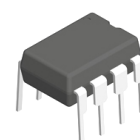


FEATURES

- Output Switch Current In Excess of 1.5A
- 2% Reference Accuracy
- Low Quiescent Current : 2.5mA(Typ.)
- Operating From 3V to 40V
- Frequency Operation to 100KHz
- Active Current Limiting
- Moisture Sensitivity Level 3 for SMD Package
- MC34063AG is Halogen Free Products

APPLICATION

- Battery Chargers
- NICs / Switches / Hubs
- ADSL Modems
- Negative Voltage Power Supplies

SOP-8 PKG**DIP-8 PKG****ORDERING INFORMATION**

Device	Package
MC34063AD	SOP-8
MC34063AGD	
MC34063BD	
MC34063AN	DIP-8

DESCRIPTION

The MC34063A/B series is a monolithic control circuit delivering the main functions for DC-DC voltage converting. The device contains an internal temperature compensated reference, comparator, duty cycle controlled oscillator with an active current limit circuit driver and high current output switch.

Output voltage is adjustable through two external resistors with a 2% reference accuracy.

Employing a minimum number of external components the MC34063A/B devices series is designed for Step-Down, Step-Up and Voltage-Inverting applications.

Absolute Maximum Ratings (Note 1)

CHARACTERISTIC	SYMBOL	MIN.	MAX.	UNIT
Power Supply Voltage	V_{CC}	-	50	V
Comparator Input Voltage Range	V_{IR}	-0.3	40	V
Switch Collector Voltage	V_{SWC}		40	V
Switch Emitter Voltage($V_{SWC}=40V$)	V_{SWE}		40	V
Switch Collector to Emitter Voltage	V_{CE}		40	V
Driver Collector Voltage	V_{dc}	-	40	V
Driver Collector Current (Note 2)	I_{dc}	-	100	mA
Switch Current	I_{sw}	-	1.5	A

Absolute Maximum Ratings (Continued)

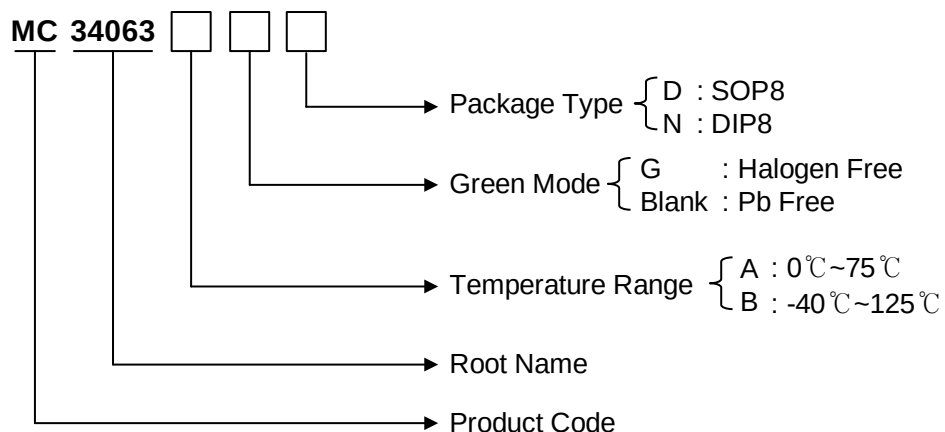
CHARACTERISTIC		SYMBOL	MIN.	MAX.	UNIT
Power Dissipation (at $T_A = 25^\circ\text{C}$)	SOP-8	PD_{MAX_SOP-8}		0.625	W
	DIP-8	PD_{MAX_DIP-8}		1.0	W
Thermal Resistance(*)	SOP-8	$\theta_{JA-SOP-8}$		160	$^\circ\text{C/W}$
	DIP-8	$\theta_{JA-DIP-8}$		100	$^\circ\text{C/W}$
Operating Junction Temperature Range		T_J	-40	150	$^\circ\text{C}$
Operating Ambient Temperature Range	MC34063A	T_{AOPR}	0	75	$^\circ\text{C}$
	MC34063B		-40	125	$^\circ\text{C}$
Storage Temperature Range		T_{STG}	-65	150	$^\circ\text{C}$

Note 1. Absolute Maximum Ratings are those values beyond which damage to the device may occur. Functional operation under these conditions is not implied.

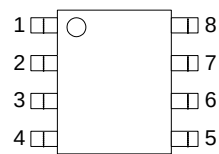
(*) This value depends from thermal design of PCB on which the device is mounted.

Ordering Information

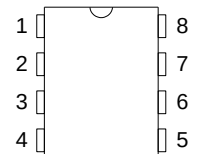
Operating Ambient Temperature(T_{AOPR}) Range	Package	Order No.	Supplied As	Status
$0^\circ\text{C} \sim 75^\circ\text{C}$	SOP8	MC34063AD	Reel	Active
$0^\circ\text{C} \sim 75^\circ\text{C}$		MC34063AGD	Reel	Contact us
$-40^\circ\text{C} \sim 125^\circ\text{C}$		MC34063BD	Reel	Active
$0^\circ\text{C} \sim 75^\circ\text{C}$	DIP8	MC34063AN	Tube	Active
$-40^\circ\text{C} \sim 125^\circ\text{C}$		MC34063BN	Tube	Active



