

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. The ME8304 is available in SOT23-5 package.

Typical Application

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

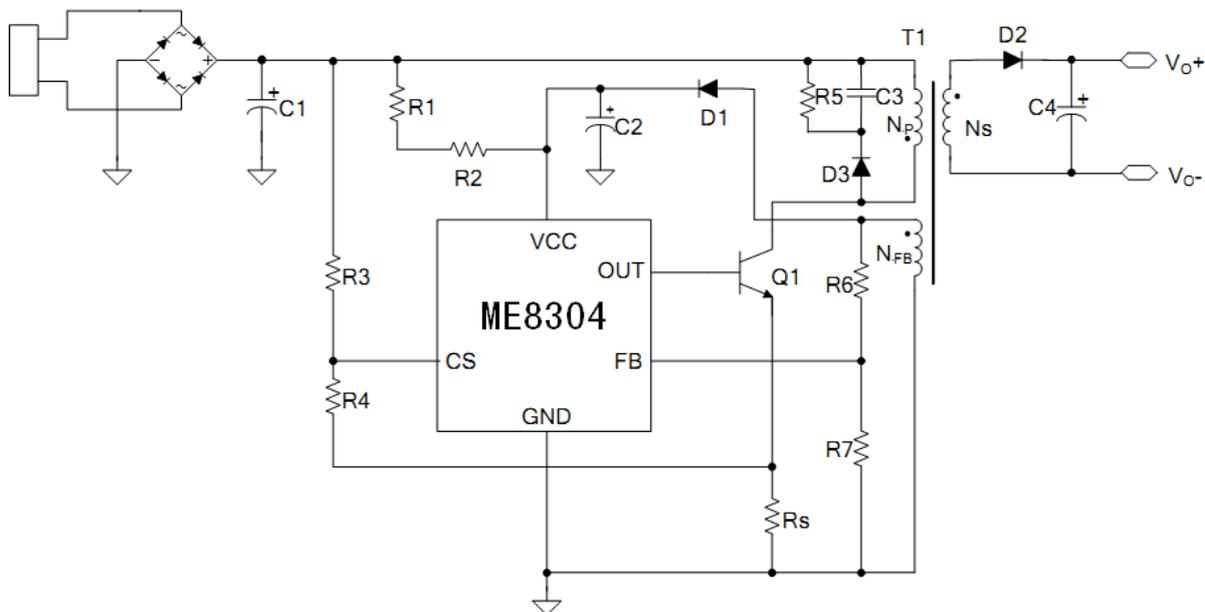
Features

- 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

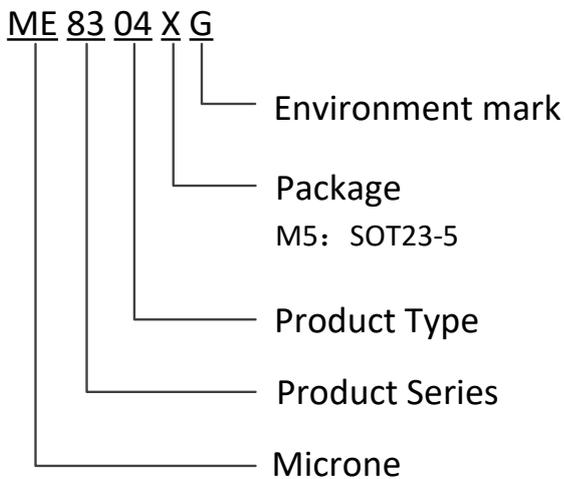
Package

- 5-pin SOT23-5

