

## LOW-Power Off-line Primary Side Regulation Controller ME8304

### General Description

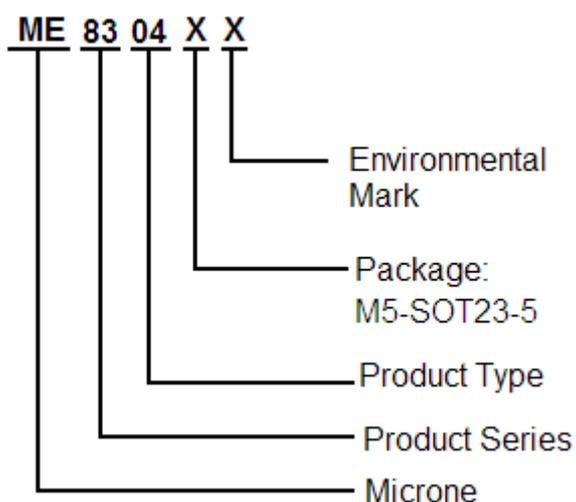
The ME8304 is a high performance AC/DC power supply controller for battery charger and adapter applications. The device uses Pulse Frequency Modulation(PFM) method to build discontinuous conduction mode (DCM) flyback power supplies.

The ME8304 provides accurate constant voltage, constant current (CV/CC) regulation while removing the opto-coupler and secondary control circuitry. It also eliminates the need of loop compensation circuitry while maintaining stability. The ME8304 achieves excellent regulation and high average efficiency, yet meets the requirement for no-load consumption less than 30mW.

### Features

- Primary Side Control for Rectangular Constant Current and Constant Voltage Output
- Sub-microampere Start-up Current
- 30mW No-load Input Power Feasible
- Tight CV Regulation Performance
- Eliminates Opto-coupler and Secondary CV/CC Control Circuitry
- Eliminates Control Loop Compensation Circuitry
- Flyback Topology in DCM Operation
- Random Frequency Modulation to Reduce System EMI
- Built-in Soft Start
- Open Feedback Protection
- Short Circuit Protection
- SOT23-5 Package

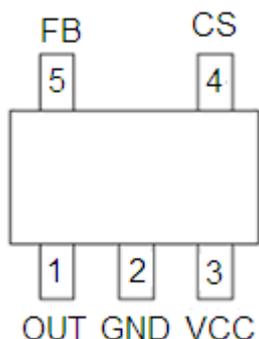
### Selection Guide:



### Typical Application

- Adapters/Chargers for Cell/Cordless Phones, PDAs, MP3 and Other Portable Apparatus
- LED Drivers
- Standby and Auxiliary Power Supplies

## Pin Configuration



## Pin Assignment

Pin Number	Pin Name	Function
1	OUT	This pin drives the base of external power NPN switch
2	GND	Ground
3	VCC	Supply voltage
4	CS	The primary current sense
5	FB	The voltage feedback from the auxiliary winding

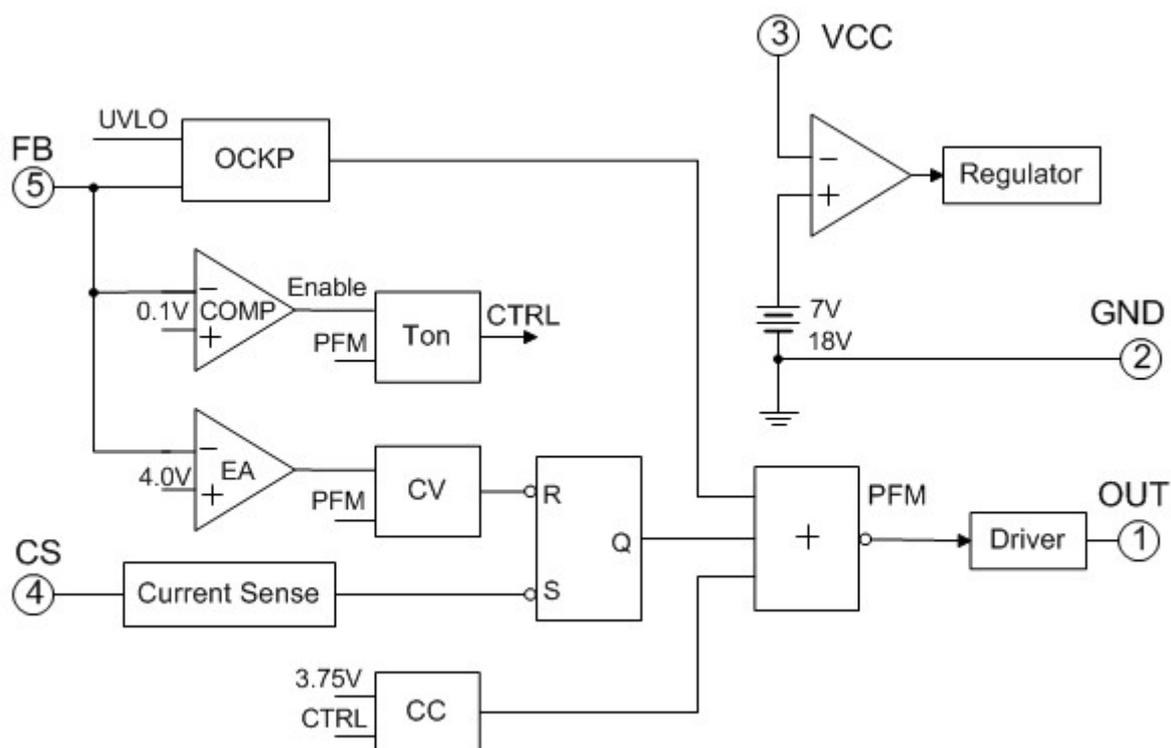
## Absolute Maximum Ratings (Note )

