

MC34063A/MC33063A

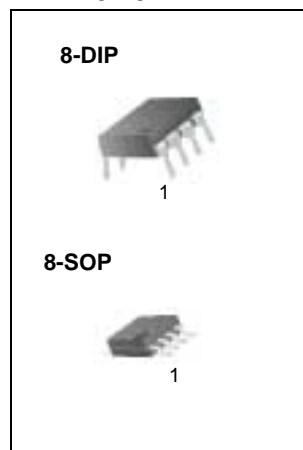
SMPS Controller

Features

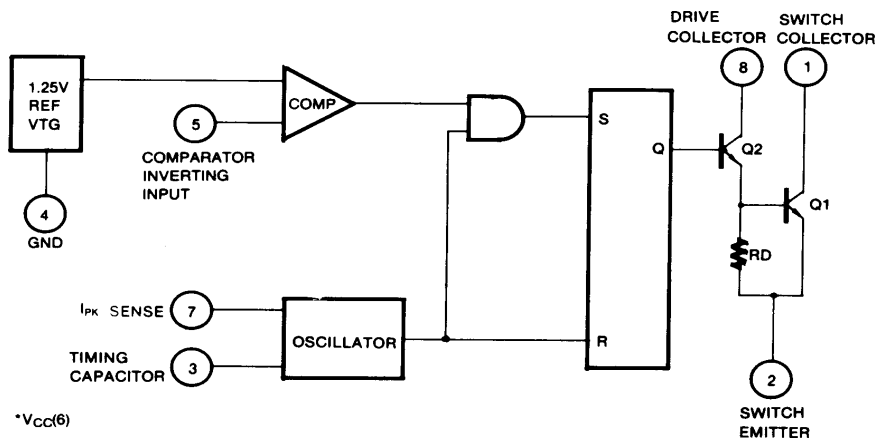
- Operation from 3.0 to 40V input
- Short circuit current limiting
- Low standby current
- Output switch current of 1.5A without external transistors
- Output voltage adjustable
- Frequency of operation from 100Hz to 100KHz
- Step up, Step down or inverting switching regulators

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



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 = 0.001μF 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

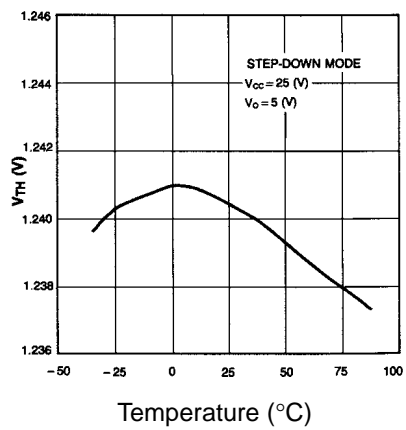


Figure 1. Temperature Drift (V_{TH})

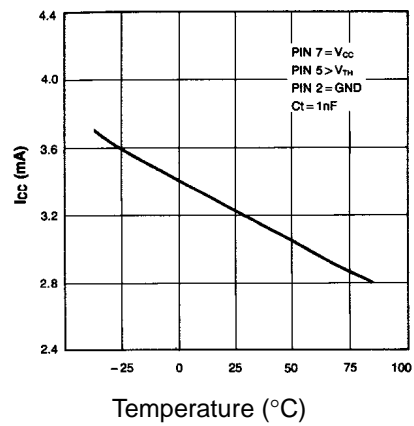
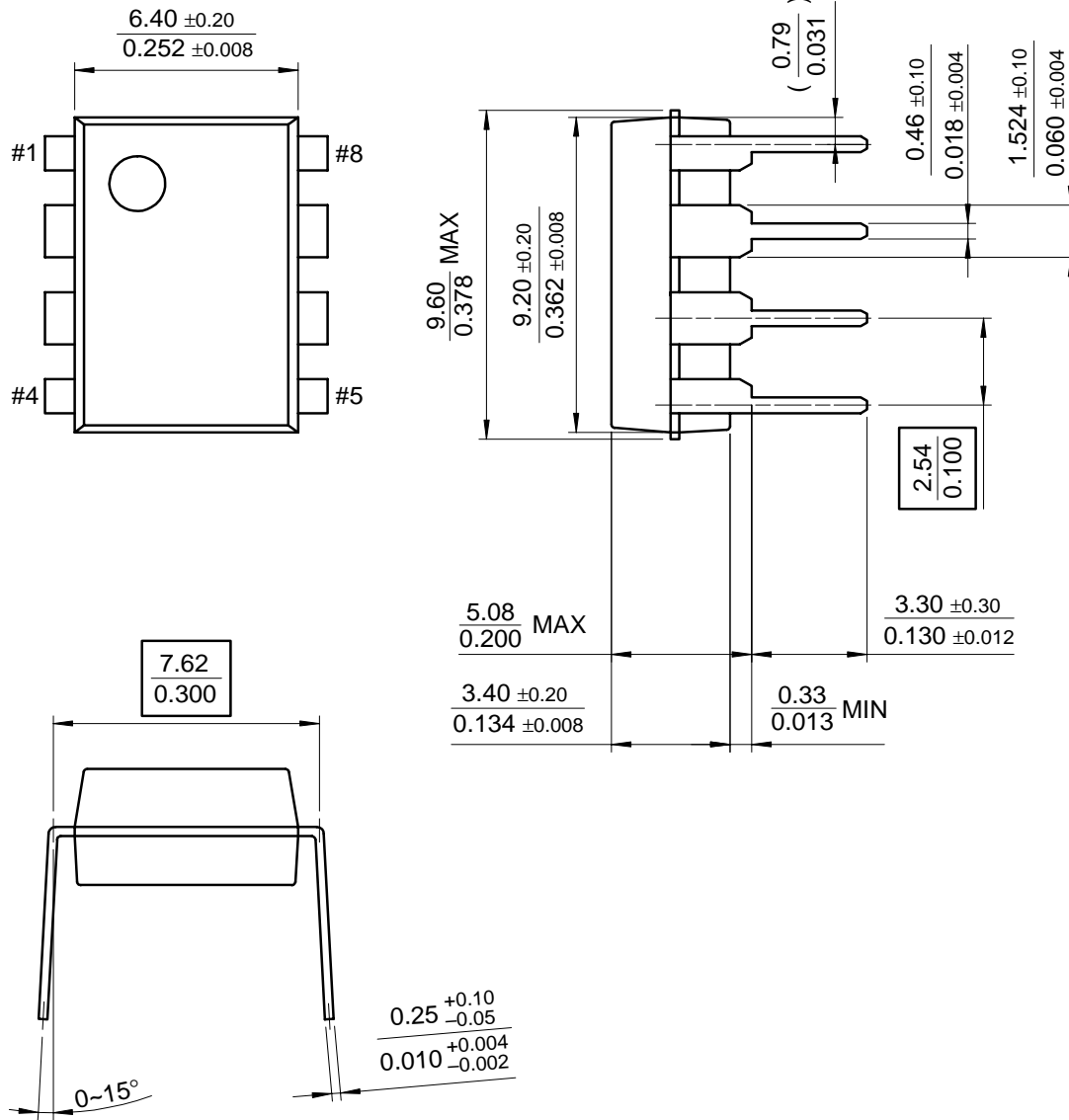


