Super-Small Package VFM Control Step-up Switching Regulator

■ General Description

The 2220 is a constant frequency, 6-pin SOT23 current mode step-up converter intended for small, low power applications. The 2220 switches at 1.4MHz and allows the use of tiny, low cost capacitors and inductors. Internal soft-start results in small inrush current and extends battery life.

The 2220 features automatic shifting to pulse frequency modulation mode at light loads. The 2220 includes under-voltage lockout, current limiting, and thermal overload protection to prevent damage in the event of an output overload.

■ Package

- SOT-23-6L

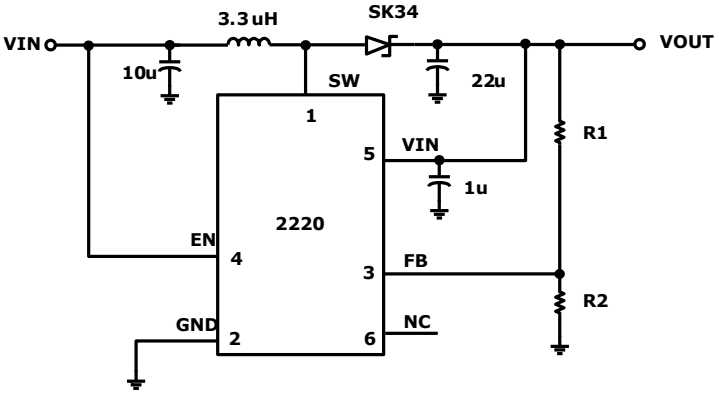
■ Features

- Integrated 80mΩ Power MOSFET
- 2V to 24V Input Voltage
- 1.4MHz Fixed Switching Frequency
- Internal 4A Switch Current Limit
- Adjustable Output Voltage
- Internal Compensation
- Up to 24V Output Voltage
- Automatic Pulse Frequency Modulation Mode
- at Light Loads
- up to 93% Efficiency

■ Applications

Battery-Powered Equipment
Set-Top Boxed
LCD Bais Supply
DSL and Cable Modems and Routers
Networking cards powered from PCI or PCI express slots

■ Typical Application Circuit



■ Ordering Information

2220P ①②

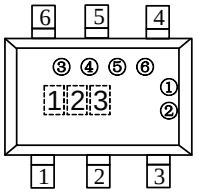
Designator	Symbol	Description
①	A	Feedback voltage 0.6V
②	R	Embossed Tape: Standard Feed
	L	Embossed Tape: Reverse Feed

■ Pin Configuration

Pin Mumber	Pin Name	Function
1	SW	Switching Output
2	GND	Common Ground
3	FB	Feedback
4	EN	Chip Enable
5	VIN	Power Input
6	NC	No Connect

■ Marking Rule

- **SOT-23-6L**



SOT-23-6L

1 **Represents the feedback voltage**

Symbol	Product Name
A	Feedback voltage 0.6V

2 **Represents the package types**

Symbol	Description
M	Package SOT23-6L

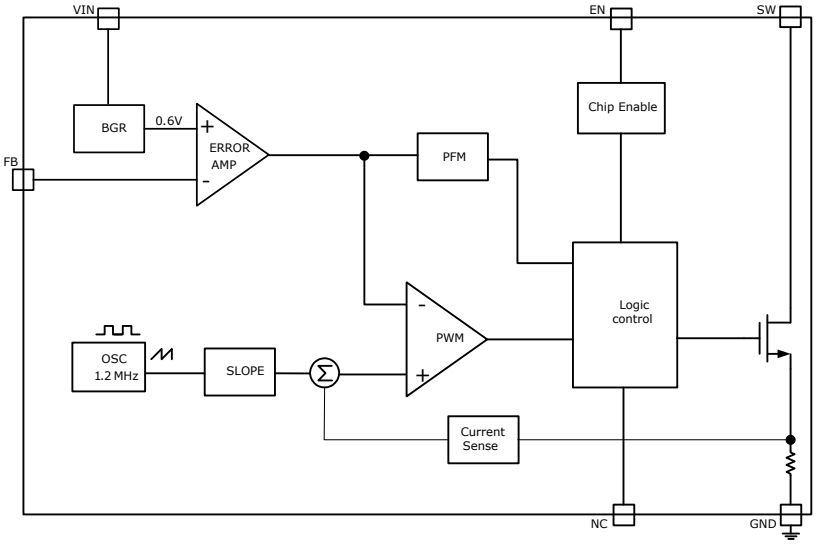
3 **Represents the technological processes change**

0-9，A-Z; 0-9，A-Z mirror writing，repeated（G，I，J，O，Q，W exception）

① ②③④⑤⑥ **Represents the assembly lot No.**

■ Function Block Diagram

■



■ Absolute Maximum Ratings

Parameter	Symbol	Maximum Rating	Unit
Input voltage	VIN	Vss-0.3～Vss+24	V
Output voltage	VOUT	Vss-0.3～Vss+24	
	VSW	Vss-0.3～Vss+24	
Output Current	ISW	4	A
Power Dissipation	PD	250	mW
Operating ambient temperature	Topr	-40～＋80	℃
Storage ambient temperature	Tstg	-40～＋125	

Caution 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.

