

## FSP3602

### ■ FEATURES

- Up to 96% Efficiency
- Low voltage start-up: 0.9V
- Shut-down current: < 1 $\mu$ A
- Input voltage: 0.6V~4.4V
- Output voltage: 2.5V ~ 4.3V (Up to 5V with Schottky)
- Low switch on resistance  $R_{DS(ON)}$ , Internal switch: 0.35  $\Omega$
- 1.4MHz fixed frequency switching
- High switch on current: 1A
- Short-Circuit protection
- Low profile SOT23-6L package

### ■ APPLICATIONS

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

### ■ PIN CONFIGURATION

### ■ GENERAL DESCRIPTION

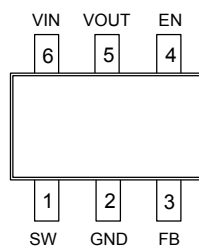
The FSP3602 is high efficiency synchronous, step-up DC/DC converters optimized to provide a high efficient solution to medium power systems. The devices work under the input voltage between 0.6V and 4.4V with a 1.4MHz fixed frequency switching. These features minimizes overall solution footprint by allowing the use of tiny, low profile inductors and ceramic capacitors.

The FSP3602 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.

The devices also featured providing 180mA from a single AA cell input or 400mA from a 2-cell AA with a 3V/3.3V output.

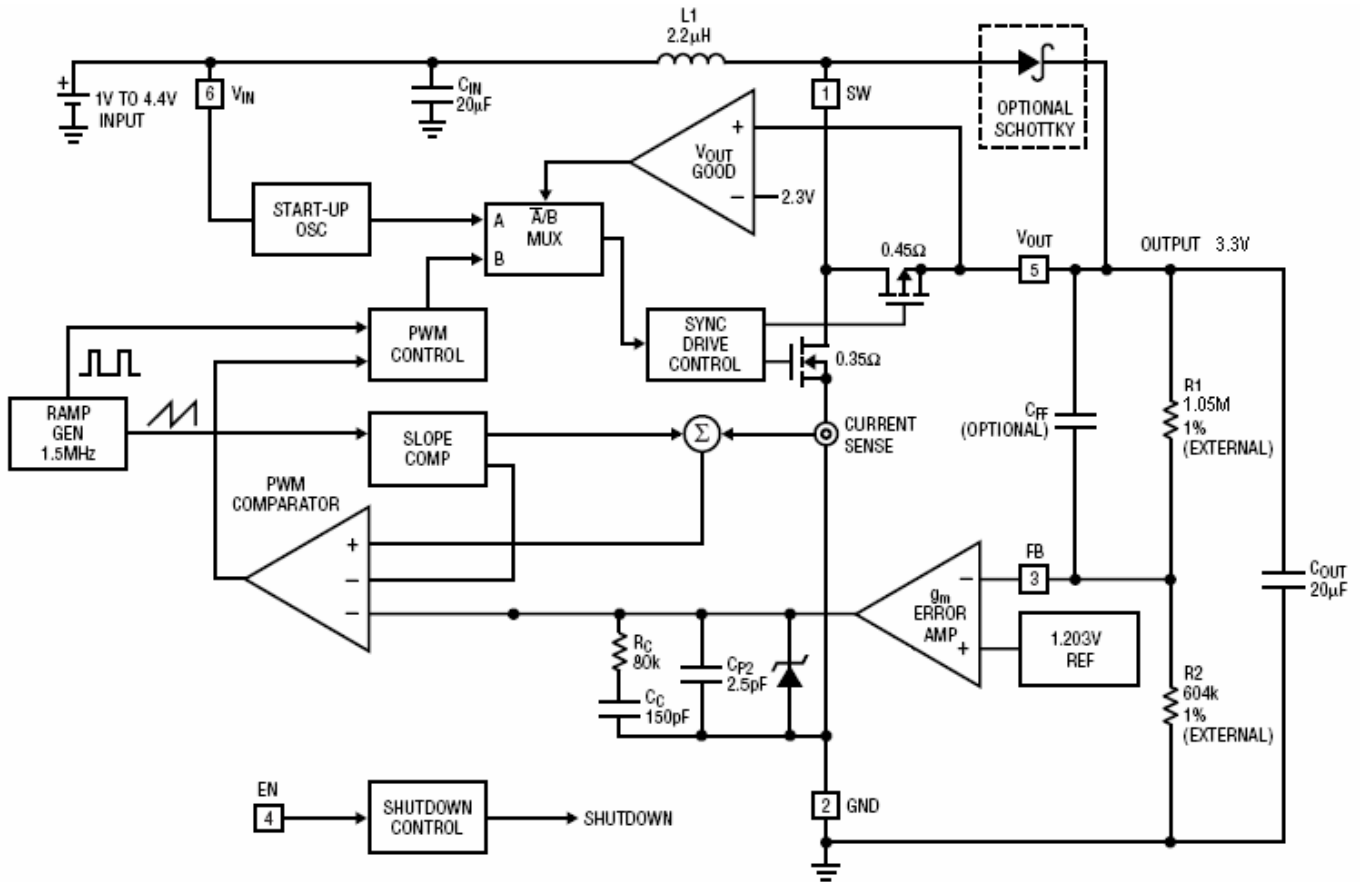
The FSP3602 converter is available in the industry standard SOT23-6L power packages (or upon request).