Typical Application Circuit

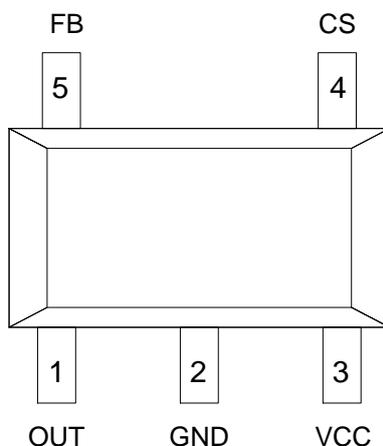


Selection Guide



product series	product description
ME8304M5G	Package: SOT23-5

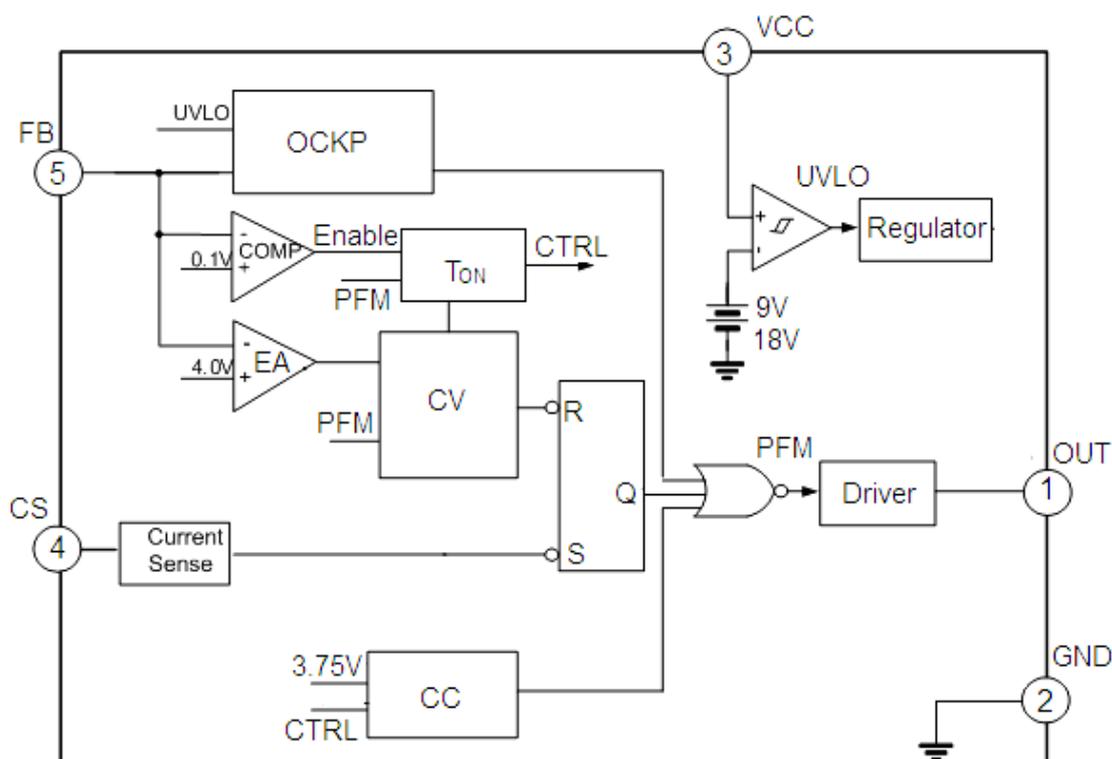
Pin Configuration & Pin Assignment



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

Block Diagram



Absolute Maximum Ratings

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