PIN CONFIGURATION



SOP-8

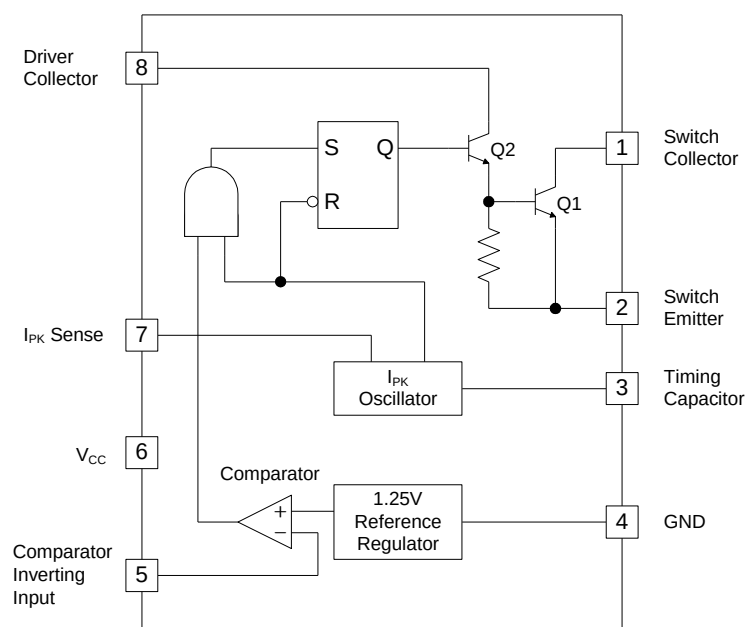


DIP-8

PIN DESCRIPTION

Pin No.	SOP-8 / DIP-8 PKG	
	Name	Function
1	Switch Collector	Internal switch transistor collector
2	Switch Emitter	Internal switch transistor emitter
3	Timing Capacitor	Timing Capacitor to control the switching frequency
4	GND	Ground pin for all internal circuits
5	Comparator Inverting Input	Inverting input pin for internal comparator
6	V _{CC}	Voltage supply
7	I _{PK} Sense	Peak Current Sense Input by monitoring the voltage drop across an external I sense resistor to limit the peak current through the switch
8	Driver Collector	Voltage driver collector

BLOCK DIAGRAM



ELECTRICAL CHARACTERISTICS

(Refer to the test circuits, $V_{CC}=5V$, $T_A=T_{LOW}$ to T_{HIGH} , unless otherwise specified, see note 2)

SYMBOL	PARAMETER	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
OSCILLATOR						
F_{OSC}	Frequency	$V_{PIN5}=0V$, $C_T=1nF$, $T_A=25^\circ C$	24	33	42	KHz
I_{CHG}	Charge Current	$V_{CC}=5$ to $40V$, $T_A=25^\circ C$	24	35	42	μA
I_{DISCHG}	Discharge Current	$V_{CC}=5$ to $40V$, $T_A=25^\circ C$	140	220	260	μA
I_{DISCHG}/I_{CHG}	Discharge to Charge Current Ratio	Pin 7 = V_{CC} , $T_A=25^\circ C$	5.2	6.5	7.5	
$V_{IPK(SENSE)}$	Current Limit Sense Voltage	$I_{CHG}=I_{DISCHG}$, $T_A=25^\circ C$	250	300	350	mV
OUTPUT SWITCH						
$V_{CE(SAT)}$	Saturation Voltage, Darlington connection	$I_{SW}=1A$, Pins 1,8 connected		1.0	1.3	V
$V_{CE(SAT)}$	Saturation Voltage	$I_{SW}=1A$, $R_{PIN8}=82\Omega$ to V_{CC} , Forced $\beta \sim 20$		0.45	0.7	V
h_{FE}	DC Current Gain	$I_{SW}=1A$, $V_{CE}=5V$, $T_A=25^\circ C$	50	75		
$I_{C(OFF)}$	Collector Off-State Current	$V_{CE}=40V$		0.01	100	μA
COMPARATOR						
V_{TH}	Threshold Voltage	$T_A=25^\circ C$	1.225	1.25	1.275	V
		$T_A=T_{LOW}$ to T_{HIGH}	1.21		1.29	V
REG_{LINE}	Threshold Voltage Line Regulation	$V_{CC}=3$ to $40V$		1	5	mV
I_{IB}	Input Bias Current	$V_{IN}=0V$		-5	-400	nA
TOTAL DEVICE						
I_{CC}	Supply Current	$V_{CC}=5$ to $40V$, $C_T=1nF$ Pin7 = V_{CC} , $V_{PIN5}>V_{TH}$, Pin2=GND Remaining pins open for MC34063A/B		1.4	4	mA

Note 1. Maximum package power dissipation limit must be observed.

Note 2. $T_{LOW} = -40^\circ C$, $T_{HIGH} = +125^\circ C$

Note 3. If Darlington configuration is not used, care must be taken to avoid deep saturation of output switch.

The resulting switch-off time may be adversely affected.

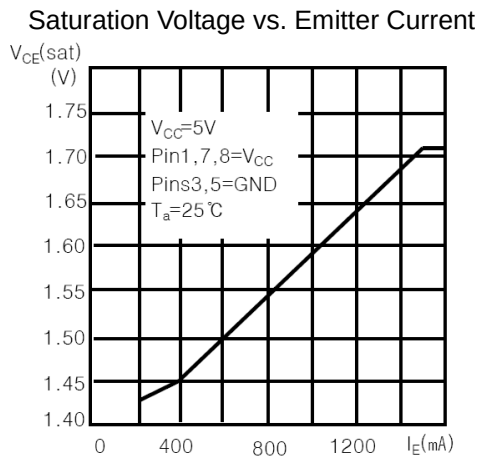
In a Darlington configuration the following output driver condition is suggested:

$$\text{Forced } \beta \text{ of output switch : } \frac{I_{C(OUTPUT)}}{I_{C(DRIVER)} - 7.0mA^*} \geq 10$$

