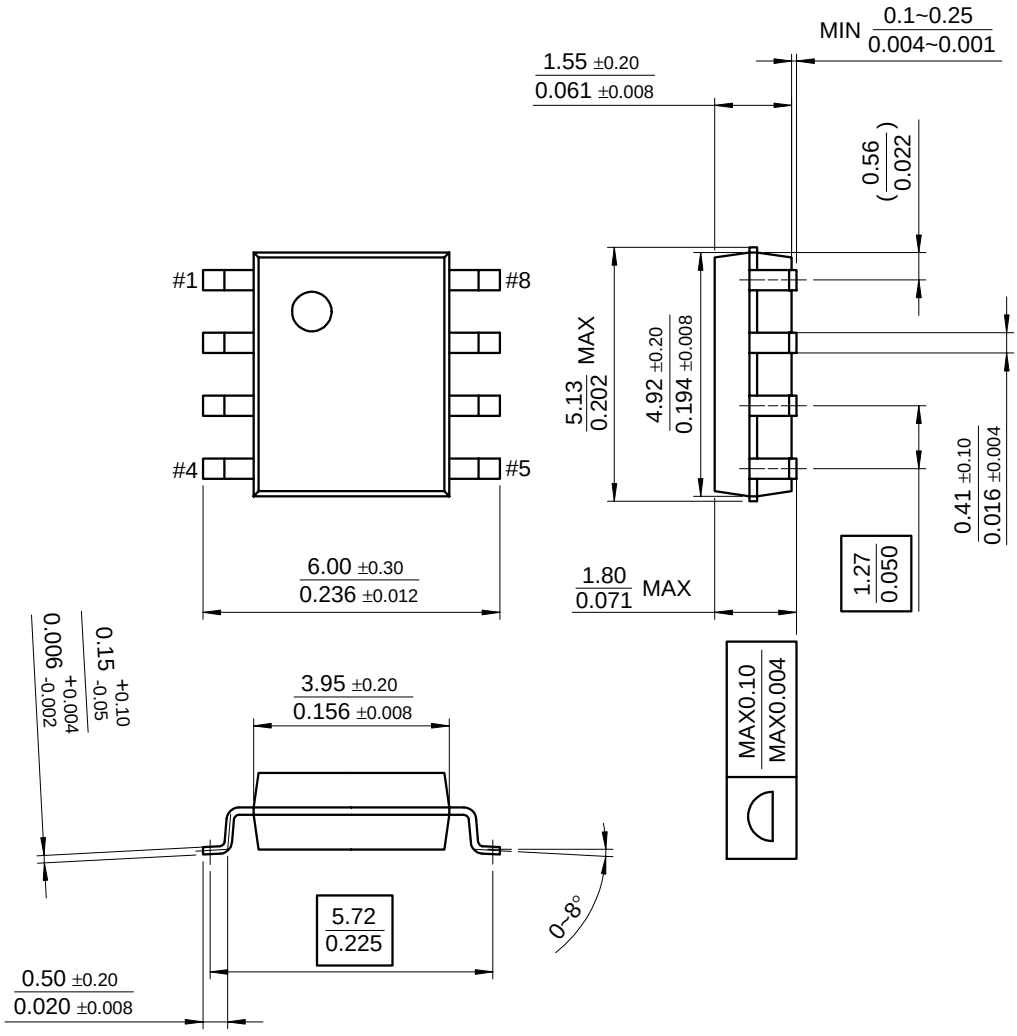
8-DIP



Mechanical Dimensions (Continued)

Package

8-SOP



Ordering Informatio

Product Number	Package	Operating Temperature
MC34063AP	8-DIP	0 ~ + 70°C
MC34063AD	8-SOP	
MC33063AP	8-DIP	-40 ~ + 85°C
MC33063AD	8-SOP	