

# MC34063A/MC33063A

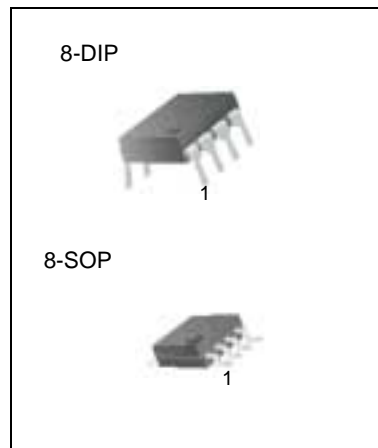
## SMPS Controller

### Features

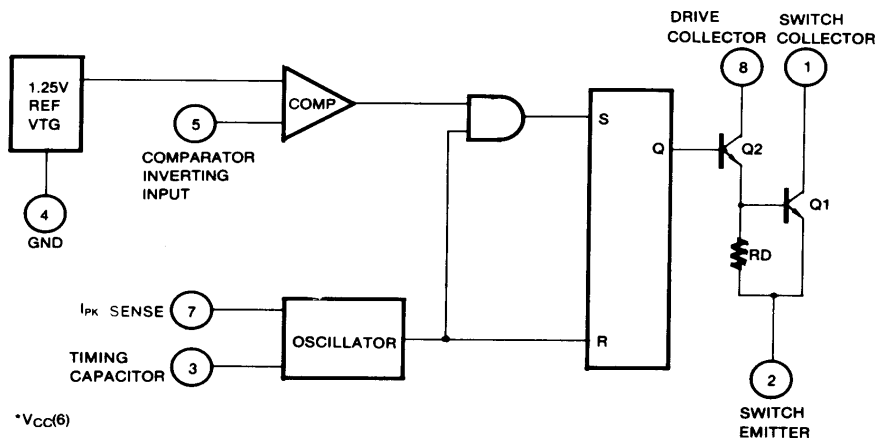
- Operation from 3.0 to 40V input
- Short circuit current limiting
- Low standby current
- Output switch current of 1.5A without external transistors
- Output voltage adjustable
- Frequency of operation from 100Hz to 100KHz
- Step up, Step down or inverting switching regulators

### Description

The MC34063A 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	$V_{CC}$	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	ISW	1.5	A

## Electrical Characteristics

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>OSCILLATOR</b>						
Charging Current	ICHG	$V_{CC} = 5$ to $40V$ $T_A = 25^{\circ}C$	22	31	42	$\mu A$
Discharging Current	IDISCHG	$V_{CC} = 5$ to $40V$ $T_A = 25^{\circ}C$	140	190	260	$\mu A$
Oscillator Amplitude	$V_{(OSC)}$	$T_A = 25^{\circ}C$		0.5	-	V
Discharge To Charge Current Ratio	K	$V_7 = V_{CC}$ , $T_A = 25^{\circ}C$	5.2	6.1	7.5	-
Current Limit Sense Voltage	$V_{SENSE(C.L)}$	ICHG = IDISCHG $T_A = 25^{\circ}C$	250	300	350	mV
<b>OUTPUT SWITCH</b>						
Saturation Voltage 1 (Note)	$V_{CE(SAT)1}$	ISW = 1.0A $V_{C(driver)} = V_{C(SW)}$	-	0.95	1.3	V
Saturation Voltage 2 (Note)	$V_{CE(SAT)2}$	ISW = 1.0A, $V_{C(driver)} = 50mA$	-	0.45	0.7	V
DC Current Gain (Note)	$G_{I(DC)}$	ISW = 1.0A, $V_{CE} = 5.0V$ , $T_A = 25^{\circ}C$	50	180	-	-
Collector off State Current (Note)	$I_{C(OFF)}$	$V_{CE} = 40V$ , $T_A = 25^{\circ}C$	-	10	100	nA
<b>COMPARATOR</b>						
Threshold Voltage	$V_{TH}$	-	1.21	1.24	1.29	V
Threshold Voltage Line Regulation	$\Delta V_{TH}$	$V_{CC} = 3$ to $40V$	-	2.0	5.0	mV
Input Bias Current	IBIAS	$V_I = 0V$		50	400	nA
<b>TOTAL DEVICE</b>						
Supply Current MC34063	ICC	$V_{CC} = 5$ to $40V$ $C_T = 0.001\mu F$ $V_7 = V_{CC}$ , $V_5 > V_{TH}$ pin2 = GND	-	-	4.0	mA
MC33063			-	-	5	