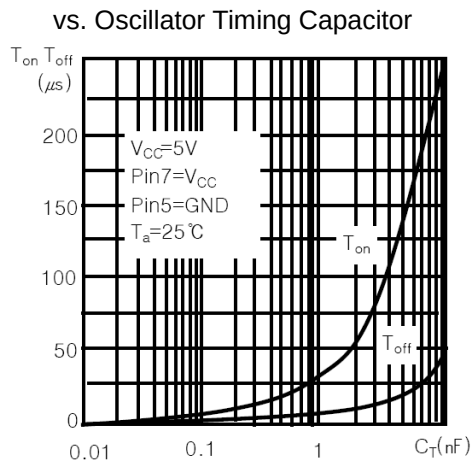
* Currentless due to a built in $1K\Omega$ anti-leakage resistor

TYPICAL ELECTRICAL CHARACTERISTICS

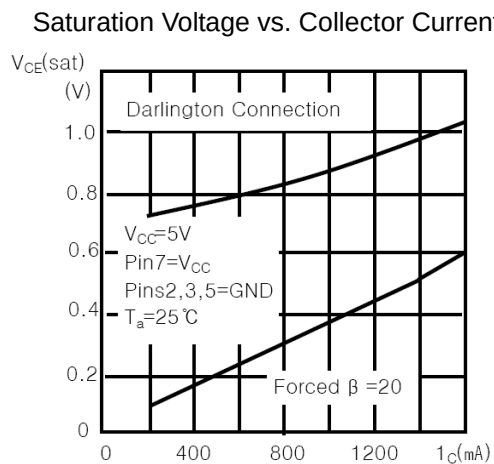
Emitter Follower Configuration Output



Output Switch ON-OFF Time

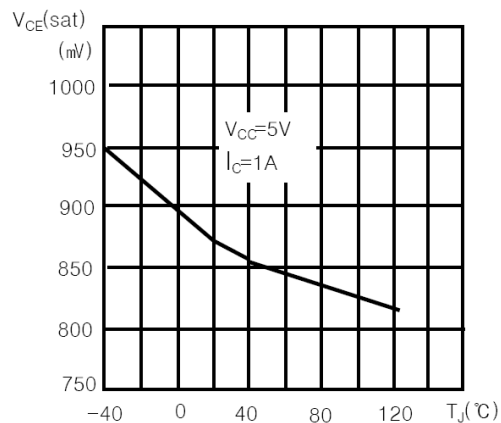


Common Emitter Configuration Output Switch

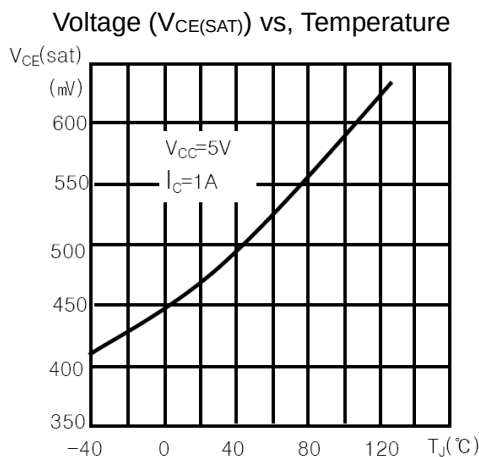


Darlington Configuration Collector Emitter

Saturation Voltage ($V_{CE(sat)}$) vs. Temperature

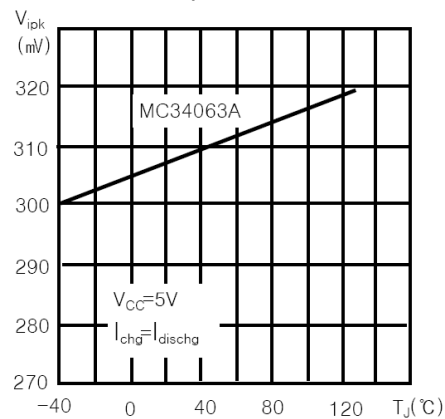


Power Collector Emitter Saturation



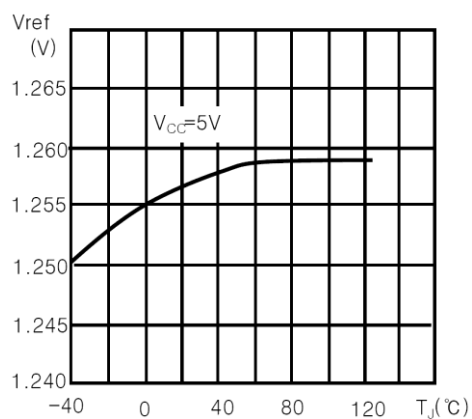
Current Limit Sense Voltage (V_{IPK})

vs. Temperature

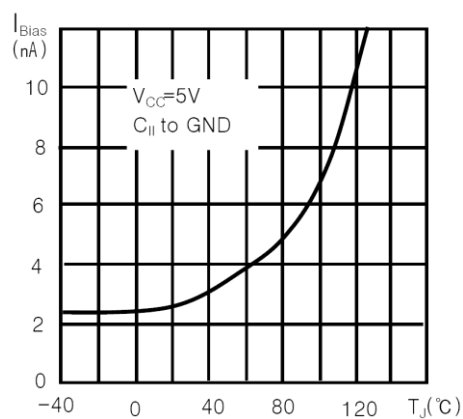


TYPICAL ELECTRICAL CHARACTERISTICS (Continued)