Parameter	Value	Unit
Supply Voltage $V_{CC}$	-0.3 to 30	V
Voltage at CS, OUT to GND	-0.3 to 7	V
FB input	-40 to 10	V
Output Current at OUT	Internally limited	A
Operating Junction Temperature	125	°C
Storage Temperature	-65 to 150	°C
Lead Temperature (Soldering, 10s)	300	°C
Thermal Resistance Junction-to-Ambient	250	°C/W
ESD (Machine Model)	200	V
ESD (Human Body Model)	2000	V

Note : The absolute maximum ratings are rated values exceeding which the product could suffer physical damage.

These values must therefore not be exceeded under any conditions.

Block Diagram

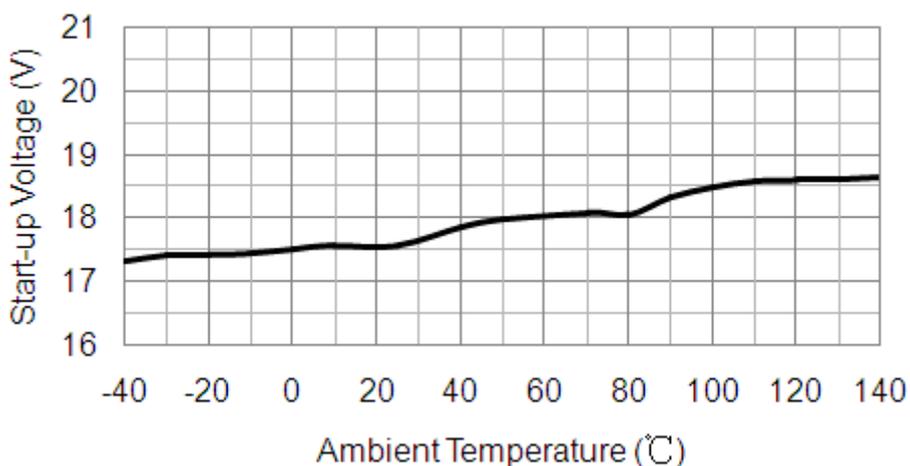


## Electrical Characteristics ( $V_{CC}=15V$ , $T_A=25^{\circ}C$ , unless otherwise specified)

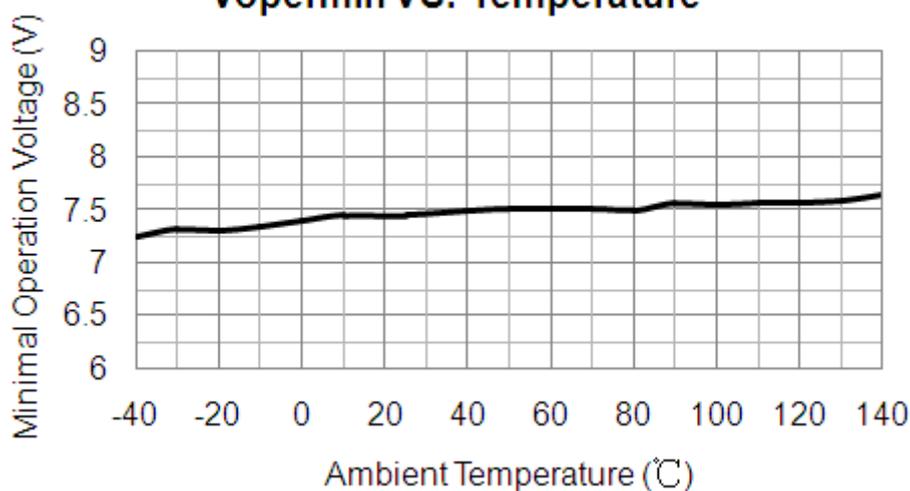
Parameter	Symbol	Conditions	Min	Typ.	Max	Unit
<b>UVLO SECTION</b>						
Start-up Threshold	$V_{TH(ST)}$		16	18	20	V
Minimal Operating Voltage	$V_{OPR(min)}$		5	7	9	V
<b>STANDBY CURRENT SECTION</b>						
Start-up Current	$I_{ST}$	$V_{CC} = V_{TH(ST)} - 0.5V$ , Before turn on	-	-	0.5	$\mu A$
Operating Current	$I_{CC(OPR)}$	Static	-	200	300	$\mu A$
<b>DRIVE OUTPUT SECTION</b>						
OUT Maximum Current	Sink	$I_{OUT}$	50	-	-	mA
	Source		25	30	35	
<b>CURRENT SENSE SECTION</b>						
Current Sense Threshold	$V_{CS}$		470	500	530	mV
Pre-Current Sense	$V_{CS(PRE)}$		370	400	430	mV
Leading Edge Blanking			-	500	-	ns
<b>FEEDBACK INPUT SECTION</b>						
Feedback Pin Input Leakage Current	$I_{FB}$	$V_{FB}=4V$	2.0	2.5	3.1	$\mu A$
Feedback Threshold Voltage	$V_{FB}$		3.89	3.95	4.01	V