**Note :**

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

## Typical Performance Characteristics

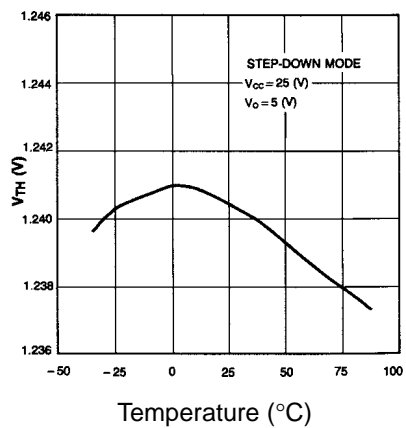


Figure 1. Temperature Drift ( $V_{TH}$ )

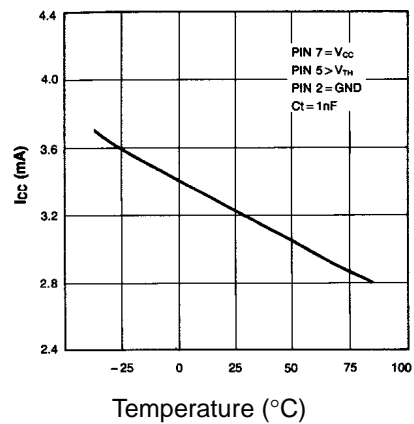
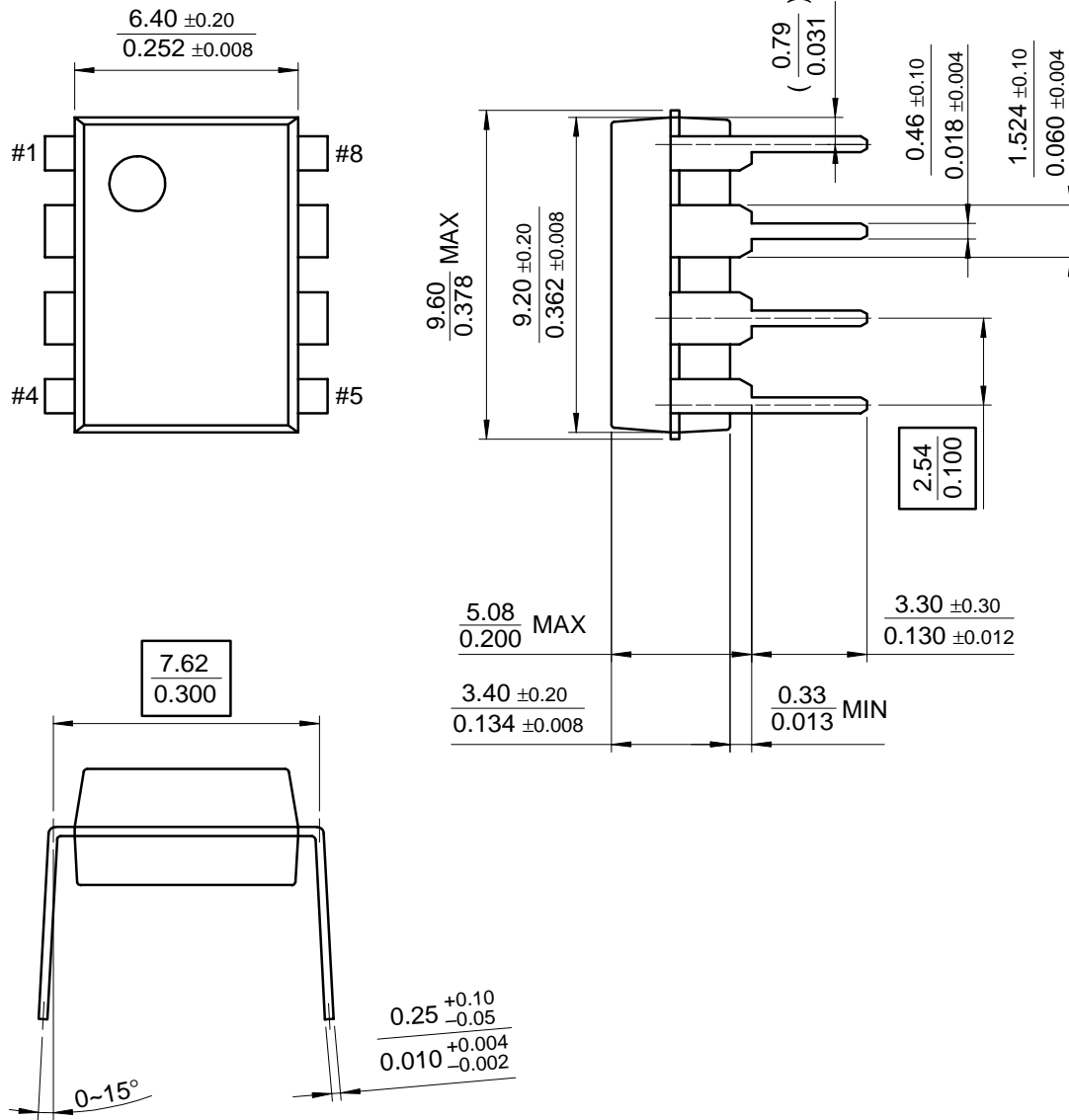


