300KHz PFM Control
Step-Up DC/DC Controller

CE8377 Series

■ INTRODUCTION

The CE8377 is a CMOS PFM-control step-up switching DC/DC controller. The PFM controller allows the duty ratio to be automatically switched according to the load, enabling products with a low ripple over a wide range, high efficiency, and high output current. With the CE8377, a step-up switching DC/DC controller can be configured by using an external coil, capacitor, and diode. This feature, along with the mini package and low current consumption, makes the CE8377 ideal for applications such as the power supply unit of portable equipment.

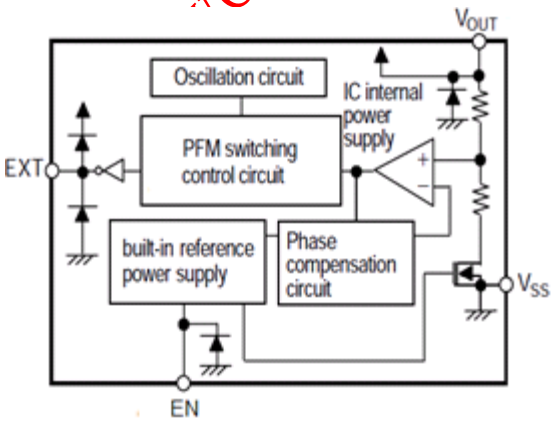
■ FEATURES

- Low voltage operation:
  Startup at 0.9 V @I_{OUT} = 1 mA
- Working frequency: 300KHz
- External parts: Coil, capacitor, diode
- Accuracy of ±2%
- High efficiency： up to 90%
- Shutdown function
- Low ripple, Low noise

■ APPLICATIONS

- Digital cameras
- Electronic notebooks and PDAs
- Portable CD/MD players
- Cameras, video equipment,
- Communications equipment
- Power supply for microcomputers

■ BLOCK DIAGRAM



■ ORDER INFORMATION

CE8377D①②③M

DESIGNATOR	SYMBOL	DESCRIPTION
①②③	Integer	Output Voltage（1.8～6.0）e.g.：5.15V=①:5; ②:1; ③:5

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■ PIN CONFIGURATION

SOT-23-5
Top view

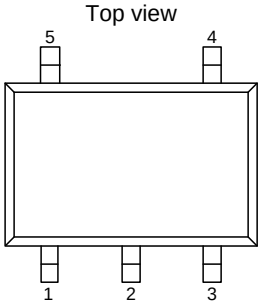

Table 1 CE8377D Series（SOT-23-5 PKG）

PIN NO.	PIN NAME	PIN DESCRIPTION
1	V_{OUT}	Output voltage pin and IC power supply pin
2	NC	Not Connect
3	EN	Enable pin “H”: Normal operation “L”: Step-up stopped
4	V_{SS}	GND pin
5	EXT	External transistor connection pin

■ ABSOLUTE MAXIMUM RATINGS

(Unless otherwise specified, Ta=25°C)

PARAMETER		SYMBOL	RATINGS	UNITS
V_{OUT} pin voltage		V_{OUT}	V_{SS}-0.3 ~ V_{SS}+8	V
EN pin voltage		V_{EN}	V_{SS}-0.3 ~ V_{SS}+8	V
EXT pin voltage		V_{EXT}	V_{SS}-0.3 ~ V_{OUT}+0.3	V
EXT pin current		I_{EXT}	±80	mA
Power dissipation	SOT-23-5	P_D	250	mW
Operating ambient temperature		T_{opr}	-40 ~+85	°C
Storage temperature		T_{stg}	-40 ~+125	°C
Soldering Temperature & Time		T_{solder}	260°C, 10s	

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■ ELECTRICAL CHARACTERISTICS

(Unless otherwise specified, Ta=25°C)

PARAMETER	SYNBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Output voltage	V_{OUT}	—	$V_{OUT(S)}$ ×0.98	V_{OUT}	$V_{OUT(S)}$ ×1.02	V
Input voltage	V_{IN}	—	—	—	6	V
Current consumption	I_{SS2}	$V_{OUT}=V_{OUT(S)}+0.5$ V	—	7	—	μA
Current consumption during shutdown	I_{SSS}	V_{EN} = 0 V, No load	—	—	1.0	μA
EXT pin output current	I_{EXTH}	V_{EXT} = V_{OUT} − 0.4 V		-32		mA
	I_{EXTL}	V_{EXT} = 0.4 V		55		mA
Line regulation	ΔV_{OUT1}	V_{IN} = $V_{OUT(S)}$ × 0.4 to × 0.6		30		mV
Load regulation	ΔV_{OUT2}	I_{OUT} = 10 μA to $V_{OUT(S)}$ / 50 × 1.25		30		mV
Maximum Oscillation frequency	F_{max}	$V_{OUT}=0.95\times V_{OUT(S)}$, measure waveform at EXT pin	—	300	—	KHz
Duty ratio	Duty	$V_{OUT}=0.95\times V_{OUT(S)}$, measure waveform at EXT pin	—	75	—	%
EN pin input voltage	V_{SH}	Measured oscillation at EXT pin	1.5	—	—	V
	V_{SL}	Judged oscillation stop at EXT pin	—	—	0.3	V
EN pin input current	I_{SH}	$V_{EN}=0.95\times V_{OUT(S)}$	-0.1	—	0.1	μA
	I_{SL}	V_{EN}=0V	-0.1	—	0.1	μA
Efficiency	EFFI		—	87		%

Remark：V_{IN} =$V_{OUT(S)}$×0.6 applied, I_{OUT}=$V_{OUT(S)}$ / 250 Ω

$V_{OUT(S)}$ specified above is the set output voltage value, and V_{OUT} is the typical value of the actual output voltage.

