


SEMTECH
 Today's Results...Tomorrow's Vision

5mA CAPLESS™ CHARGE PUMP
SC1460

PRELIMINARY - July 6, 1999

TEL:805-498-2111 FAX:805-498-3804 WEB:http://www.semtech.com

DESCRIPTION

The SC1460 is a versatile charge pump designed for use in battery operated power supply applications requiring up to 5mA. It enables a simple low current boost circuit to be implemented without the costly inductors or capacitors associated with regular switching circuits. Features include internal MOSFETs, control circuitry and charge pump capacitor, requiring only two external capacitors for a total solution. With a very high operating frequency (8MHz free running at 2.5V in typically), the SC1460 does not require large input or output capacitors, and therefore uses very little board space. Two versions of the SC1460 are available: the -3.3 produces a regulated 3.3V output from 2.5V in, and the -5.0 produces a regulated 5V output from 3.3V in. It is supplied in the popular 3 lead, SOT-23 package.

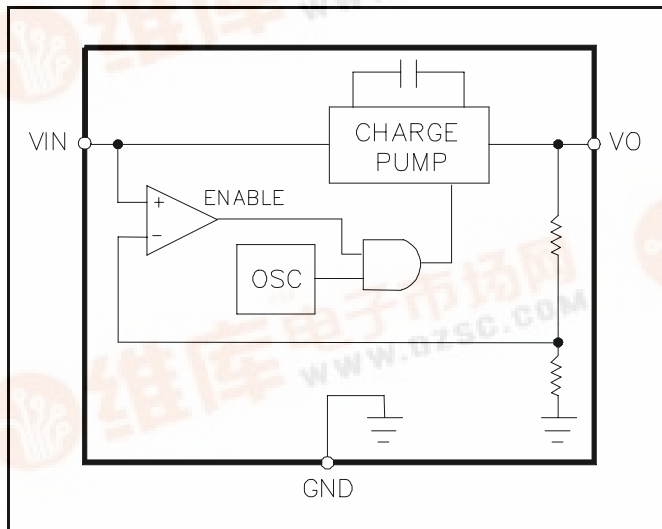
FEATURES

- Small size - SOT-23 package
- 4% voltage accuracy
- Typical 100uA quiescent current

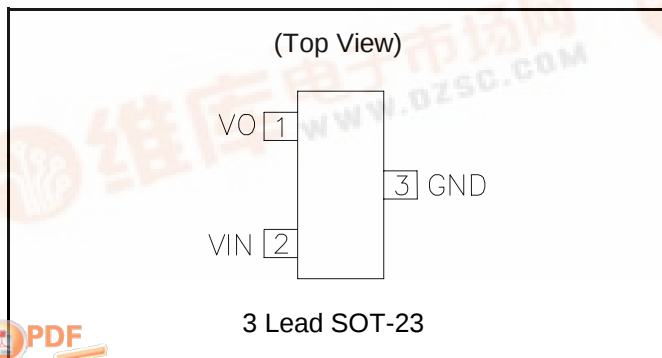
APPLICATIONS

- Handheld Power Supplies
- PDA Power Supplies
- Notebook Power Supplies
- Peripheral Card Supplies
- Industrial Power Supplies
- High Density DC/DC Conversion

BLOCK DIAGRAM



PIN CONFIGURATION



ORDERING INFORMATION

DEVICE ⁽¹⁾⁽²⁾	PACKAGE
SC1460CSK-X.X	SOT-23

Notes:

(1) Where X.X denotes voltage options. Available voltages are: 3.3V and 5.0V.

(2) Add suffix 'TR' for tape and reel.

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Maximum	Units
Supply Voltage	VIN	-0.3 to +4	V
Output Voltage	VO	-0.3 to +6.0	V
Thermal Resistance Junction to Ambient	θ_{JA}	410	°C/W
Operating Temperature	T _A	0 to +70	°C
Temperature Range	T _J	0 to 125	°C
Storage Temperature	T _{STG}	-65 to +150	°C
Lead Temperature (Soldering) 10 seconds	T _L	300	°C