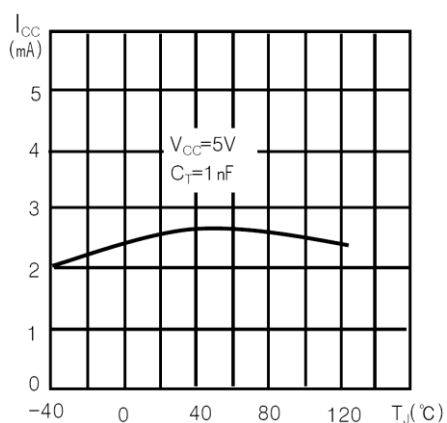
Reference Voltage vs. Temperature



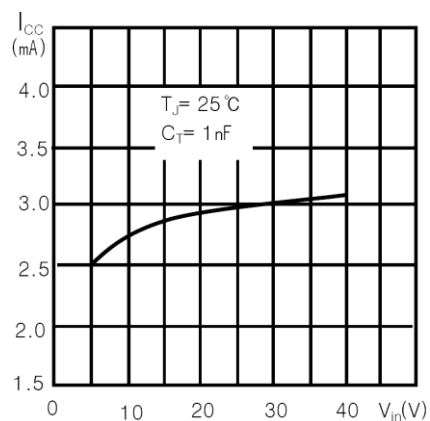
Bias Current vs. Temperature



Supply Current vs. Temperature

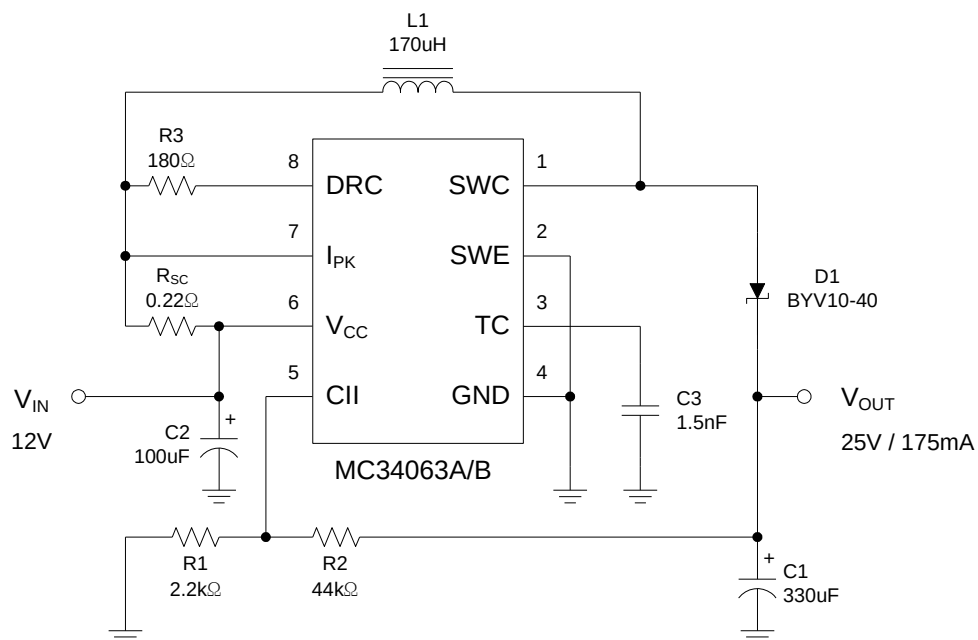


Supply Current vs. Input Voltage

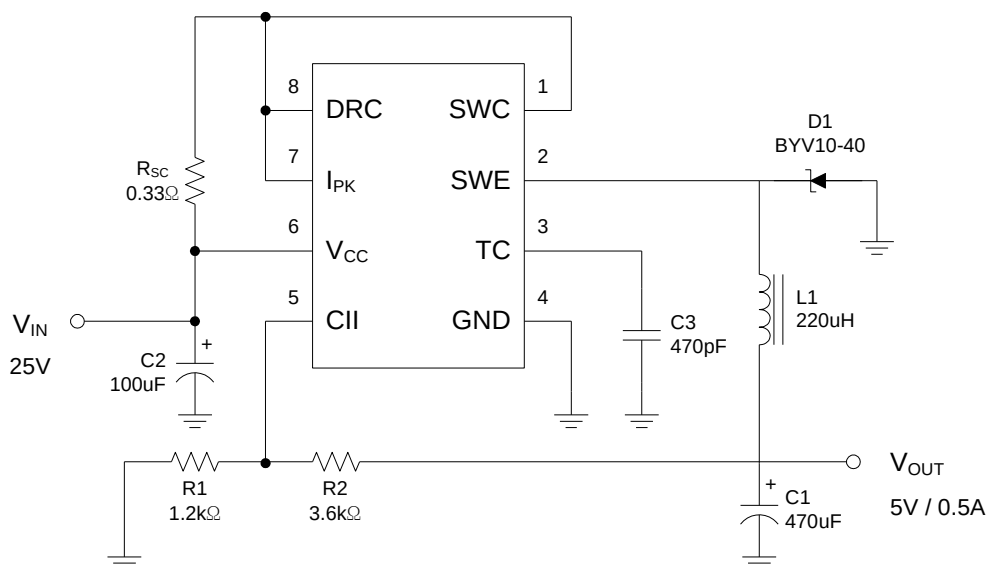


TYPICAL APPLICATION CIRCUIT

Step-Up Converter



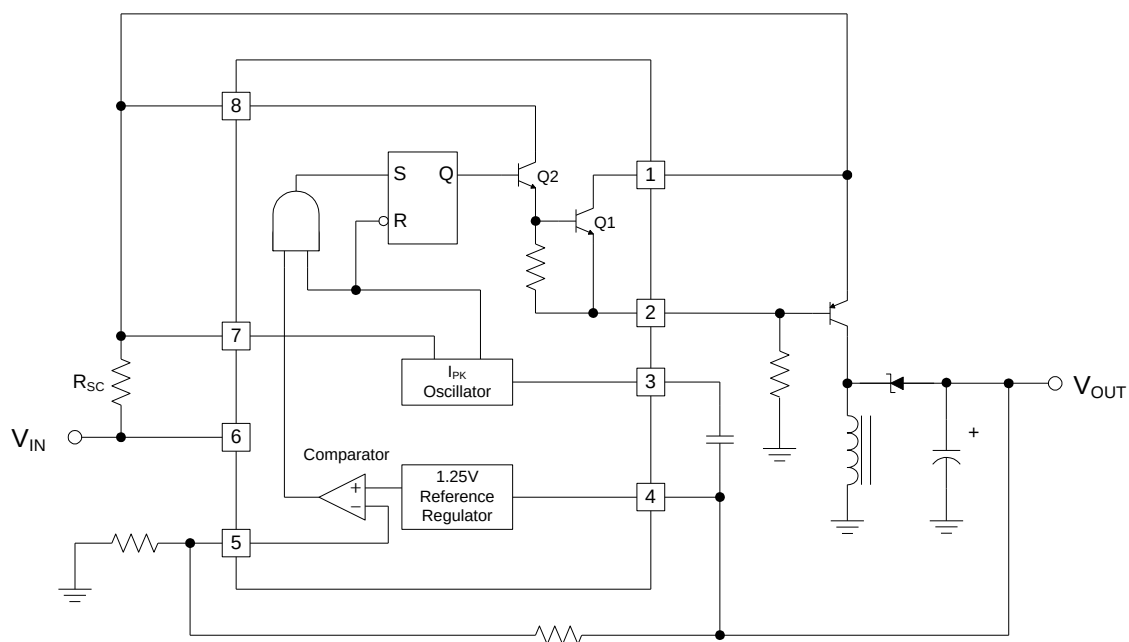
Step-Down Converter



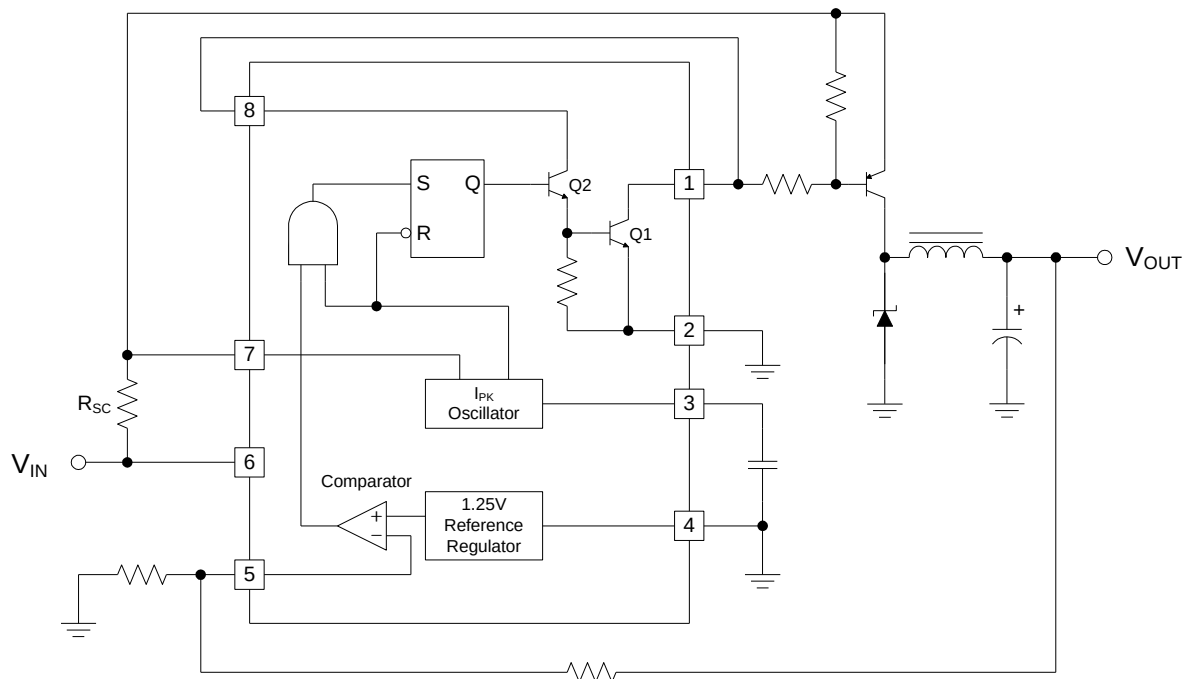
[illegible]

The schematic diagram illustrates a boost converter circuit. The input voltage V_{IN} (4.5V to 5V) is connected to the V_{CC} pin (pin 6) of the LTC1875 IC through a resistor R_{SC} (0.22Ω). A capacitor $C2$ (100μF) is connected between the input and ground. The IC's I_{PK} pin (pin 7) is connected to the input, and its DRC pin (pin 8) is connected to ground. The CII pin (pin 5) is connected to ground through a resistor $R1$ (8.2kΩ). The GND pin (pin 4) is connected to ground through a resistor $R2$ (953Ω). The TC pin (pin 3) is connected to ground through a capacitor $C3$ (1.5nF). The SWE pin (pin 2) is connected to the gate of a MOSFET $D1$ (BYV10-40). The MOSFET's source is connected to ground through a capacitor $C1$ (1000μF). The MOSFET's drain is connected to an inductor $L1$ (90μH), which is then connected to the output voltage V_{OUT} (-12V / 100mA). The output is also connected to ground through a capacitor $C1$ (1000μF).