Figure 2. Temperature Drift (I_{CC})

Mechanical Dimensions

Package

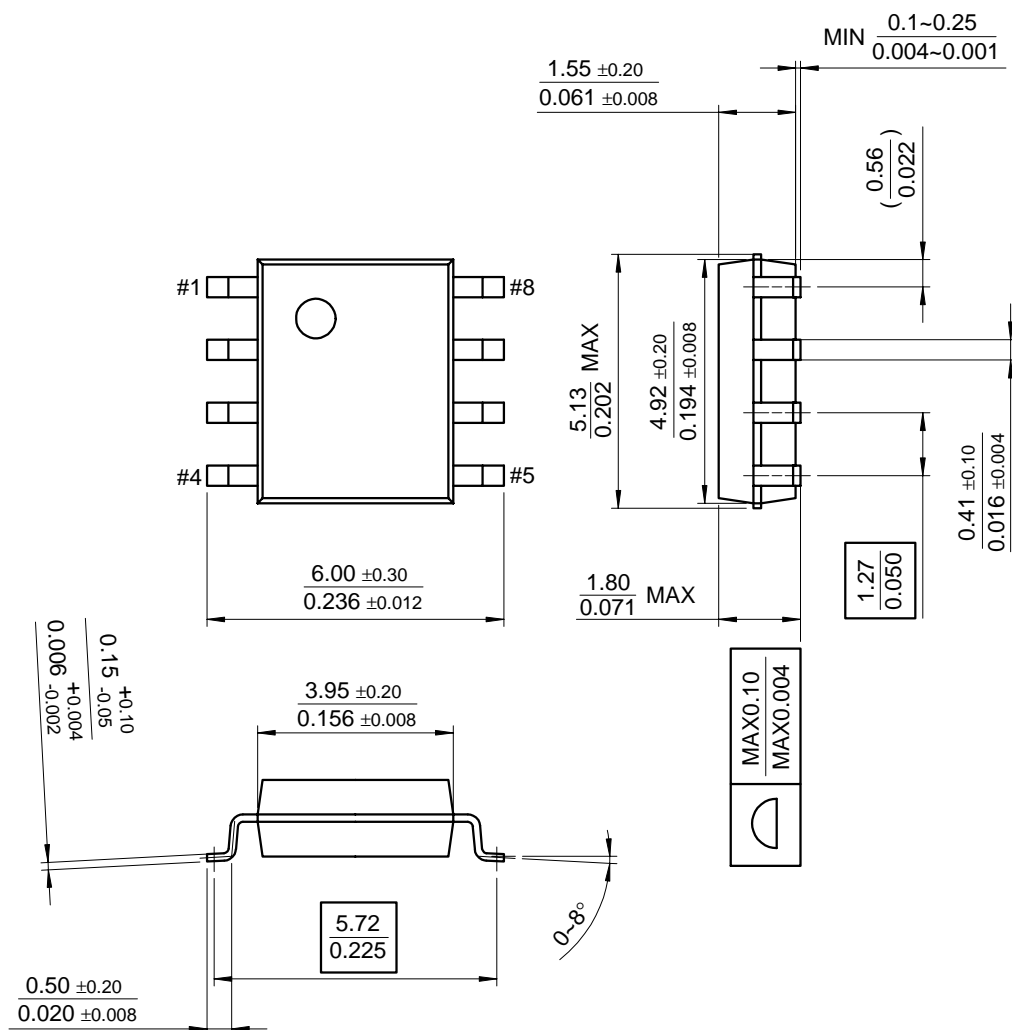
8-DIP



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	

DISCLAIMER

FAIRCHILD SEMICONDUCTOR RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION OR DESIGN. FAIRCHILD DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS.

LIFE SUPPORT POLICY

FAIRCHILD'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF THE PRESIDENT OF FAIRCHILD SEMICONDUCTOR CORPORATION. As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury of the user.
2. A critical component in any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.