(Top View)



Pin Number	Pin Name	Pin Function
1	SW	Switch Output
2	GND	Ground
3	FB	Feedback
4	EN	ON/OFF Control(High Enable)
5	VOUT	Output
6	VIN	Input

### ■ BLOCK DIAGRAM

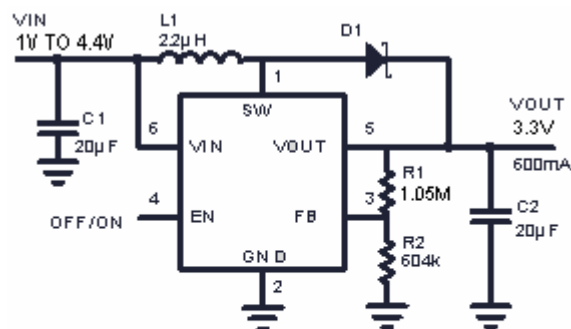


### ■ ABSOLUTE MAXIMUM RATINGS

Parameter	Rating	Unit
Power Dissipation	Internally limited	W
$V_{IN}$	0.6 ~ 4.4	V
$V_{OUT}$	2.5 ~ 5	V
$V_{SW}$	0.6 ~ 5	V
$V_{EN}$	1.0 ~ 4.4	V
Operating Temperature Range	- 30 ~ +85	°C
Lead Temperature (Soldering 10 sec.)	+ 300	°C
Storage Temperature Range	- 65 ~ +125	°C

**■ ELECTRICAL CHARACTERISTICS (NOTE 4)**
 $(V_{IN}= 1.2V, V_{OUT}= 3.3V, T_A=25^{\circ}C, \text{ Unless otherwise noted})$ 

Parameter	Condition	Min.	Typ.	Max.	Unit
Output Voltage Range (Adj.)		2.5		5	V
Minimum Start-Up Voltage	$I_{LOAD} = 1mA$		0.9	1.1	V
Minimum Operating Voltage	$EN = V_{IN}$		0.5	0.65	V
Switching Frequency		1.1	1.4	1.7	MHz
Max Duty Cycle	$V_{FB} = 1.15V$	80	87		%
Current Limit Delay to Output			40		ns
Feedback Voltage		1.165	1.203	1.241	V
Feedback Input Current	$V_{FB} = 1.25V$		1		nA
NMOS Switch Leakage	$V_{SW} = 5V$		0.1	5	$\mu A$
PMOS Switch Leakage			0.1	5	$\mu A$
NMOS Switch On Resistance			0.35		$\Omega$
PMOS Switch On Resistance			0.45		$\Omega$
NMOS Current Limit		700	950		mA
Quiescent Current (Active)			300	500	$\mu A$
Shutdown Current	$V_{EN}=0V, \text{ Not Including Switch Leakage}$		0.01	1	$\mu A$
En Input High		1			V
En Input Low				0.35	V
En Input Current	$V_{EN} = 5.5V$		0.01	1	$\mu A$