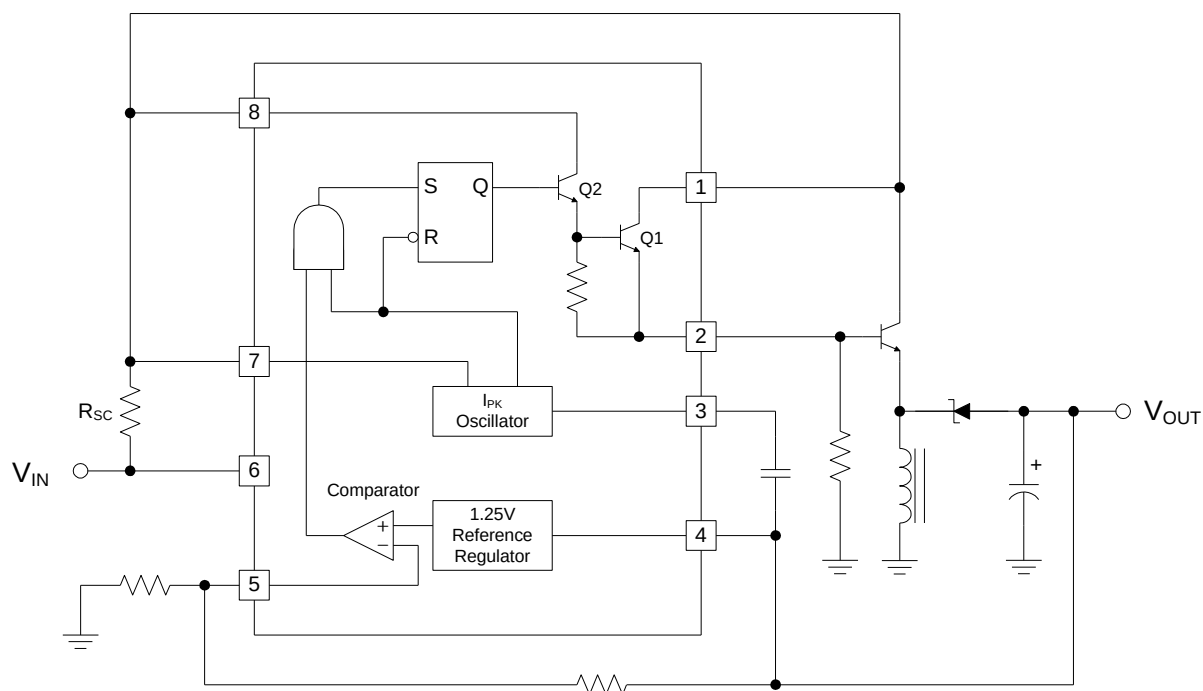
Step-Down with External NPN Switch



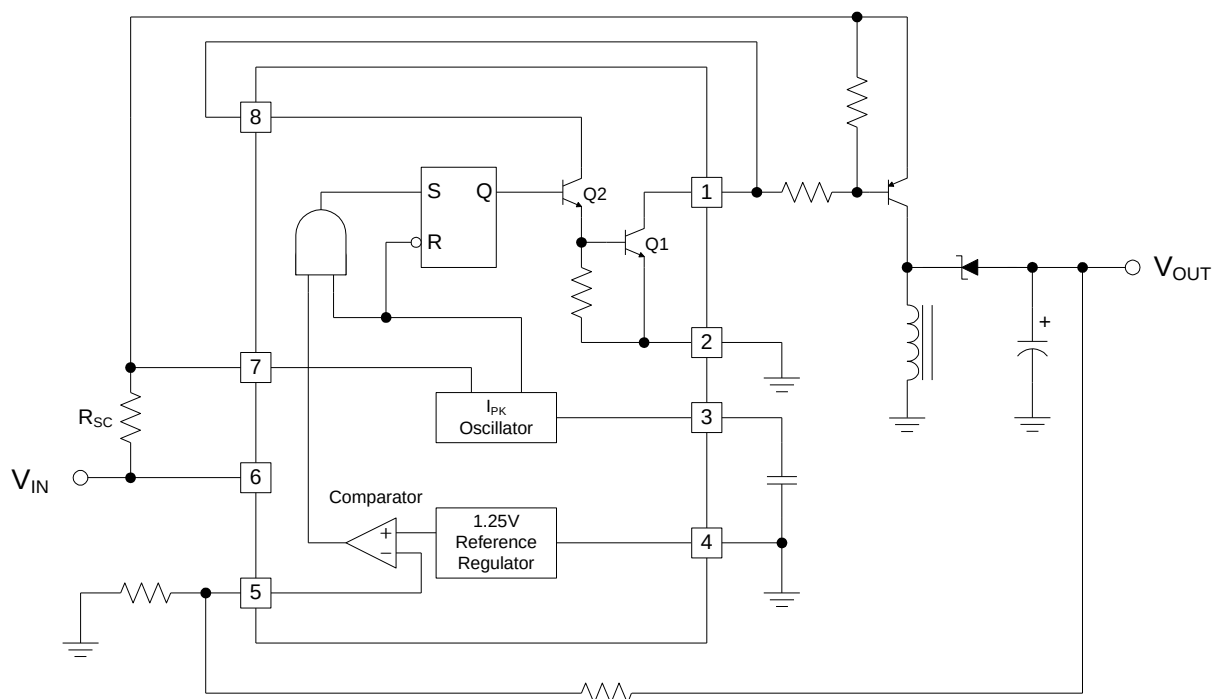
Step-Down with External PNP Switch



