



## UD05206

Advance

LINEAR INTEGRATED CIRCUIT

### 2.0A, LOW NOISE 1.5MHz SYNCHRONOUS STEP-DOWN CONVERTER

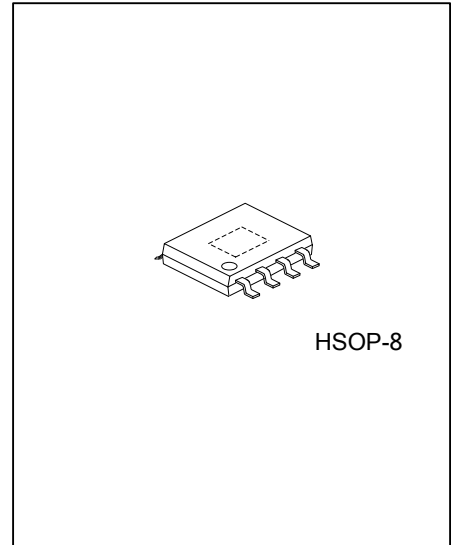
#### DESCRIPTION

The UTC **UD05206** is a high-frequency, synchronous, rectified, step-down, switch-mode converter with internal power MOSFETs.

It offers a very compact solution to achieve a 2A continuous output current over from 2.5V to 5.5V input supply range, with excellent load and line regulation.

The output voltage is adjustable from 0.6V to the input voltage. During shutdown, the input is disconnected from the output and the shutdown current is less than 1µA. Other key features include over-temperature and short circuit protection, and under-voltage lockout to prevent deep battery discharge.

The UTC **UD05206** at 2A maximum output current. Ultra-low  $R_{DS(ON)}$  integrated MOSFET and 100% duty cycle operation make the UTC **UD05206** an ideal choice for high-output voltage, high-current applications which require a low dropout threshold.



HSOP-8

#### FEATURES

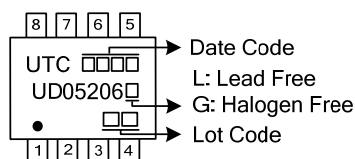
- \* Output Current : Up to 2A
- \* Output Voltage : 0.6V to  $V_{IN}$
- \* Input Voltage : 2.5V to 5.5V
- \* Low- $R_{DS(ON)}$  Internal Power MOSFETs
- \* Shutdown Current < 1µA
- \* 100% Duty Cycle Operation
- \* Fixed 1.5MHz Switching Frequency
- \* Current Mode Operation
- \* Internal Soft-Start
- \* Current Limit Protection
- \* Over-temperature Protection
- \* Input Under Voltage Lockout (UVLO)

#### ORDERING INFORMATION

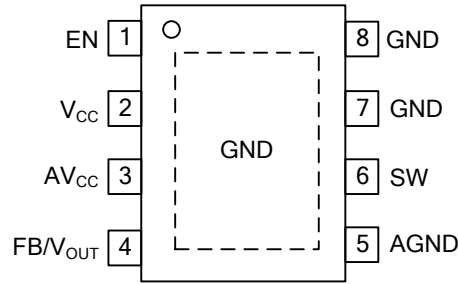
Ordering Number		Package	Packing
Lead Free	Halogen Free		
UD05206L-SH2-R	UD05206G-SH2-R	HSOP-8	Tape Reel

<p>UD05206G-SH2-R</p> <ul style="list-style-type: none"> <li>(1) Packing Type</li> <li>(2) Package Type</li> <li>(3) Green Package</li> </ul>	<ul style="list-style-type: none"> <li>(1) R: Tape Reel</li> <li>(2) SH2: HSOP-8</li> <li>(3) G: Halogen Free and Lead Free, L: Lead Free</li> </ul>
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#### MARKING



