

DC TO DC CONVERTER CONTROLLER

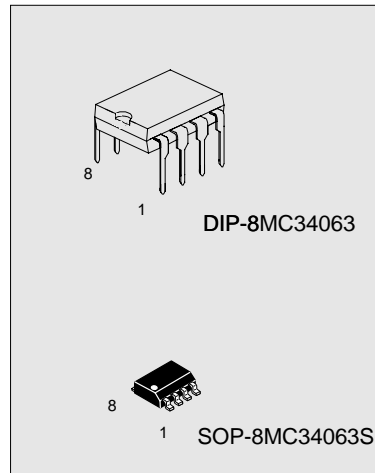
DESCRIPTION

The MC34063 is a monolithic regulator subsystem intended for use as DC to DC converter. This device contains a temperature compensated band-gap reference, a duty-cycle control oscillator, driver and high current output switch.

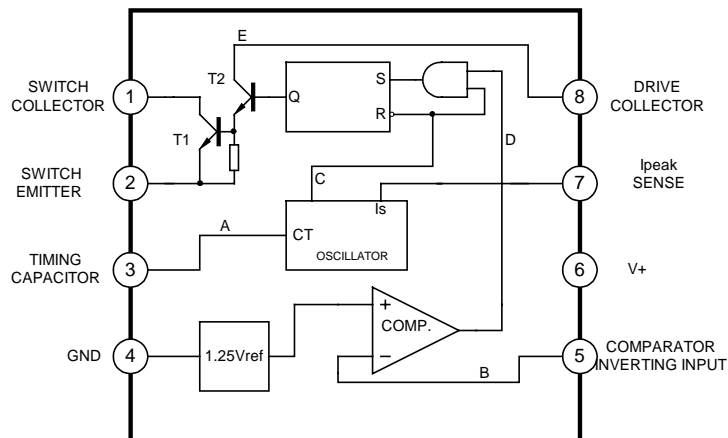
It can be used for step down, step-up or inverting switching regulators as well as for series pass regulators.

FEATURES

- *Operation from 3.0V to 36V
- *Short circuit current limiting
- *Low standby current
- *Output switch current of 1.2A without external transistors
- *Frequency of operation from 100Hz to 100kHz
- *Step-up, step-down or inverting switch regulators



BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS($T_a=25^{\circ}\text{C}$)

Characteristic	Symbol	Value	Unit
Supply Voltage	V_{cc}	36	V
Comparator input voltage range	$V_i(\text{comp})$	-0.3~+36	V
Switch collector voltage	$V_c(\text{sw})$	36	V
Switch Emitter Voltage	$V_e(\text{sw})$	36	V
Switch collector to emitter voltage	$V_{ce}(\text{sw})$	36	V
Driver collector Voltage	$V_c(\text{dr})$	36	V
Switch current	I_{sw}	1.2	A

ELECTRICAL CHARACTERISTICS($T_a=25^{\circ}\text{C}$)

($V_{cc}=5.0\text{V}$, $T_a=0\sim 70^{\circ}\text{C}$, unless otherwise specified)

Characteristic	Symbol	Test Condition	Min	Typ.	Max	Unit
Oscillator						
Charging Current	I_{chg}	$V_{cc}=5\text{ to }36\text{V}$, $T_a=25^{\circ}\text{C}$	22	31	42	μA
Discharging Current	I_{dischg}	$V_{cc}=5\text{ to }36\text{V}$, $T_a=25^{\circ}\text{C}$	140	190	260	μA
Oscillator Amplitude	V_{osc}	$T_a=25^{\circ}\text{C}$		0.5		V
Discharge to charge current ratio	K	$V_7=V_{cc}$, $T_a=25^{\circ}\text{C}$	5.2	6.1	7.5	
Current limit sense voltage	V_{sense}	$I_{chg}=I_{dischg}$ $T_a=25^{\circ}\text{C}$	250	300	350	mV
Output Switch						
Saturation voltage 1(note)	$V_{ce}(\text{sat})1$	$I_{sw}=1.0\text{A}$ $V_c(\text{driver})=V_c(\text{sw})$		0.95	1.3	V
Saturation voltage 2(note)	$V_{ce}(\text{sat})2$	$I_{sw}=1.0\text{A}$ $V_c(\text{driver})=50\text{mA}$		0.45	0.7	V
DC current Gain(note)	$G_i(\text{DC})$	$I_{sw}=1.0\text{A}$ $V_{ce}=5.0\text{V}$, $T_a=25^{\circ}\text{C}$	50	180		
Collector off state current(note)	$C(\text{off})$	$V_{ce}=36.0\text{V}$, $T_a=25^{\circ}\text{C}$		10	100	nA
Comparator						
Threshold Voltage	V_{th}		1.21	1.24	1.29	V
Threshold voltage line regulation	V_{th}	$V_{cc}=3\sim 36\text{V}$		2.0	5.0	mV
Input Bias current	I_{bias}	$V_i=0\text{V}$		50	400	nA
Total Device						
Supply current	I_{cc}	$V_{cc}=5\sim 36\text{V}$ $C_t=0.001$ $V_7=V_{cc}$ $V_c>V_{th}$ $\text{Pin}2=\text{GND}$		2.7	4.0	mA

NOTE:

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

APPLICATION CIRCUIT

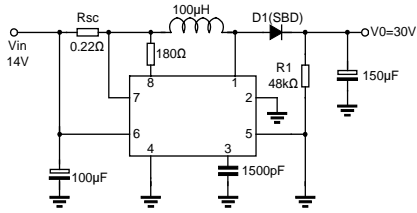


Fig.1 Step-up Application

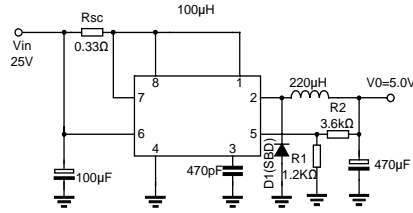


Fig.2 Step-down Application

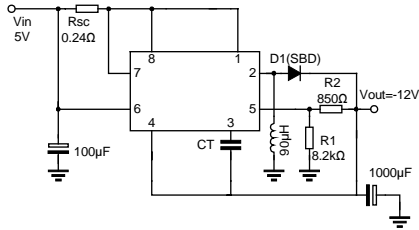


Fig.3 Inverting Application