



Synchronous Boost DC/DC Regulator kB3429

Features

- Up to 96% Efficiency
- Low voltage start-up: 0.82V
- Shut-down current: <math>< 1\mu\text{A}</math>
- Input voltage: 0.5V~4.4V
- Output voltage: 2.5V~4.3V (Up to 5V with Schottky)
- Low switch on resistance RDS(ON), Internal switch: 0.35 Ω
- 0.5MHz fixed frequency switching
- High switch on current: 1A
- Short-Circuit protection
- Low Profile (1mm) SOT-23 Package

Description

The kB3429 is high efficiency synchronous, step-up DC/DC converters optimized to provide a high efficient solution to medium power systems. The devices work under the input voltage between 0.6V and 4.4V with a 1.5MHz fixed frequency switching. These features minimizes overall solution footprint by allowing the use of tiny, low profile inductors and ceramic capacitors.

The kB3429 is capable of supplying an output voltage between 2.5V and 4.3V, the internal synchronous switch is desired to provide high efficiency without Schottky.

Applications

- Digital cameras and MP3
- Palmtop computers / PDAs
- Cellular phones
- Wireless handsets and DSL modems
- PC cards
- Portable media players

The devices also featured providing up to 260mA from a single AA cell input or up to 600mA from a 2-cell AA with a 3V/3.3V output.

The kB3429 regulators are available in the industry standard SOT-23-6 power packages (or upon request).

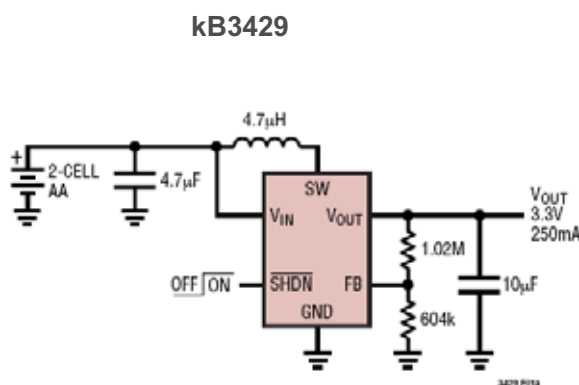
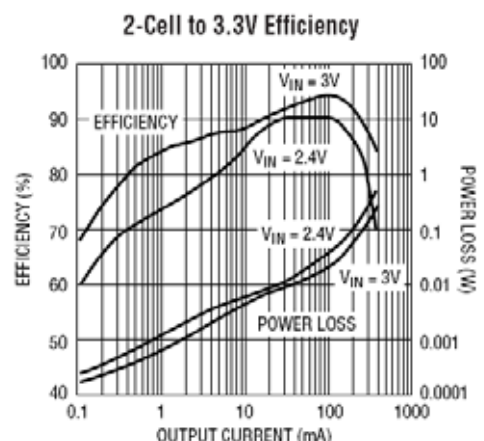
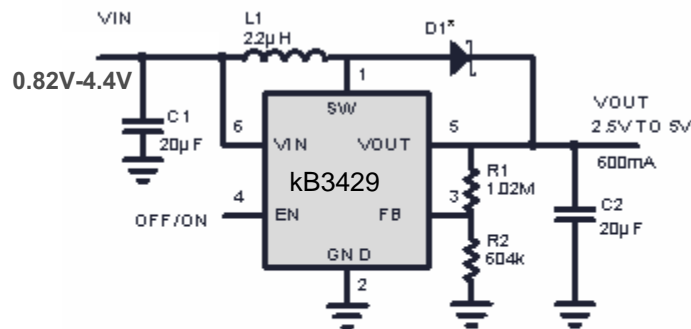


Figure 1. 2-Cell to 3.3V Synchronous Boost Converter



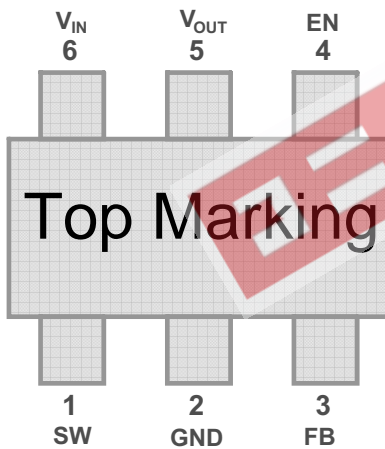


Typical Application



*LOCATE COMPONENTS CLOSE TO THE PIN
 C1: TAIYO YUDEN X5R JMK212BJ206MM
 C2: TAIYO YUDEN X5R JMK212BJ206MM
 D1: MOTOROLA MBR0520L
 L1: COILCRAFT D0160C-222