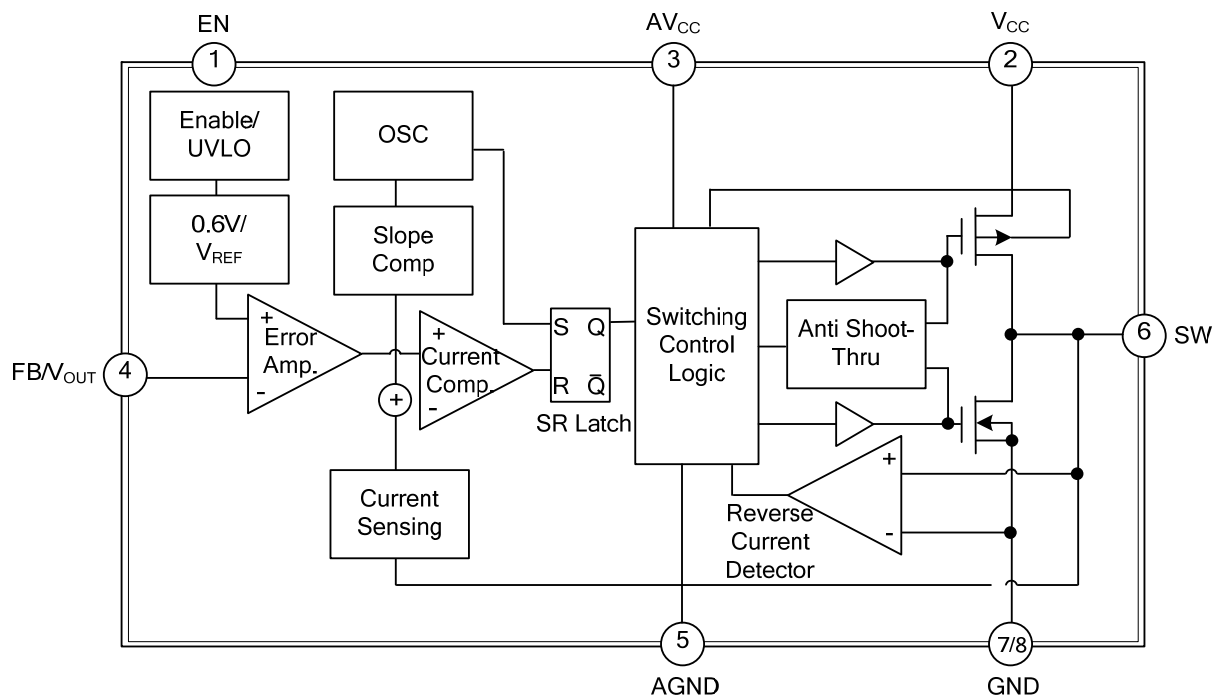
■ PIN CONFIGURATION



■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	EN	Enable / UVLO
2	V <sub>CC</sub>	Supply Voltage
3	AV <sub>CC</sub>	Analog Supply Voltage
4	FB/V <sub>OUT</sub>	Feedback
5	AGND	Analog Ground
6	SW	Switch
7, 8	GND	Ground
Exposed Pad	GND	Connect exposed pad to GND.

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING ( $T_A = 25^\circ\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Input Voltage	$V_{IN}, PV_{IN}$	6.0	V
SW Pin Voltage	$V_{SW}$	$V_{IN}+0.3$	V
FB Pin Voltage	$V_{FB}$	$V_{IN}+0.3$	V
EN Pin Voltage	$V_{EN}$	6.6	V
Maximum Switch Source Current(DC)		2.6	A
Maximum Peak SW Sink and Source Current(AC)		4.3	A
Maximum Junction Temperature Range	$T_J$	+125	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-65 ~ +150	$^\circ\text{C}$

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Input Voltage	$V_{IN}$	+2.5V ~ +5.5V	V
Operating Ambient Temperature Range	$T_A$	-40 ~ +85	$^\circ\text{C}$

■ THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	$\theta_{JA}$	90	$^\circ\text{C/W}$
Junction to Case	$\theta_{JC}$	11	$^\circ\text{C/W}$

■ ELECTRICAL CHARACTERISTICS

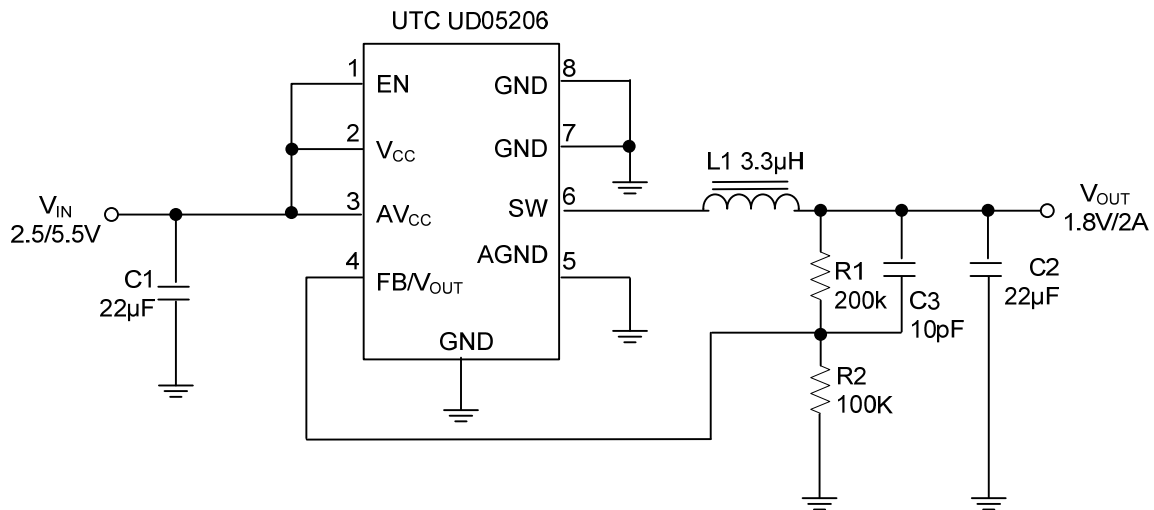
( $V_{IN} = 3.6\text{V}$ ,  $T_A = 25^\circ\text{C}$  unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Voltage Range	$V_{IN}$		2.5		5.5	V
Quiescent Current	$I_Q$			128		$\mu\text{A}$
Shutdown Current	$I_{SHDN}$	$V_{EN} = 0\text{V}$ .			1	$\mu\text{A}$
HS Switch-On Resistance (Note 1, 2)	$HS_{RDS-ON}$	$I_{SW}=100\text{mA}$		120		$\text{m}\Omega$
LS Switch-On Resistance (Note 1, 2)	$LS_{RDS-ON}$	$I_{SW}=-100\text{mA}$		130		$\text{m}\Omega$
SW Leakage	$I_{LSW}$	$V_{EN}=0\text{V}, V_{IN}=5\text{V}$		$\pm 0.01$	$\pm 1.0$	$\mu\text{A}$
Peak Inductor Current	$I_{PK}$	$V_{FB}=0.5\text{V}$		3.3		A
Feedback Voltage	$V_{FB}$	$T_A = 25^\circ\text{C}$	0.588	0.6	0.612	V
		$T_A = -40^\circ\text{C} \sim +85^\circ\text{C}$	0.582	0.6	0.618	V
EN Threshold	$V_{EN}$		0.3	1		V
EN Input Current	$I_{EN}$	$V_{IN} = V_{EN} = 0\text{V}$		$\pm 0.01$	$\pm 1.0$	$\mu\text{A}$
Oscillation frequency	$F_{SW}$		1.2		1.8	MHz

Notes: 1. Guaranteed by design.

2. Not tested in production and guaranteed by over-temperature correlation.

■ TYPICAL APPLICATION CIRCUIT



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