Figure 2. Temperature Drift ( $I_{CC}$ )

# Mechanical Dimensions

## Package

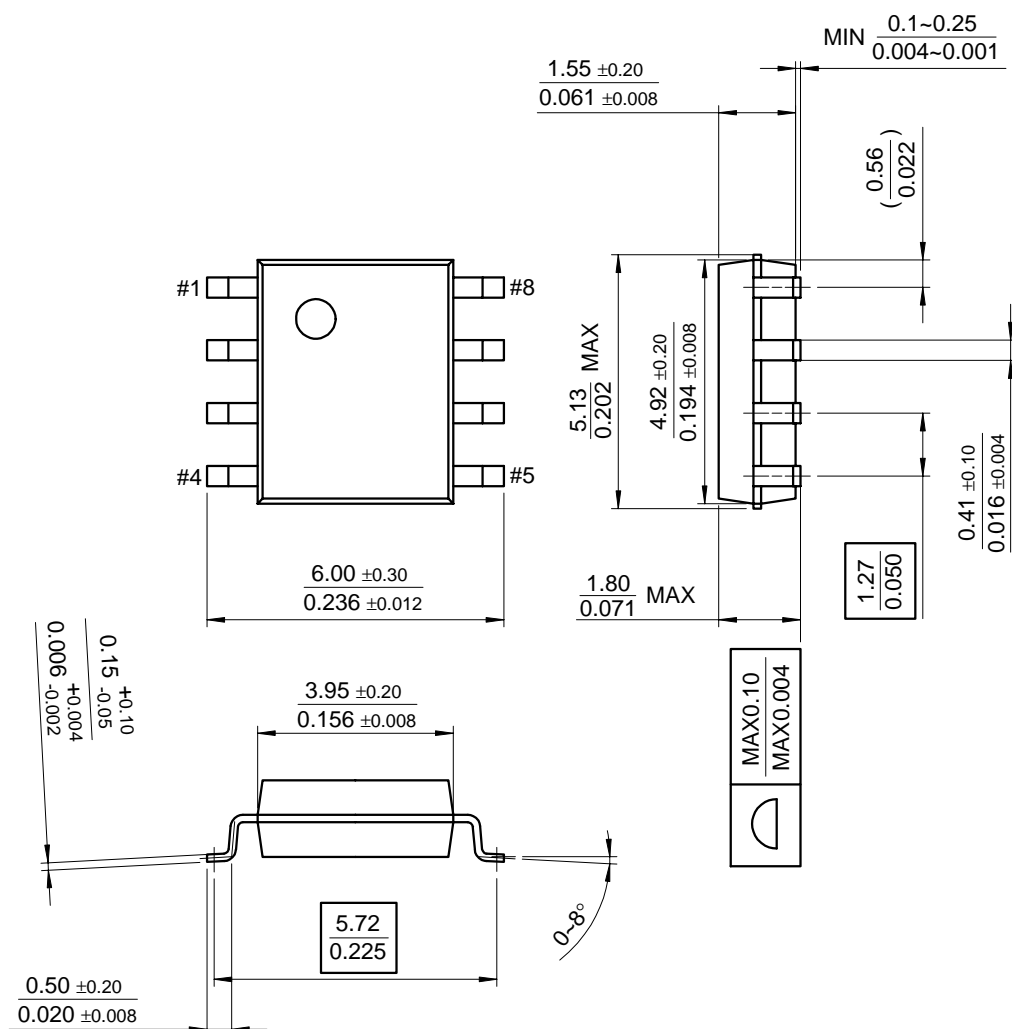
### 8-DIP



# 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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