

# MC34063A/MC33063A

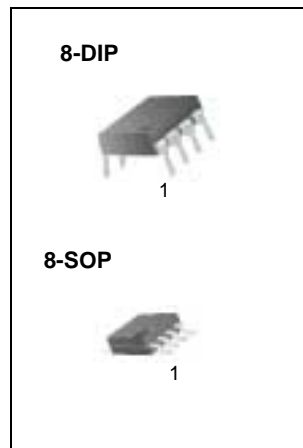
## SMPS Controller

### Features

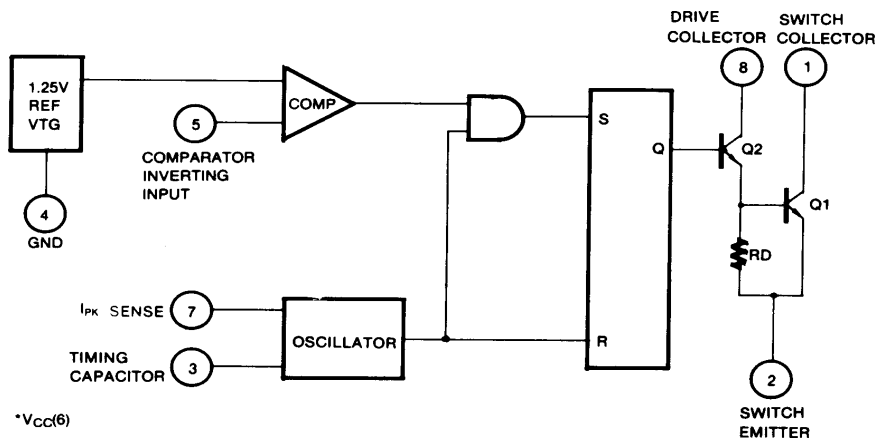
- Operation from 3.0 to 40V input
- Short circuit current limiting
- Low standby current
- Output switch current of 1.5A without external transistors
- Output voltage adjustable
- Frequency of operation from 100Hz to 100KHz
- Step up, Step down or inverting switching regulators

### 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.



### Internal Block Diagram



## Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Supply Voltage	V <sub>CC</sub>	40	V
Comparator Input Voltage Range	V <sub>I</sub> (COMP)	- 0.3 ~ + 40	V
Switch Collector Voltage	V <sub>C</sub> (SW)	40	V
Switch Emitter Voltage	V <sub>E</sub> (SW)	40	V
Switch Collector To Emitter Voltage	V <sub>CE</sub> (SW)	40	V
Driver Collector Voltage	V <sub>C</sub> (DR)	40	V
Switch Current	I <sub>SW</sub>	1.5	A
Storage Temperature Range	T <sub>STG</sub>	- 65 ~ + 150	°C

## Electrical Characteristics

(V<sub>CC</sub> = 5.0V, T<sub>A</sub> = 0°C to +70°C for the MC34063, T<sub>A</sub> = -40°C to the +85°C for the MC33063, unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>OSCILLATOR</b>						
Charging Current	I <sub>CHG</sub>	V <sub>CC</sub> = 5 to 40V T <sub>A</sub> = 25°C	22	31	42	μA
Discharging Current	I <sub>DISCHG</sub>	V <sub>CC</sub> = 5 to 40V T <sub>A</sub> = 25°C	140	190	260	μA
Oscillator Amplitude	V(OSC)	T <sub>A</sub> = 25°C	-	0.5	-	V
Discharge To Charge Current Ratio	K	V <sub>7</sub> = V <sub>CC</sub> , T <sub>A</sub> = 25°C	5.2	6.1	7.5	-
Current Limit Sense Voltage	V <sub>SENSE</sub> (C.L)	I <sub>CHG</sub> = I <sub>DISCHG</sub> T <sub>A</sub> = 25°C	250	300	350	mV
<b>OUTPUT SWITCH</b>						
Saturation Voltage 1 (Note)	V <sub>CE</sub> (SAT)1	I <sub>SW</sub> = 1.0A V <sub>C</sub> (driver) = V <sub>C</sub> (SW)	-	0.95	1.3	V
Saturation Voltage 2 (Note)	V <sub>CE</sub> (SAT)2	I <sub>SW</sub> = 1.0A, V <sub>C</sub> (driver) = 50mA	-	0.45	0.7	V
DC Current Gain (Note)	G <sub>I</sub> (DC)	I <sub>SW</sub> = 1.0A, V <sub>CE</sub> = 5.0V, T <sub>A</sub> = 25°C	50	180	-	-
Collector off State Current (Note)	I <sub>C</sub> (OFF)	V <sub>CE</sub> = 40V, T <sub>A</sub> = 25°C	-	0.01	100	μA
<b>COMPARATOR</b>						
Threshold Voltage	V <sub>TH</sub>	-	1.21	1.24	1.29	V
Threshold Voltage Line Regulation	ΔV <sub>TH</sub>	V <sub>CC</sub> = 3 to 40V	-	2.0	5.0	mV
Input Bias Current	I <sub>BIAS</sub>	V <sub>I</sub> = 0V	-	50	400	nA
<b>TOTAL DEVICE</b>						
Supply Current MC34063	I <sub>CC</sub>	V <sub>CC</sub> = 5 to 40V C <sub>T</sub> = 0.001μF V <sub>7</sub> = V <sub>CC</sub> , V <sub>5</sub> > V <sub>TH</sub> pin2 = GND	-	-	4.0	mA
MC33063			-	-	5.0	