Pin Assignment



PIN NUMBER SOT-23-6	PIN NAME	FUNCTION
1	SW	Switch Output
2	GND	Ground
3	FB	Feedback
4	EN	ON/OFF Control (High Enable)
5	V _{OUT}	Output
6	V _{IN}	Input

Top Marking:

HX-Xh: To manufacture marking after 2007-3-15

XF: Before 2007-3-15

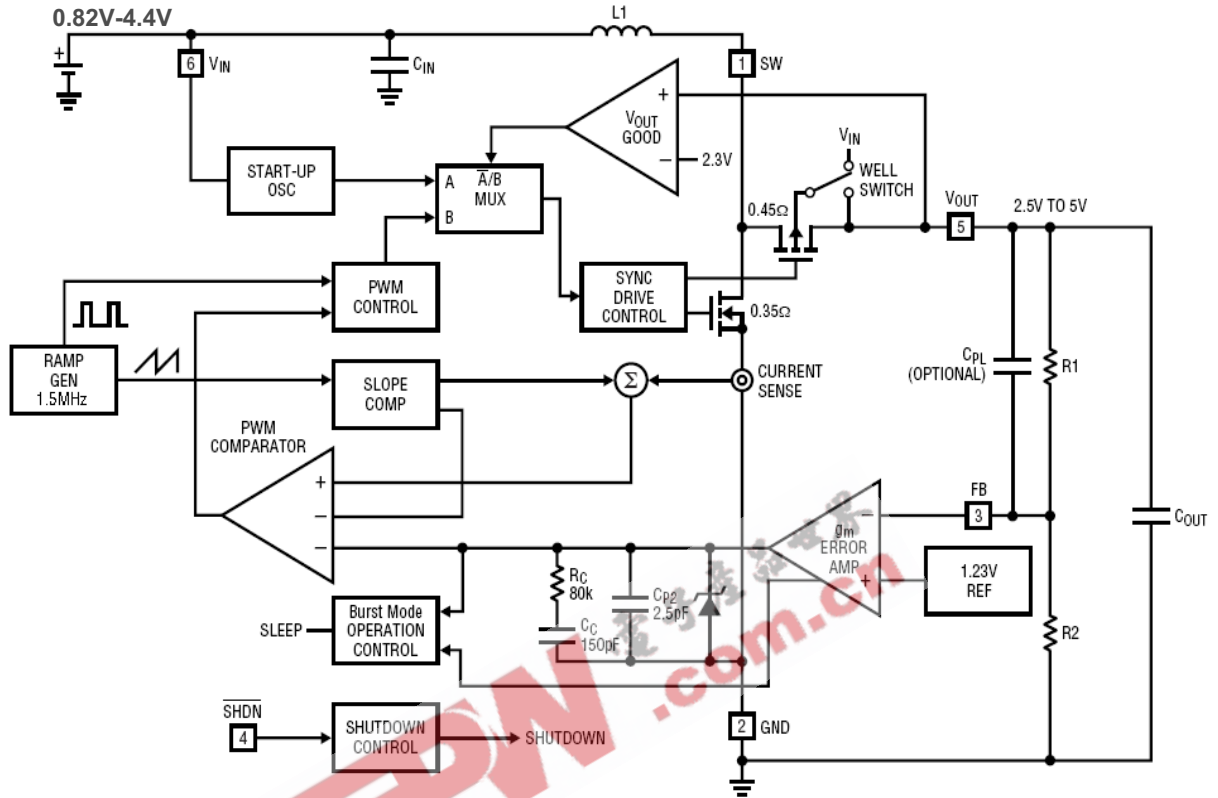
Order Information

KB3429 - ① ② :

SYMBOL	DESCRIPTION
①	Denotes Output voltage: A : Adjustable Output
②	Denotes Package Types: F: SOT-23-6