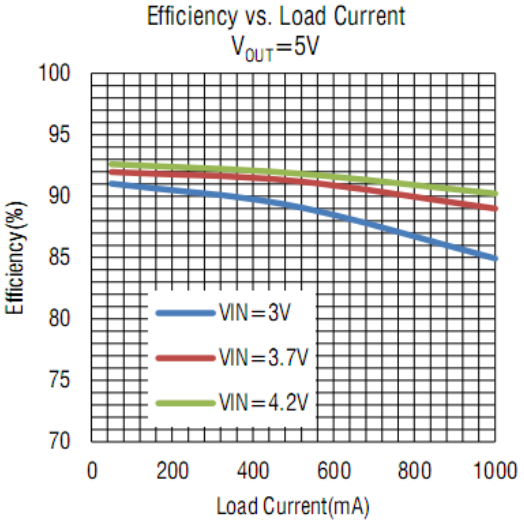
■ Electrical Characteristics

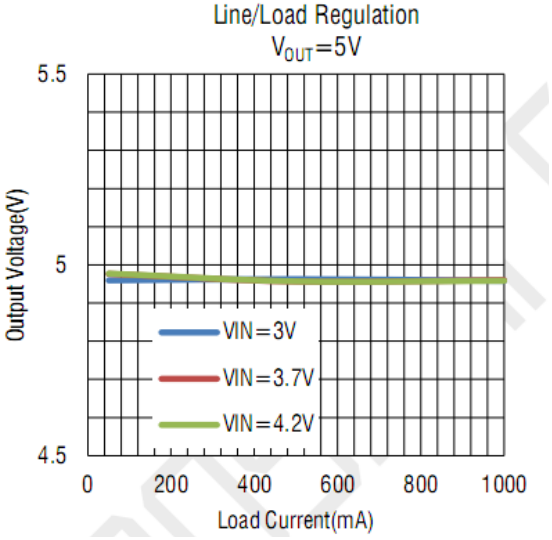
(Ta=25℃, VIN=1.5V，VOUT=3.3V unless otherwise noted)

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Output voltage	VOUT	-	2.5		24	V
Input voltage	VIN	-	2	-	24	
VIN under voltage lockout threshold	UVLO_F		1.7		2	V
VIN under voltage lockout hysteresis	UVLO_HYS	-	-	100	-	mV

Shutdown mode	IOFF	VEN<VENL	-	0.01	1	μA
I Quiescent Current (PFM)	I_PFM	VIN=3.6V，VOUT=5V	-	100	-	μA
FB Voltage	VR	VOUT=5V	588	600	612	mV
Switching frequency	FS	IOUT=1.2A	-	1.4	-	MHz
Maximum Duty Cycle	DMAX	VFB=0V	85	-	-	%
Internal power MOFFET resistance	RDSON	VIN=3.6V，ISW=2A	-	80	150	mΩ
SW Current Limit	ISW	VIN=4.2V	-	4	-	A
Load regulation	ΔVLINE	IOUT=1.2A，VIN=3V~4.2V	-	0.4	-	%
Line regulation	ΔVLOAD	VIN=3.6V，IOUT=10mA~1.2A	-	0.45	-	%
EN Input High Voltage	VENH	VIN=3.6V	1.2	-	-	V
EN Input Low Voltage	VENL	VIN=3.6V	-	-	0.4	V
SW Leakage	ISW_L	VSW=20V			1	uA
Thermal Shutdown	TSHD	VIN=3.6V，IOUT=10mA	-	160	-	℃

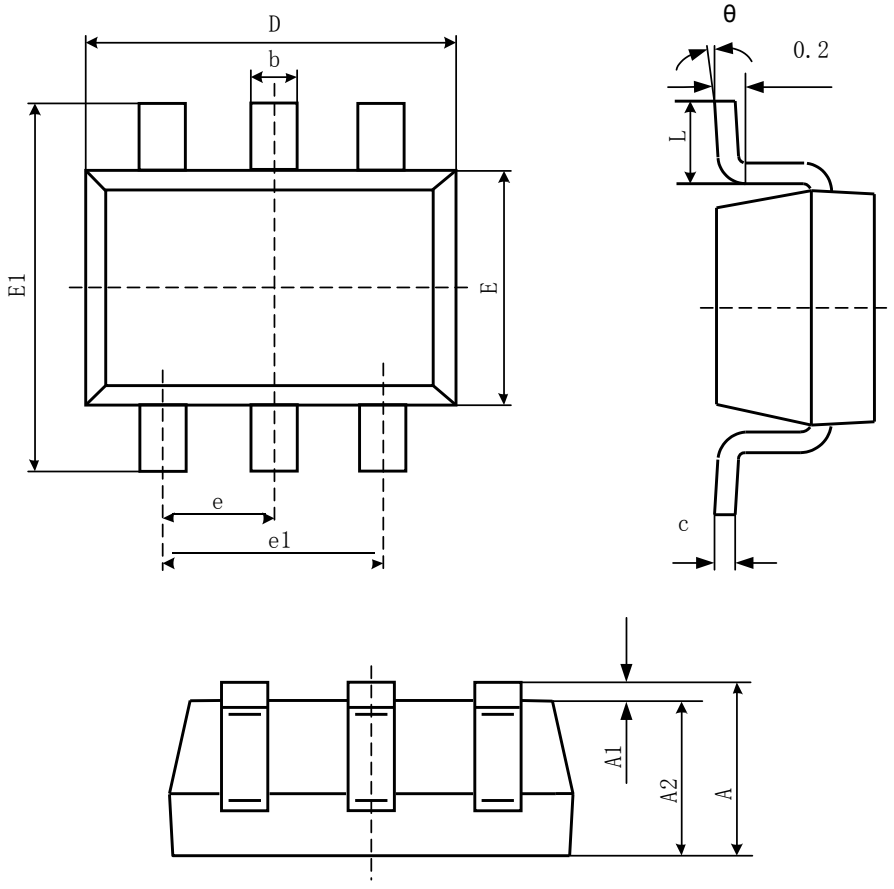
■ Typical Performance Characteristics





■ Package Information

■ SOT-23-6L



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°