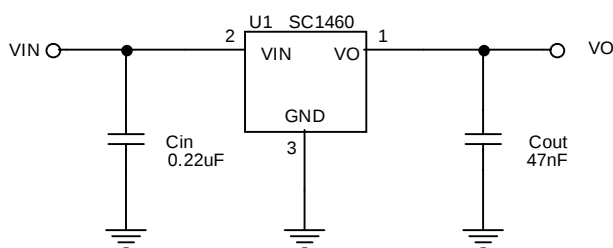
PRELIMINARY - July 6, 1999

ELECTRICAL CHARACTERISTICS

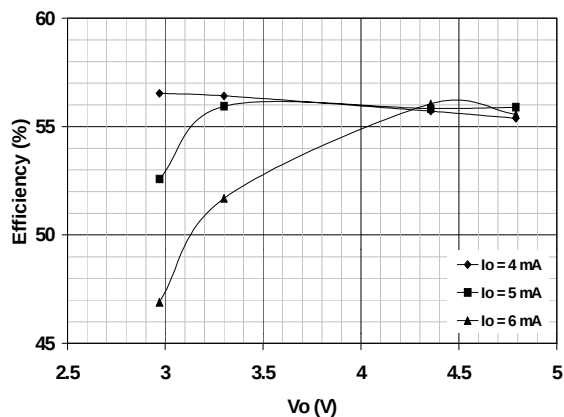
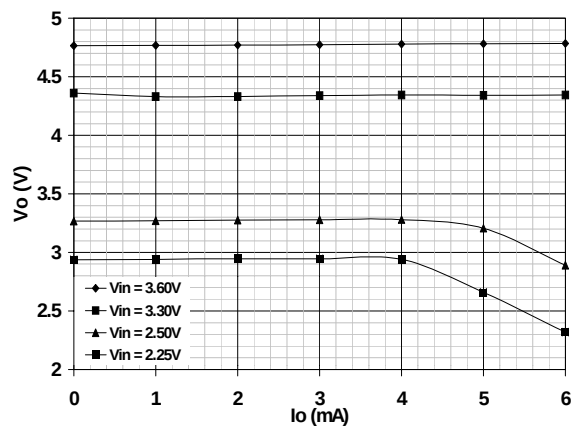
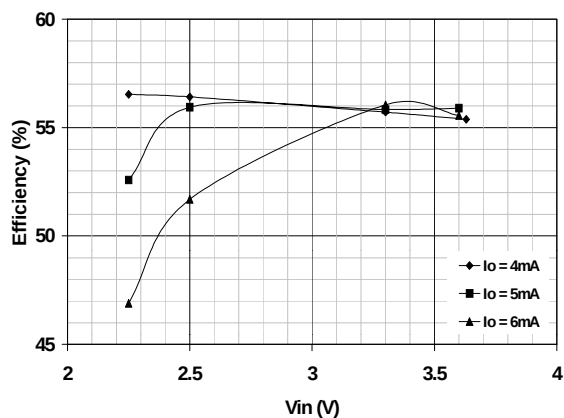
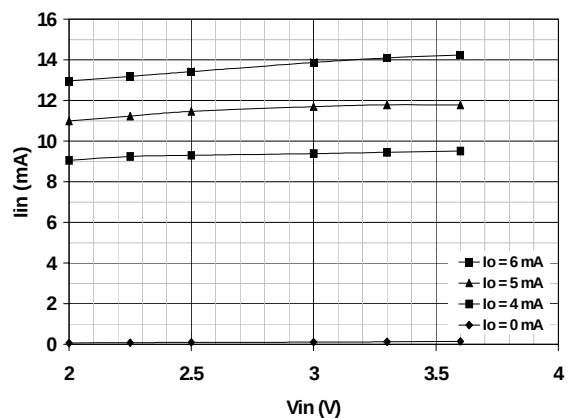
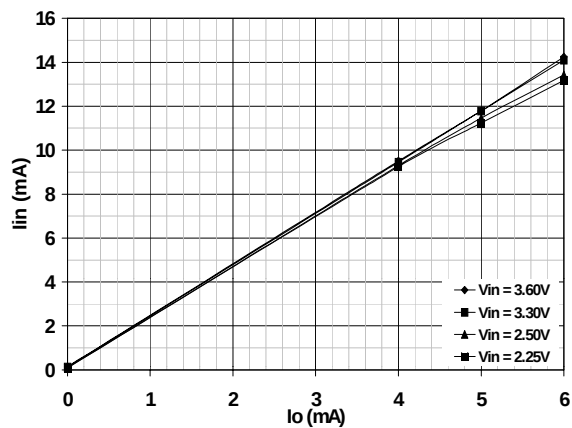
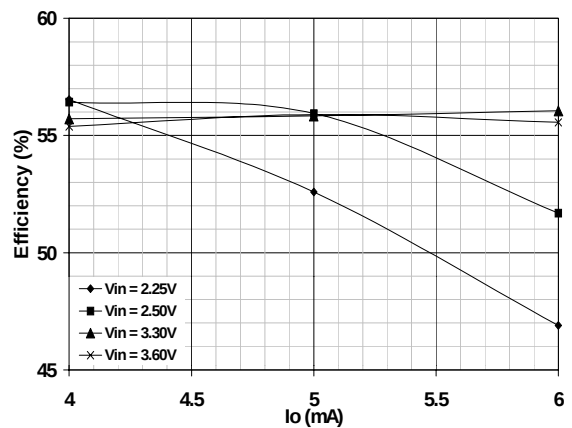
Unless specified: VIN = 3.3V (-5.0 parts), VIN = 2.5V (-3.3 parts), $0 \leq I_O \leq 4\text{mA}$, $C_{IN} = 0.22\mu\text{F}$, $C_{OUT} = 47\text{nF}$, $T_A = 25^\circ\text{C}$. Values in **bold** apply over full operating temperature range