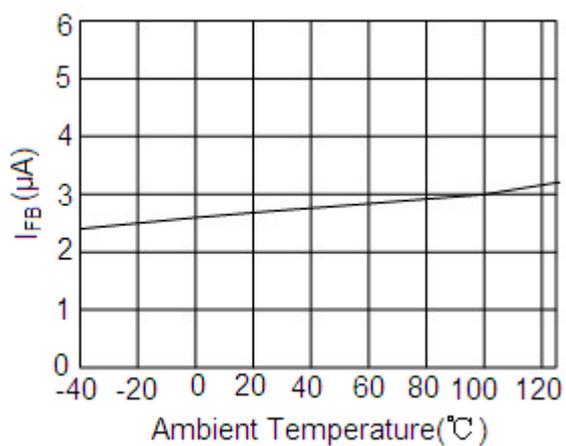
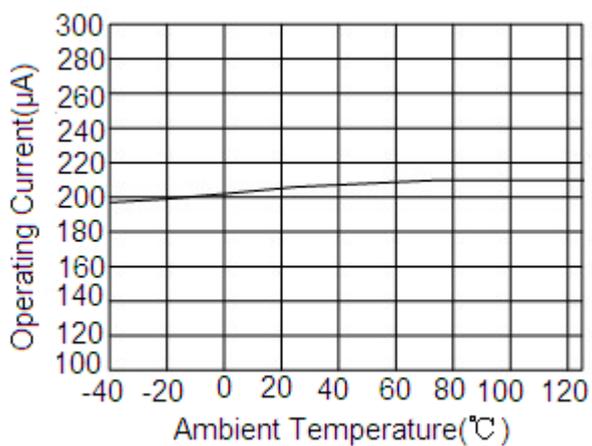
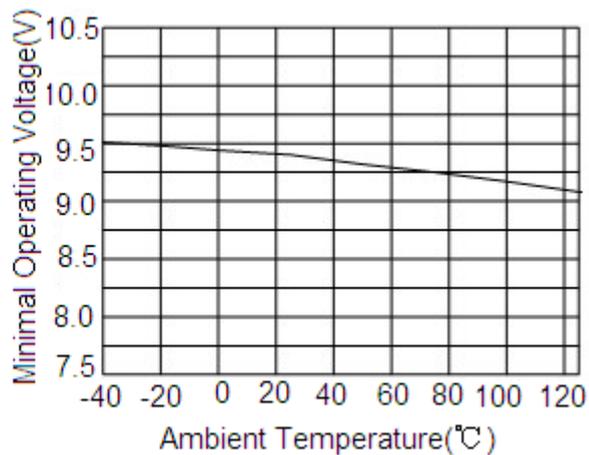
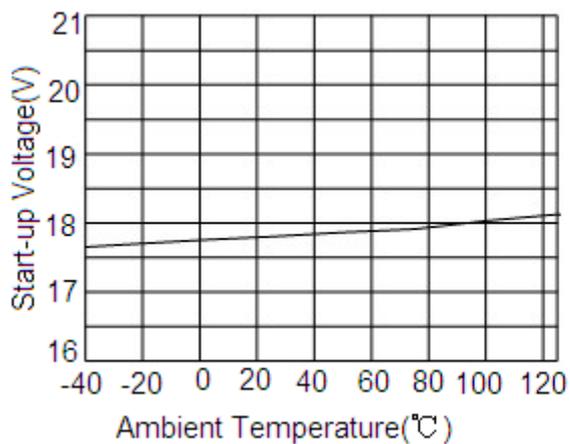
Note : The absolute maximum ratings are rated values exceeding which the product could suffer physical damage.

These values must therefore not be exceeded under any conditions.