**Note :**

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

## Typical Performance Characteristics

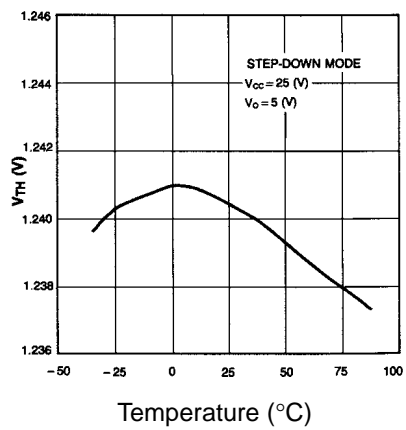


Figure 1. Temperature Drift ( $V_{TH}$ )

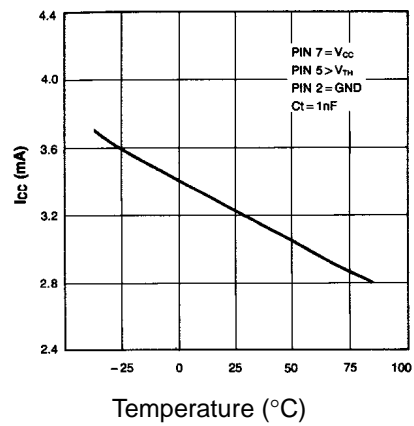
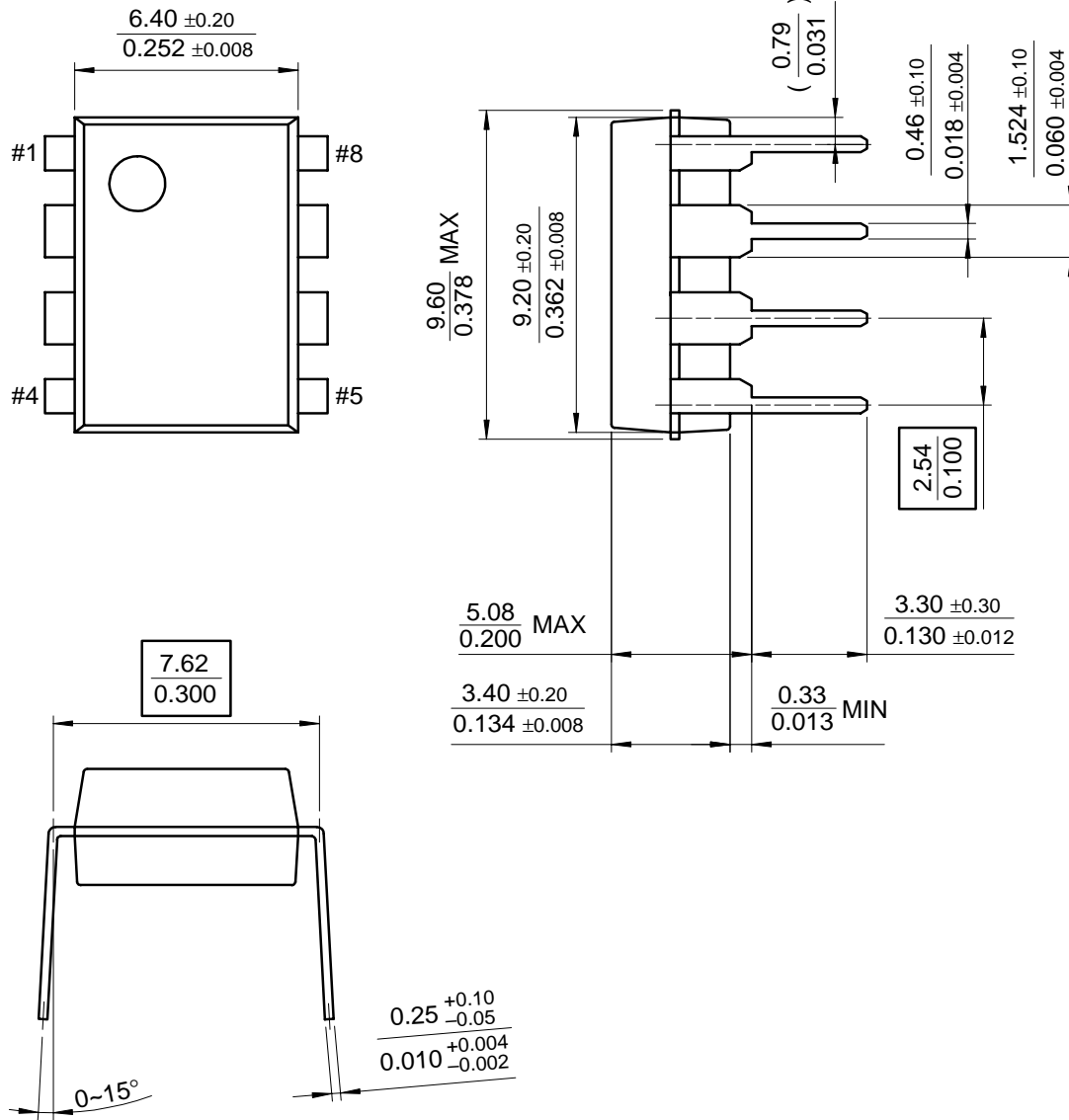