Parameter	Symbol	Conditions	MIN	TYP	MAX	Units
Input Supply Voltage	VIN		2.25		3.63	V
Input Supply Current	I _{IN}	I _O = 0mA VIN = 2.5 V		100	150	μA
Output Voltage	VO	SC1460CSK - 3.3, VIN = 2.5V	-4	1.32 x VIN	4	%
		SC1460CSK - 5.0, VIN = 3.3V	4	1.515 X VIN	4	%
Output Ripple (pk-pk)	V _R	I _O = 4mA, C _{OUT} = 47nF		50		mV
Output Current	I _O		4	5		mA
Efficiency	η	I _O = 4mA	50	56		%
Oscillator Frequency	OSC	SC1460CSK - 3.3, VIN = 2.5V		8		MHz
		SC1460CSK - 5.0, VIN = 3.3V		8.75		
Time to Regulation at Turn-On	t _{ON}	Power Up with I _O = 4mA		100		μs

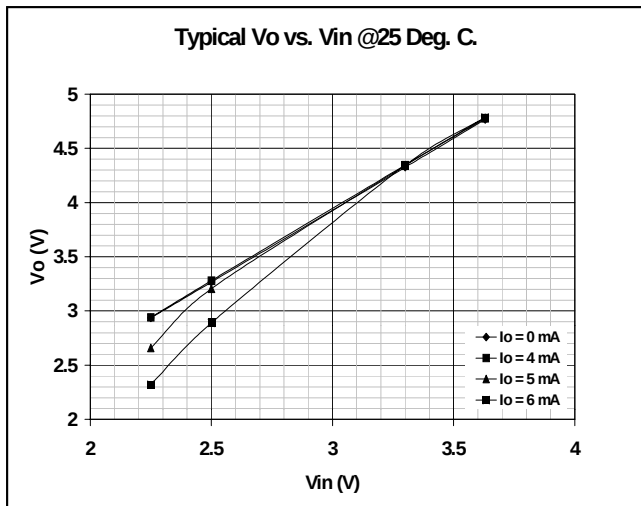