Functional Diagram



Absolute Maximum Ratings

- Power Dissipation.....Internally limited
- V_{IN} - 0.3 V ~ + 6 V
- V_{OUT} - 0.3 V ~ + 6 V
- V_{SW} - 0.3 V ~ + 6 V
- V_{EN}, V_{OUT} - 0.3 V ~ + 6 V
- Operating Temperature Range - 30°C ~ + 85°C
- Lead Temperature (Soldering 10 sec.) + 300°C
- Storage Temperature Range - 65°C ~ + 125°C



Electrical Characteristics

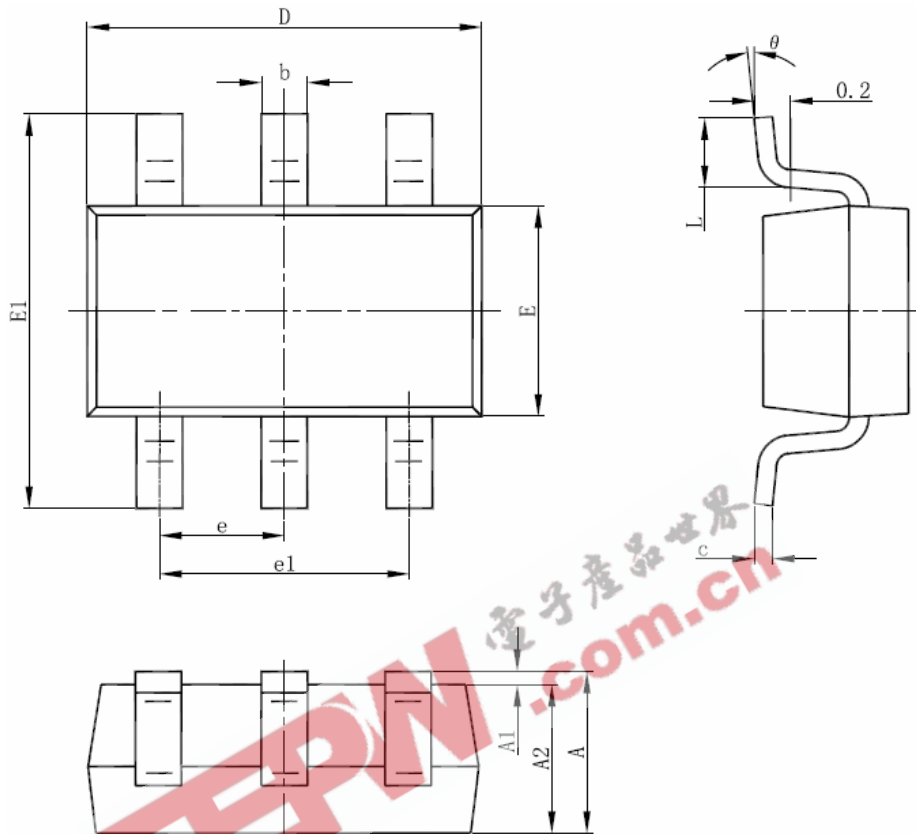
Operating Conditions: TA=25°C, V_{IN}=1.2V, V_{OUT}=3.3V unless otherwise specified.

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Output Voltage Range (Adj.)		2.5		5	V
Minimum Start-Up Voltage	I _{LOAD} = 1mA		0.82	0.85	V
Minimum Operating Voltage	EN = V _{IN}		0.5	0.65	V
Switching Frequency		1.1	1.5	1.7	MHz
Max Duty Cycle	V _{FB} = 1.15V	80	87		%
Current Limit Delay to Output			40		ns
Feedback Voltage		1.165	1.23	1.241	V
Feedback Input Current	V _{FB} = 1.22V		1		nA
NMOS Switch Leakage	V _{SW} = 5V		0.1	5	μA
PMOS Switch Leakage	V _{SW} = 0V		0.1	5	μA
NMOS Switch On Resistance	V _{OUT} = 3.3V		0.35		Ω
PMOS Switch On Resistance	V _{OUT} = 3.3V		0.45		Ω
NMOS Current Limit		700	950		mA
Quiescent Current (Active)	Measured On V _{OUT} , Nonswitching		300	500	μA
Shutdown Current	V _{EN} =0V, Including Switch Leakage		0.1	1	μA
En Input High		1			V
En Input Low				0.35	V
En Input Current	V _{EN} = 5.5V		0.01	1	μA



Packaging Information

SOT-23-6 Package Outline Dimension



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.450	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°