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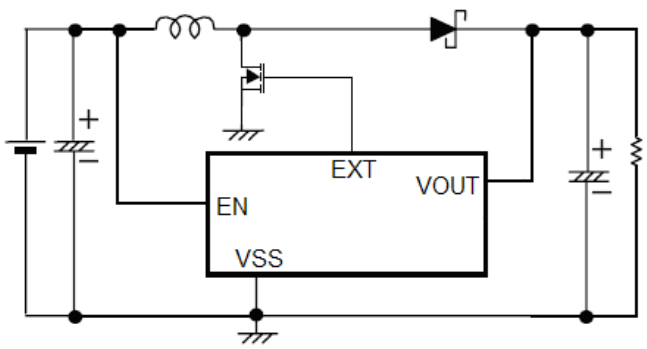
■ STANDARD CIRCUITS

Component: Inductor：22uH(Sumida) Capacitor：47uF/10V(Tantalum)

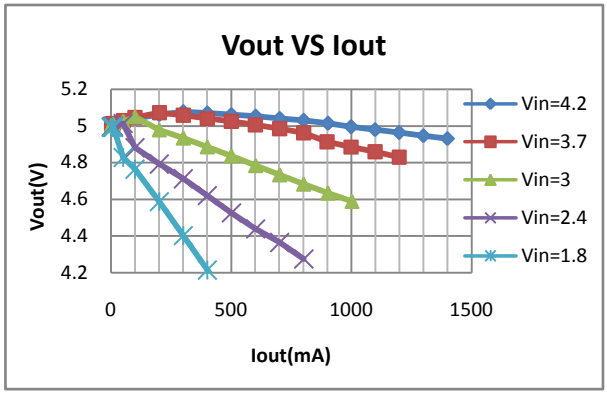
Diode：SS34、SS54 NMOS：CE2312



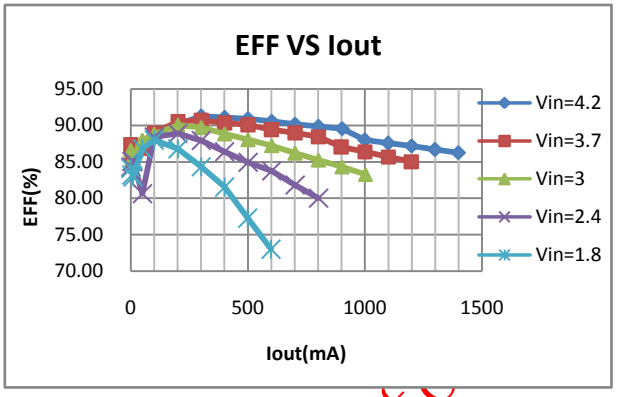
■ TYPICAL PERFORMANCE CHARACTERISTICS

CE8377D50M：

a、V_{OUT} vs. I_{OUT} :



b、 Efficiency vs. I_{OUT} :



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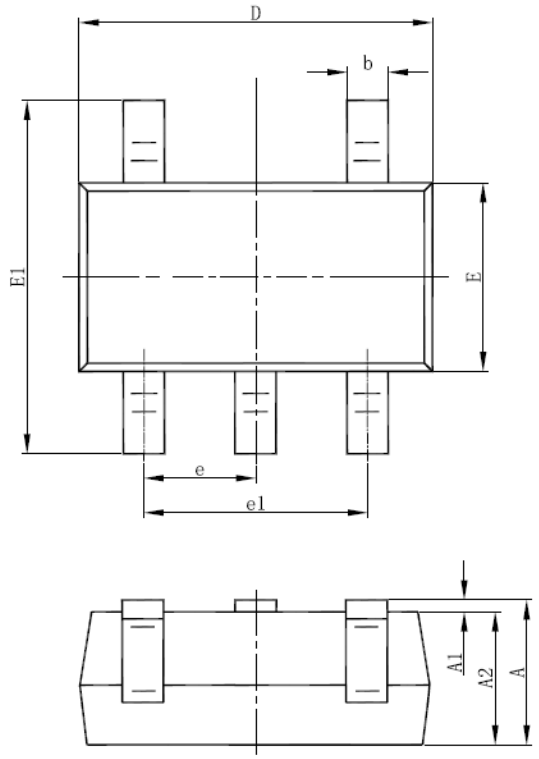
■ PACKAGE INFORMATION

● **SOT-23- 5**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

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