APPLICATION CIRCUIT



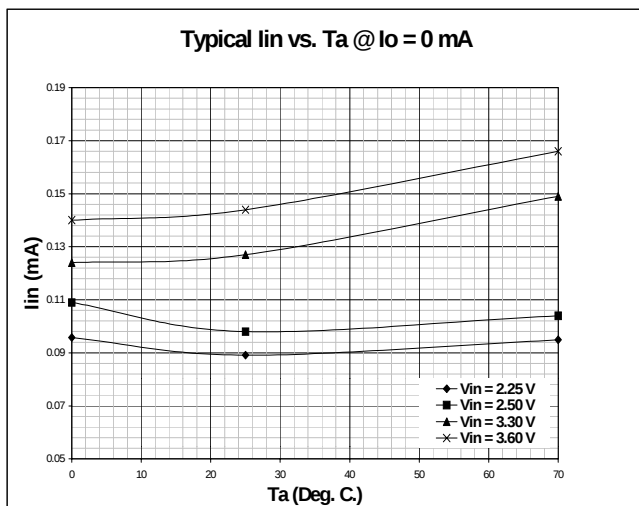
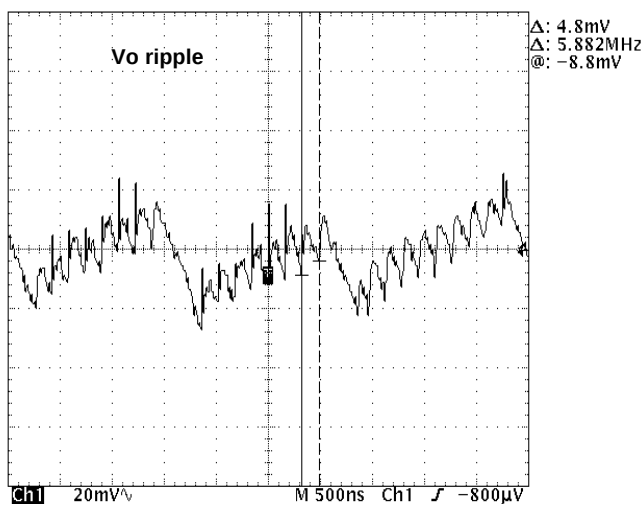
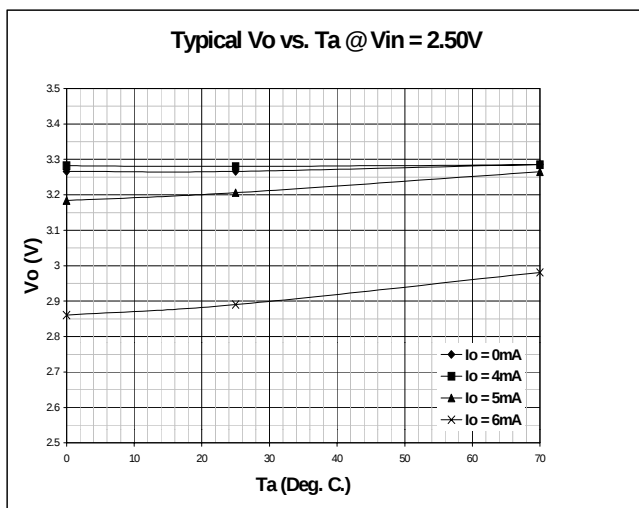
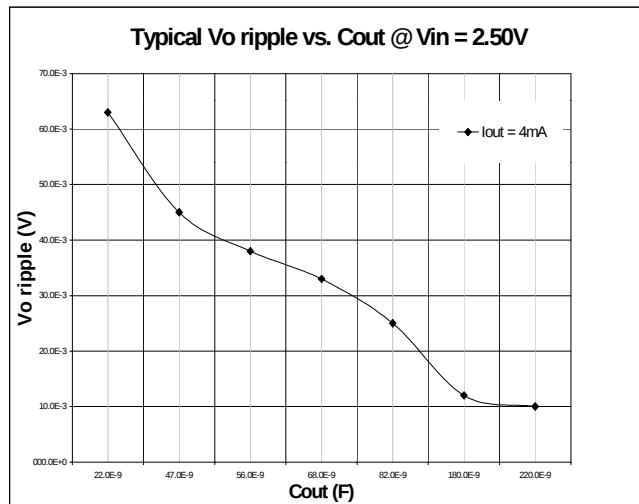
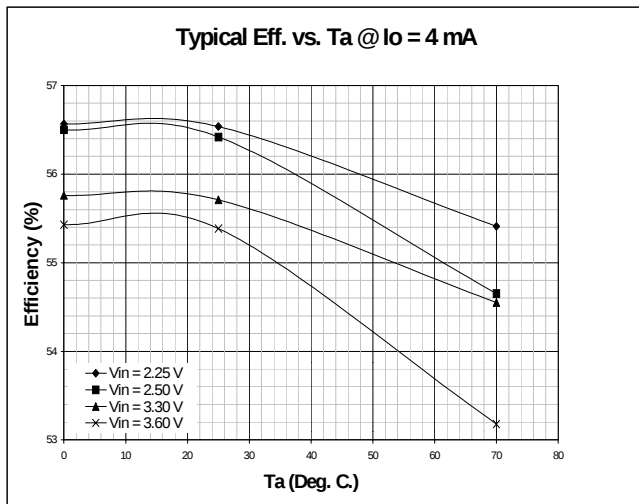
PRELIMINARY - July 6, 1999

Typical Eff. vs. Vo @25 Deg. C.

Typical Vo vs. Io @25 Deg. C.

Typical Eff. vs. Vin @25 Deg. C.

Typical Iin vs. Vin @25 Deg. C.

Typical Iin vs. Io @25 Deg. C.

Typical Eff. vs. Io @25 Deg. C.


PRELIMINARY - July 6, 1999



PRELIMINARY - July 6, 1999



PRELIMINARY - July 6, 1999

OUTLINE DRAWING SOT-23-3L