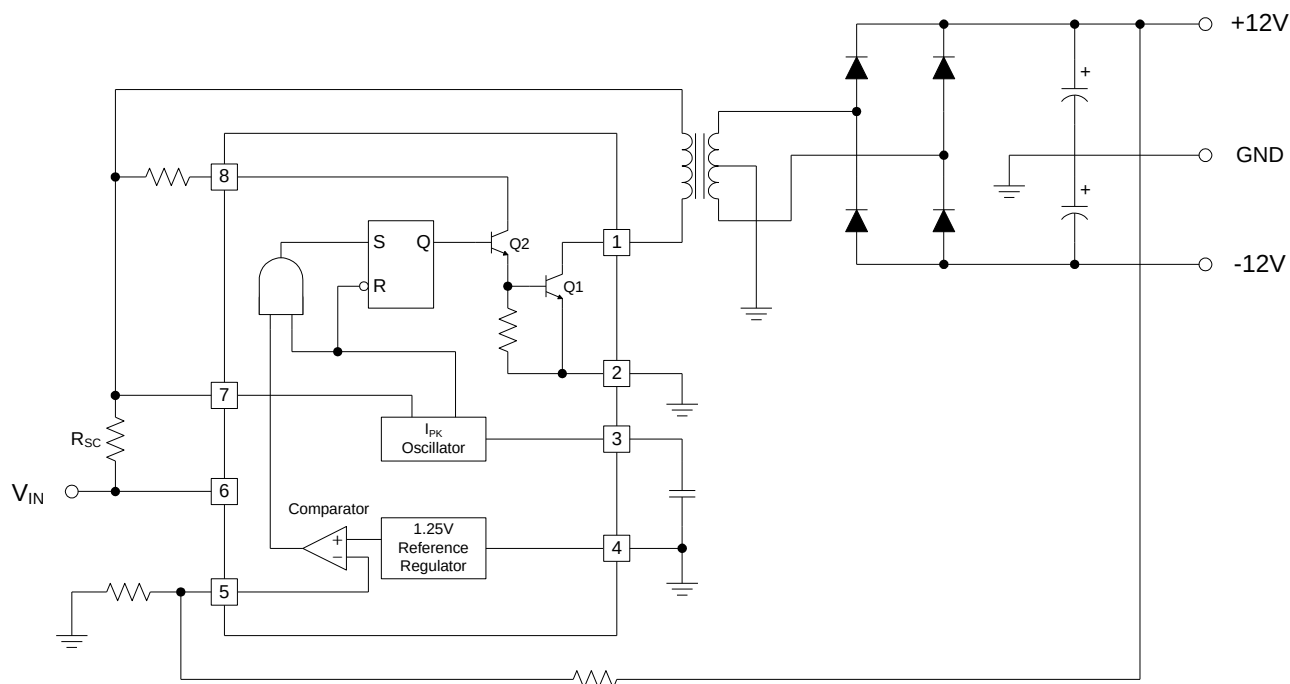
Voltage Inverting with External NPN Switch



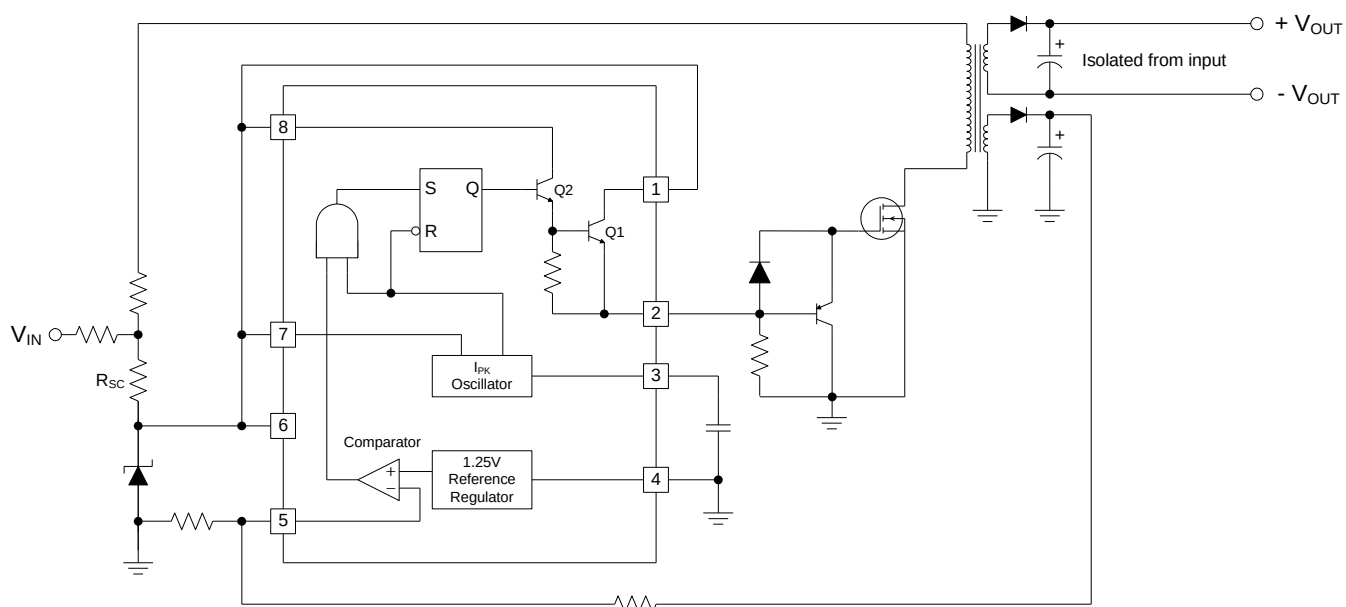
Voltage Inverting with External PNP Saturated Switch