Type Characteristics

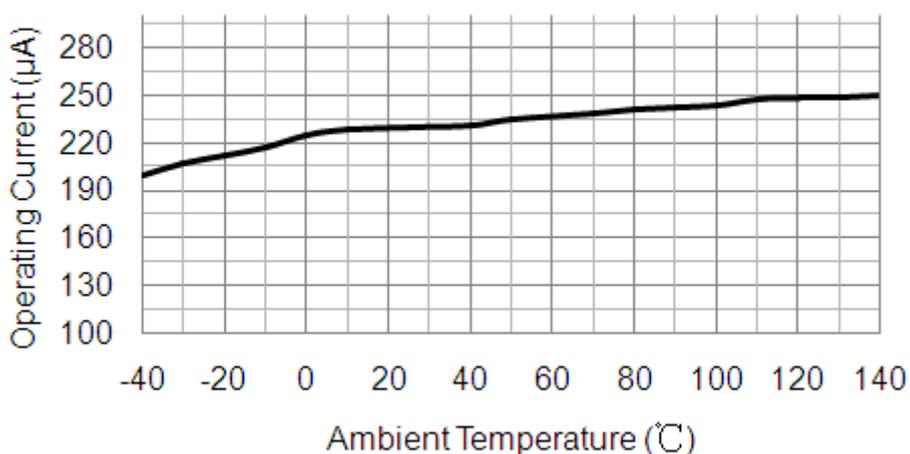
Vstart VS. Temperature



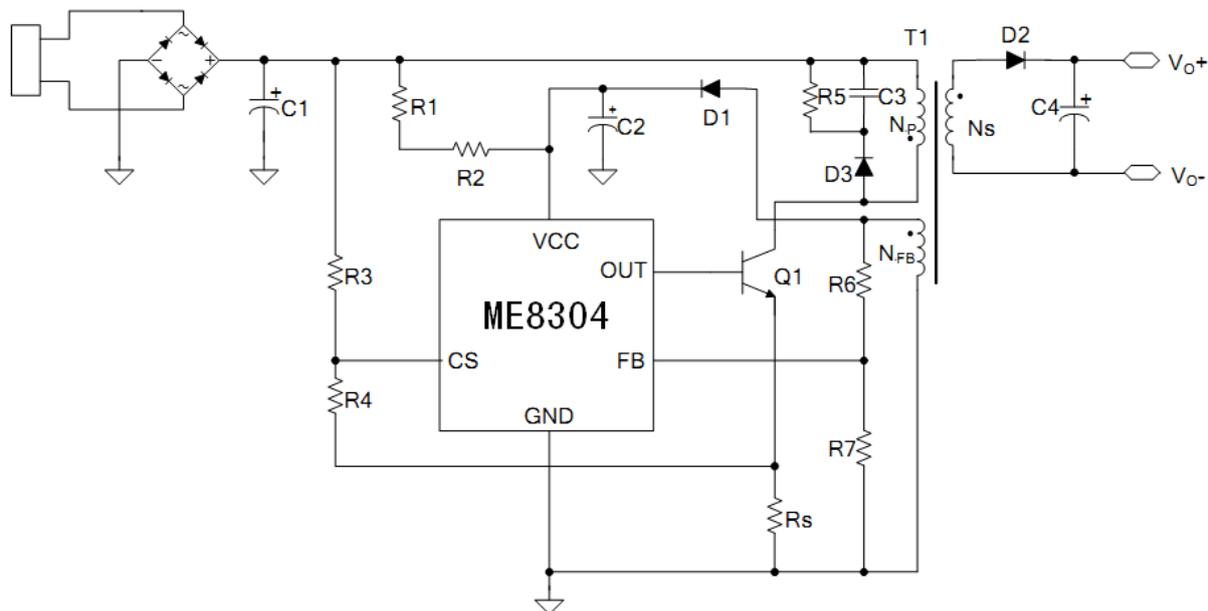
Vopermin VS. Temperature



Ioper VS. Temperature

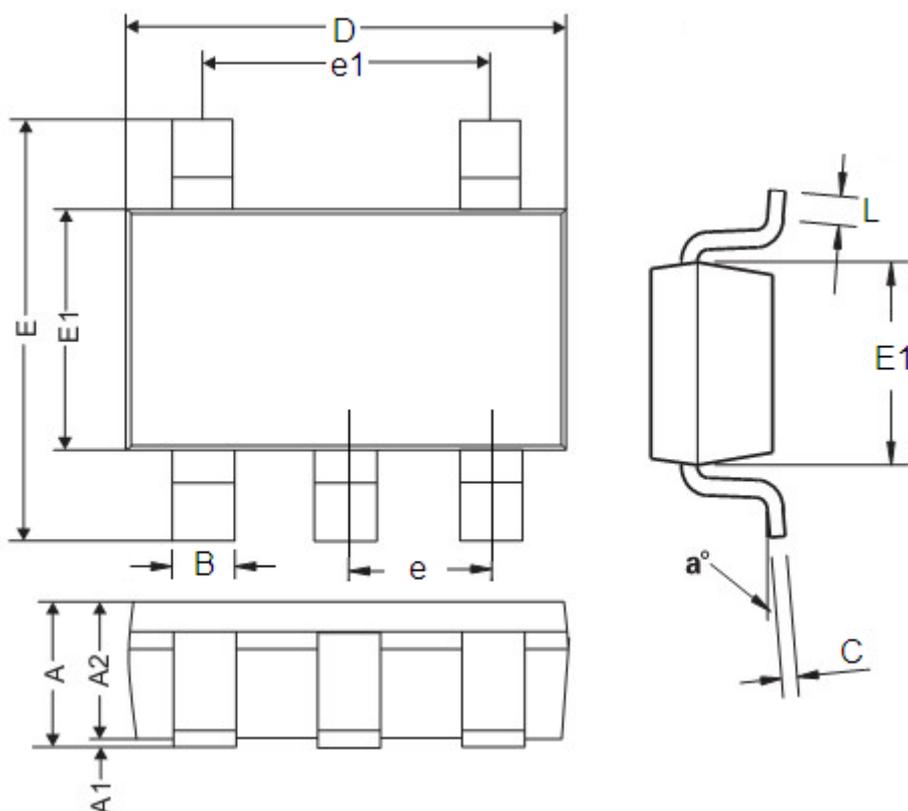


## Typical Application



## Packaging Information

Package Type: SOP23-5 Unit:mm(inch)



DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	0.9	1.45	0.0354	0.0570
A1	0	0.15	0	0.0059
A2	0.9	1.3	0.0354	0.0511
B	0.2	0.5	0.0078	0.0196
C	0.09	0.26	0.0035	0.0102
D	2.7	3.10	0.1062	0.1220
E	2.2	3.2	0.0866	0.1181
E1	1.30	1.80	0.0511	0.0708
e	0.95REF		0.0374REF	
e1	1.90REF		0.0748REF	
L	0.10	0.60	0.0039	0.0236
a°	0°	30°	0°	30°

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