Figure 2. Temperature Drift ( $I_{CC}$ )

# Mechanical Dimensions

## Package

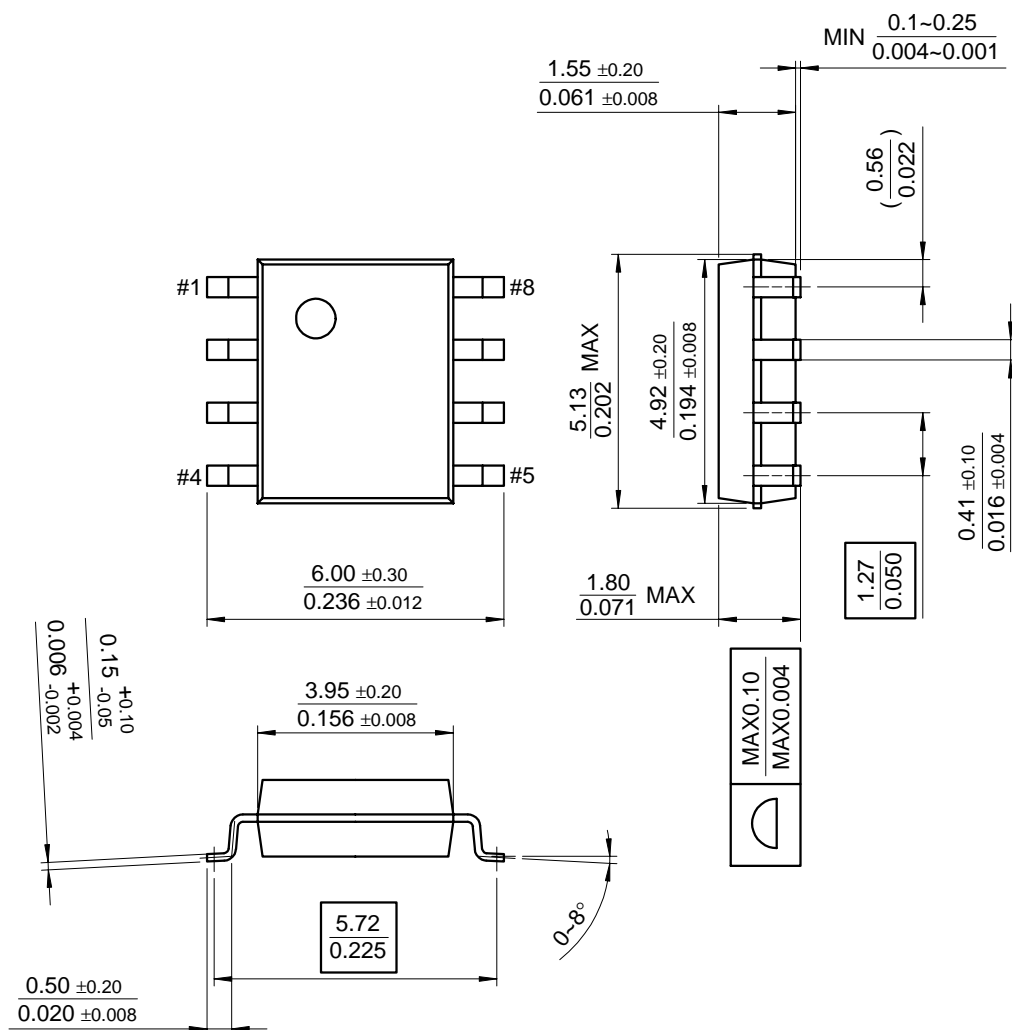
### 8-DIP



# Mechanical Dimensions (Continued)

## Package

### 8-SOP



**Ordering Informatio**

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



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