Dual Output Voltage



Higher Output Power, Higher Input Voltage



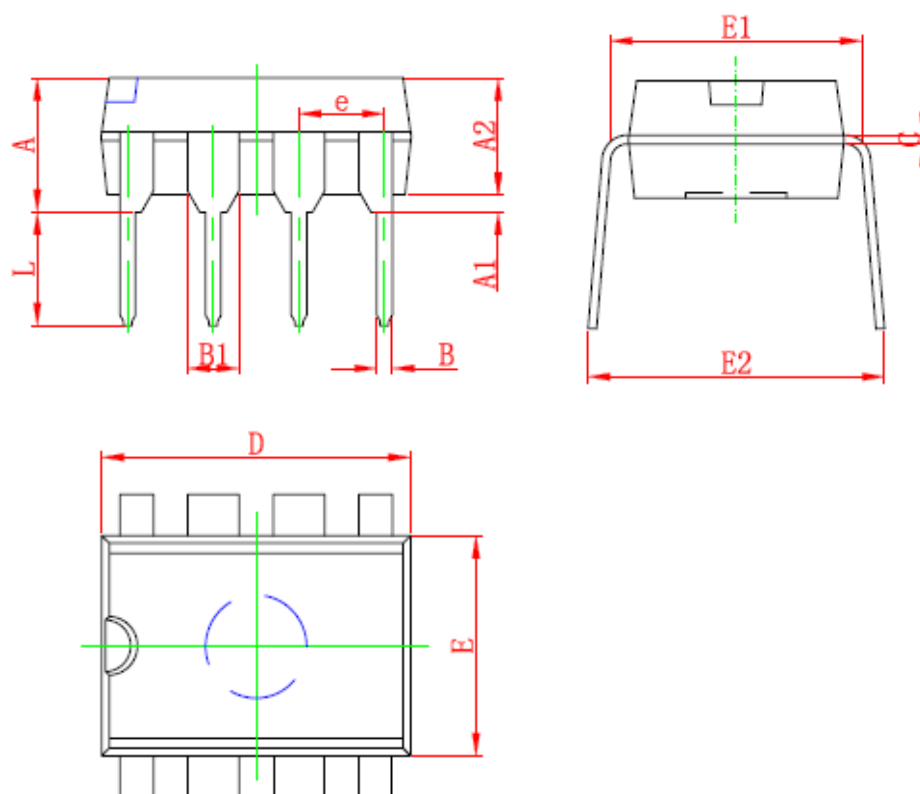
REVISION NOTICE

The description in this datasheet can be revised without any notice to describe its electrical characteristic properly.

Package Dimension

DIP8

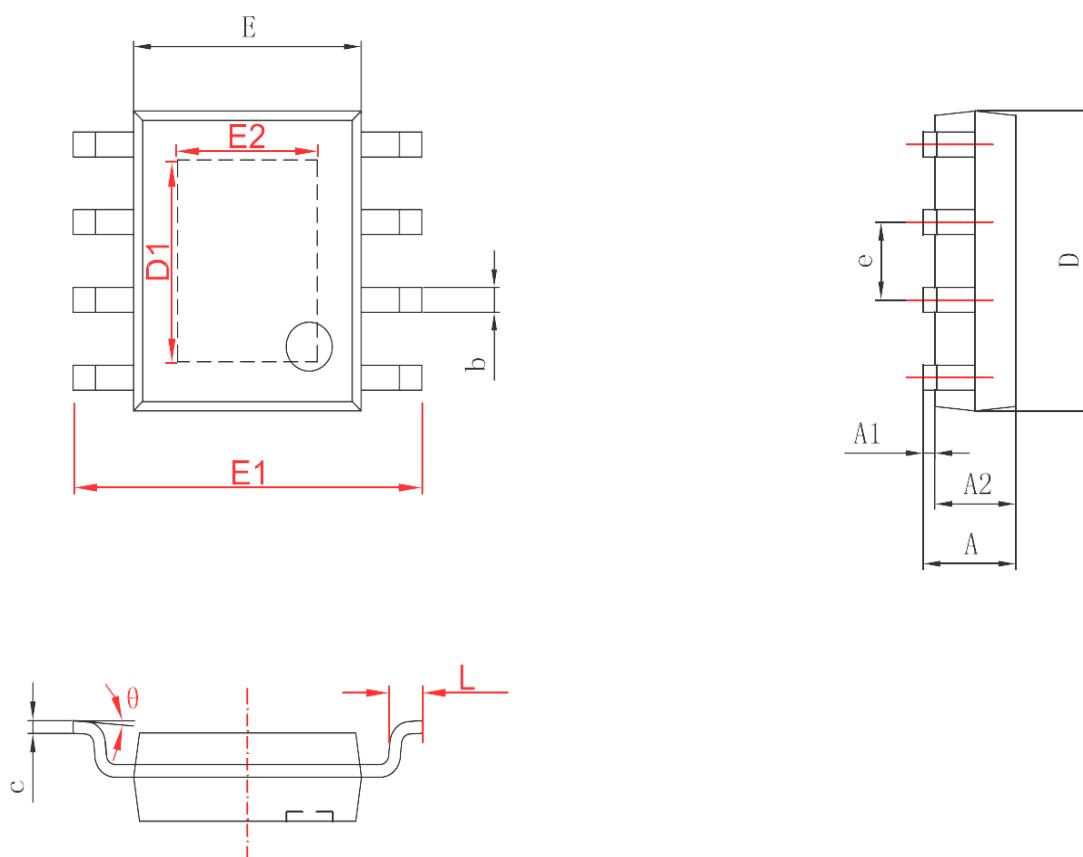
DIP8 PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	3.710	4.310	0.146	0.170
A1	0.510		0.020	
A2	3.200	3.600	0.126	0.142
B	0.360	0.560	0.014	0.022
B1	1.524 (TYP)		0.060 (TYP)	
C	0.204	0.360	0.008	0.014
D	9.000	9.400	0.354	0.370
E	6.200	6.600	0.244	0.260
E1	7.620 (TYP)		0.300 (TYP)	
e	2.540 (TYP)		0.100 (TYP)	
L	3.000	3.600	0.118	0.142
E2	8.200	9.400	0.323	0.370

Package Dimension

SOP-8 & SOP-8PP



SYMBOL	Dimension In Millimeters		Dimension In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1 (for SOP-8)	0.100	0.250	0.004	0.010
A1 (for SOP-8PP)	0.050	0.150	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
D1 (for SOP-8PP)	3.202	3.402	0.126	0.134
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
E2 (for SOP-8PP)	2.313	2.513	0.091	0.099
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°		