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

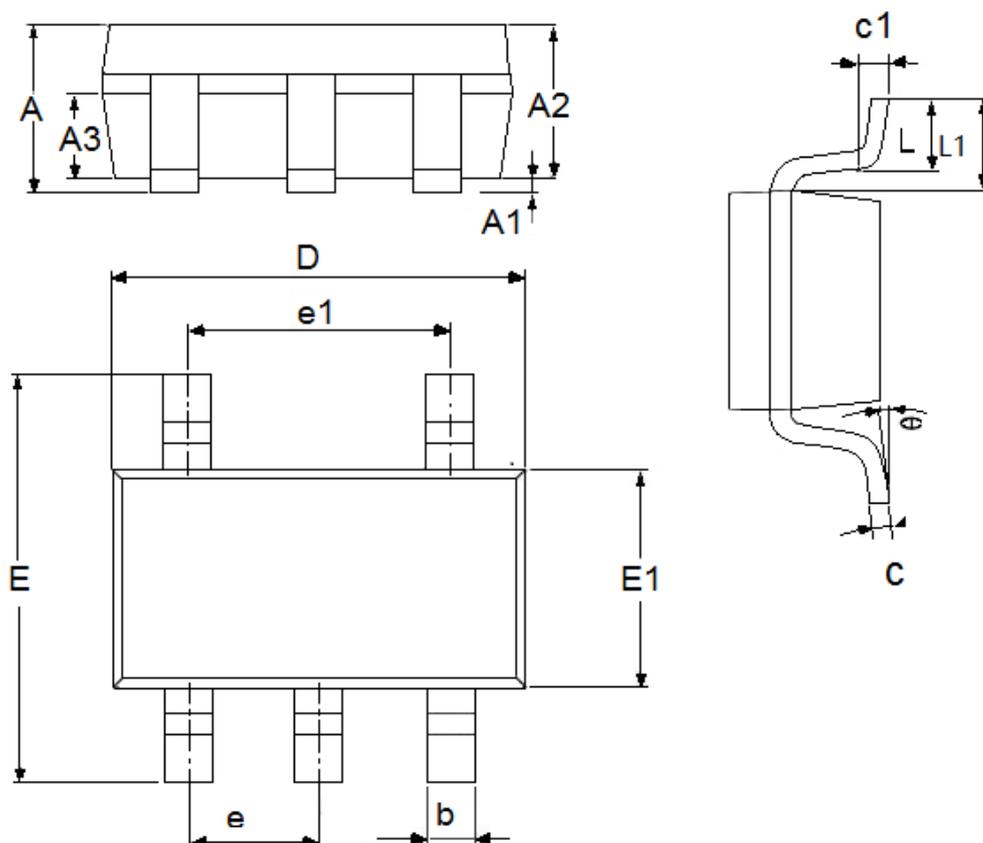
Parameter	Symbol	Conditions	Min	Typ.	Max	Unit
UVLO SECTION						
Start-up Threshold	$V_{TH(ST)}$		18	20	22	V
Minimal Operating Voltage	$V_{OPR(min)}$		7	8.5	10	V
STANDBY CURRENT SECTION						
Start-up Current	I_{ST}	$V_{CC} = V_{TH(ST)} - 0.5V$, Before turn on	-	-	0.6	μA
Operating Current	$I_{CC(OPR)}$	Static	-	200	320	μA
DRIVE OUTPUT SECTION						
OUT Maximum Current	Sink	I_{OUT}	50	-	-	mA
	Source		24	30	36	
CURRENT SENSE SECTION						
Current Sense Threshold	V_{CS}		455	510	545	mV
Pre-Current Sense	$V_{CS(PRE)}$		356	410	455	mV
Leading Edge Blanking			-	750	-	ns
FEEDBACK INPUT SECTION						
Feedback Pin Input Leakage Current	I_{FB}	$V_{FB}=4V$	2.0	2.5	3.1	μA
Feedback Threshold Voltage	V_{FB}		3.89	3.95	4.01	V

Type Characteristics



Packaging Information

● SOT23-5



DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	0.9	1.5	0.0354	0.0591
A1	0	0.15	0.0000	0.0059
A2	0.9	1.3	0.0354	0.0512
A3	0.6	0.7	0.0236	0.0276
b	0.25	0.5	0.0098	0.0197
c	0.1	0.26	0.0039	0.0102
D	2.8	3.1	0.1102	0.1220
e1	1.9(TYP)		0.0748(TYP)	
E	2.6	3.1	0.1024	0.1201
E1	1.5	1.8	0.0512	0.0709
e	0.95(TYP)		0.0374(TYP)	
L	0.25	0.6	0.0098	0.0236
L1	0.59(TYP)		0.0232(TYP)	
θ	0	8°	0.0000	8°
c1	0.2(TYP)		0.0079(TYP)	

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