

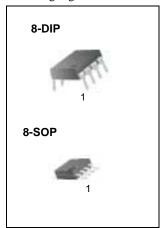
# MC34063A/MC33063A SMPS Controller

#### **Features**

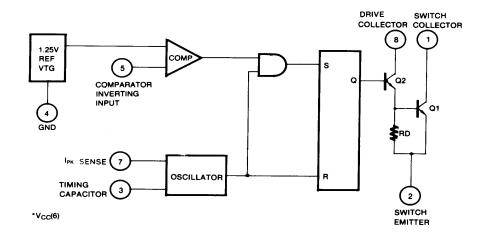
- Operation from 3.0 to 40V input
- · Short circuit current limiting
- Low standby current
- Output switch current of 1.5A without external transistors
- Output voltage adjustable
- Frequency of operation from 100Hz to 100KHz
- Step up, Step down or inverting switching regulators

### **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	Vcc	40	V
Comparator Input Voltage Range	VI(COMP)	- 0.3 ~ + 40	V
Switch Collector Voltage	Vc(SW)	40	V
Switch Emitter Voltage	VE(SW)	40	V
Switch Collector To Emitter Voltage	VCE(SW)	40	V
Driver Collector Voltage	VC(DR)	40	V
Switch Current	Isw	1.5	А
Storage Temperature Range	T <sub>STG</sub>	- 65 ~ + 150	°C

### **Electrical Characteristics**

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

Parameter	Symbol	Conditions	Min.	Тур.	Max.	Unit	
OSCILLATOR							
Charging Current	ICHG	VCC = 5 to 40V T <sub>A</sub> = 25°C	22	31	42	μΑ	
Discharging Current	IDISCHG	V <sub>CC</sub> = 5 to 40V T <sub>A</sub> = 25°C	140	190	260	μΑ	
Oscillator Amplitude	V(OSC)	T <sub>A</sub> = 25°C	-	0.5	-	V	
Discharge To Charge Current Ratio	K	V7 = VCC , TA = 25°C	5.2	6.1	7.5	-	
Current Limit Sense Voltage	VSENSE(C.L)	ICHG = IDISCHG T <sub>A</sub> = 25°C	250	300	350	mV	
OUTPUT SWITCH							
Saturation Voltage 1 (Note)	VCE(SAT)1	ISW = 1.0A VC(driver) = VC(SW)	-	0.95	1.3	V	
Saturation Voltage 2 (Note)	VCE(SAT)2	Isw = 1.0A, VC(driver) = 50mA	-	0.45	0.7	V	
DC Current Gain (Note)	G <sub>I(DC)</sub>	ISW = 1.0A, VCE = 5.0V, TA = 25°C	50	180	-	-	
Collector off State Current (Note)	IC(OFF)	VCE = 40V, T <sub>A</sub> = 25°C	-	0.01	100	μΑ	
COMPARATOR							
Threshold Voltage	VTH	-	1.21	1.24	1.29	V	
Threshold Voltage Line Regulation	ΔVTH	VCC = 3 to 40V	-	2.0	5.0	mV	
Input Bias Current	IBIAS	V <sub>I</sub> = 0V	-	50	400	nA	
TOTAL DEVICE							
Supply Current MC34063	Icc	V <sub>CC</sub> = 5 to 40V C <sub>T</sub> = 0.001uF V <sub>7</sub> = V <sub>CC</sub> , V <sub>5</sub> >V <sub>TH</sub>	-	-	4.0	mA	
MC33063		pin2 = GND	-	-	5.0		

#### Note:

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

## **Typical Performance Characteristics**

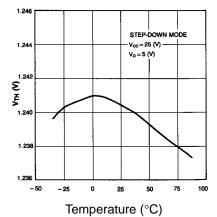


Figure 1. Temperature Drift (VTH)

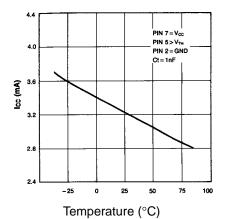
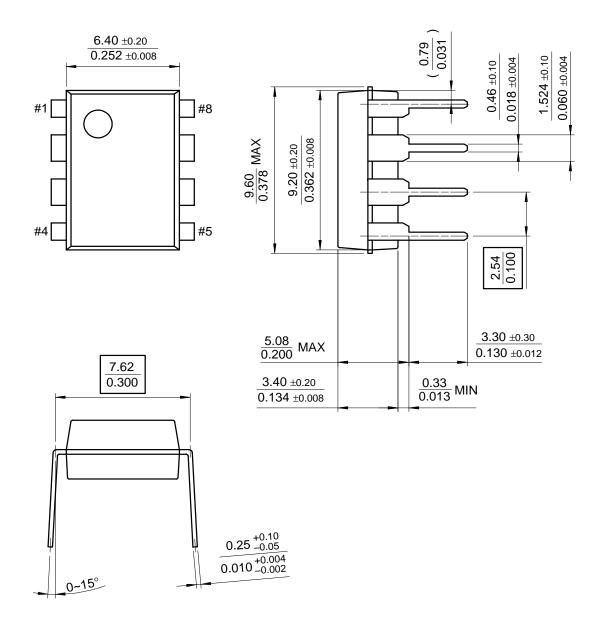


Figure 2. Temperature Drift (IOC)

#### **Mechanical Dimensions**

### **Package**

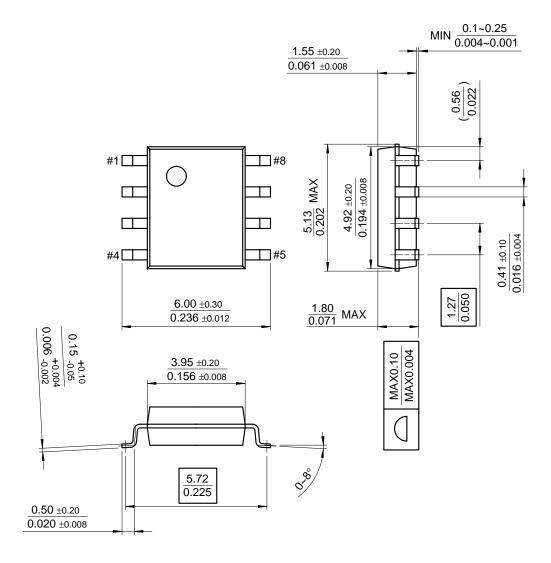
## 8-DIP



## **Mechanical Dimensions** (Continued)

### Package

## 8-SOP



## **Ordering Informatio**

Product Number	Package	Operating Temperature	
MC34063AP	8-DIP	0 ~ + 70°C	
MC34063AD	8-SOP	0~+700	
MC33063AP	8-DIP	-40 ~ + 85°C	
MC33063AD	8-SOP	-40 ~ + 65 C	

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