**■ TYPICAL APPLICATION CIRCUIT**


\*LOCATE COMPONENTS CLOSE TO THE PIN

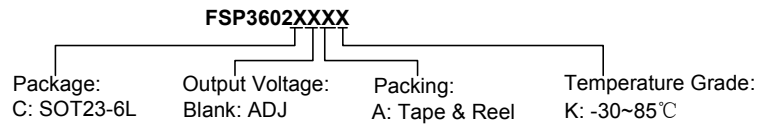
C1: TAIYO YUDEN X5R JMK212BJ206MM

C2: TAIYO YUDEN X5R JMK212BJ206MM

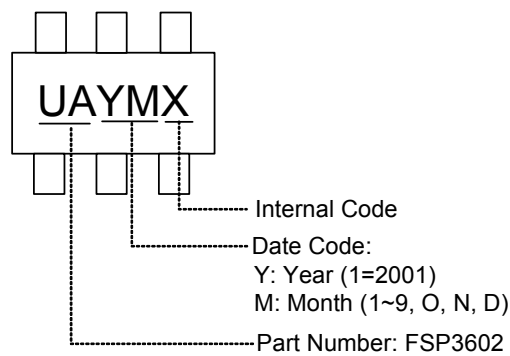
D1: MOTOROLA MBR0520L

L1: COILCRAFT D0160C-222

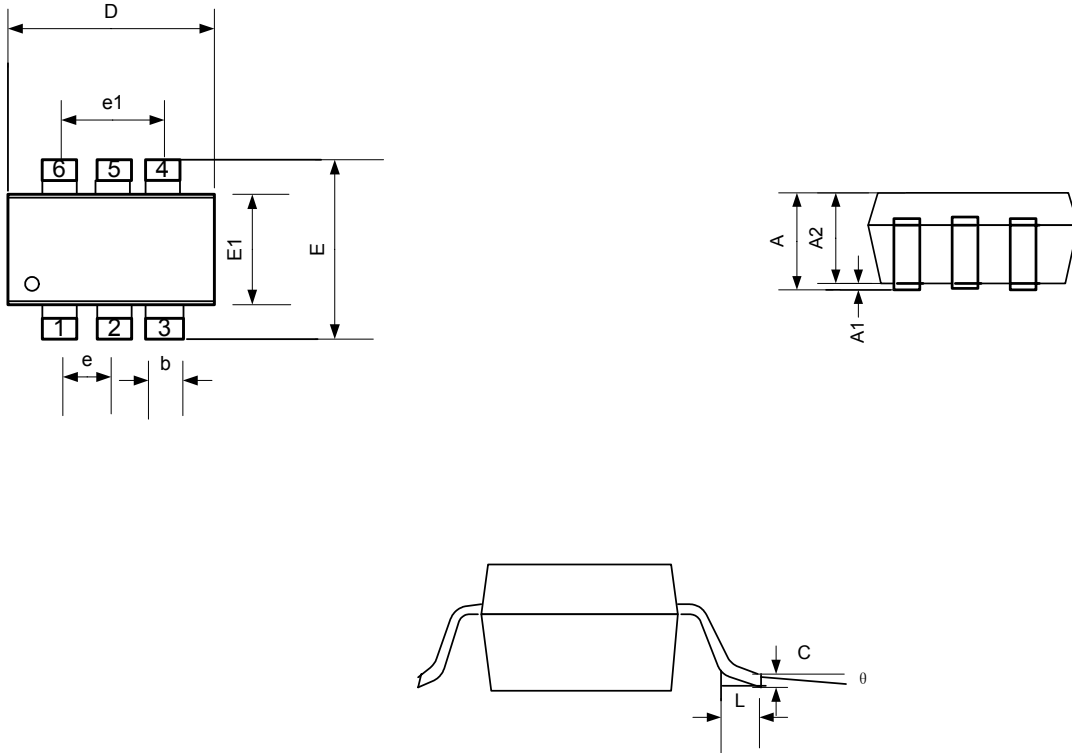
■ ORDERING INFORMATION



■ MARKING INFORMATION



■ PACKAGE INFORMATION



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	2.650	2.950	0.104	0.116
E1	1.500	1.700	0.060	0.068
L	0.300	0.600	0.012	0.024
e	0.95 Bsc.		0.038 Bsc.	
e1	1.90 Bsc.		0.076 Bsc.	
$\theta$	0°	8°	0°	8°