



UD05203

Preliminary

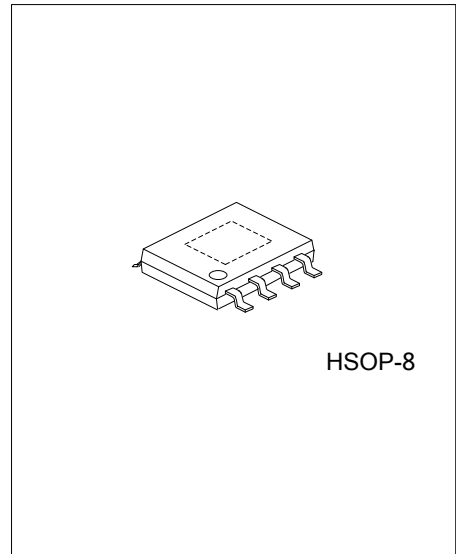
LINEAR INTEGRATED CIRCUIT

HIGH EFFICIENCY 1MHZ, 2A SYNCHRONOUS STEP DOWN REGULATOR

DESCRIPTION

The UTC **UD05203** is a high-efficiency 1MHz synchronous step-down DC-DC regulator IC capable of delivering up to 2A output current. The UTC **UD05203** operates over a wide input voltage ranging from 3V to 5.5V and integrate main switch and synchronous switch with very low $R_{DS(ON)}$ to minimize the conduction loss.

Low output voltage ripple and small external inductor and capacitor sizes are achieved with 1MHz switching frequency.



HSOP-8

FEATURES

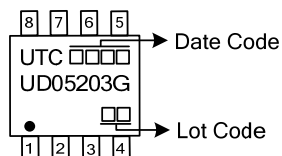
- * Low $R_{DS(ON)}$ for internal switches (top/bottom) 130mΩ/100mΩ, 2A
- * 3~5.5V input voltage range
- * 1MHz switching frequency minimizes the external components
- * Internal softstart limits the inrush current
- * 100% dropout operation

ORDERING INFORMATION

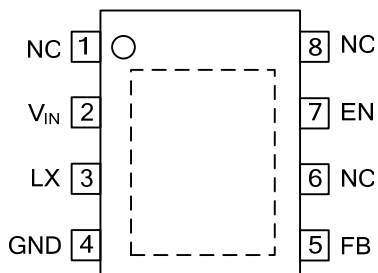
Ordering Number	Package	Packing
UD05203G-SH2-R	HSOP-8	Tape Reel

<p>UD05203G-SH2-R</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Green Package</p>	<p>(1) R: Tape Reel</p> <p>(2) SH2: HSOP-8</p> <p>(3) G: Halogen Free and Lead Free</p>
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MARKING



■ PIN CONFIGURATION



■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1, 6, 8	NC	No connection
2	V _{IN}	Input pin. Decouple this pin to GND pin with at least 1uF ceramic cap.
3	LX	Inductor pin. Connect this pin to the switching node of inductor.
4	GND	Ground pin
5	FB	Output Feedback Pin. Connect this pin to the center point of the output resistor divider (as shown in Figure 1) to program the output voltage: $V_{OUT}=0.6 \times (1+R1/R2)$.
7	EN	Enable control. Pull high to turn on. Do not float.

■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	RATINGS	UNIT
Input Supply Voltage	V_{IN}	6.0	V
Enable, FB Voltage	V_{FB}	$V_{IN}+0.6$	V
Power Dissipation	$T_A=25^{\circ}\text{C}$ P_D	0.6	W
Junction Temperature Range	T_J	150	$^{\circ}\text{C}$
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}	3~5.5	V
Junction Temperature Range	T_J	-40~125	$^{\circ}\text{C}$
Ambient Temperature Range	T_A	-40~85	$^{\circ}\text{C}$

Note: The device is not guaranteed to function outside its operating conditions.

■ THERMAL CHARACTERISTICS

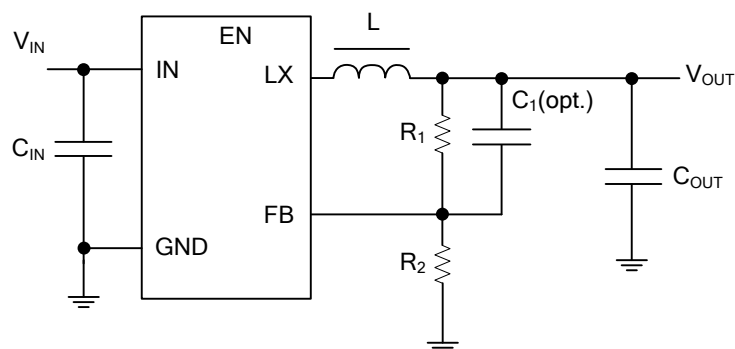
PARAMETER	SYMBOL	RATINGS	UNIT
Junction To Ambient	θ_{JA}	105	$^{\circ}\text{C/W}$
Junction to Case	θ_{JC}	50	$^{\circ}\text{C/W}$

■ ELECTRICAL CHARACTERISTICS

($V_{IN}=5\text{V}$, $V_{OUT}=2.5\text{V}$, $L=2.2\mu\text{H}$, $C_{OUT}=10\mu\text{F}$, $T_A=25^{\circ}\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Voltage Range	V_{IN}		3		5.5	V
Quiescent Current	I_Q	$I_{OUT}=0$, $V_{FB}=V_{REF}+5\%$		80		μA
Shutdown Current	I_{SHDN}	$EN=0$		0.1	1	μA
Feedback Reference Voltage	V_{REF}		0.588	0.6	0.612	V
FB Input Current	I_{FB}	$V_{FB}=V_{IN}$	-50		50	nA
PFET RON	$R_{DS(ON)_P}$			0.13		Ω
NFET RON	$R_{DS(ON)_N}$			0.10		Ω
PFET Current Limit	I_{LIM}		2.5			A
EN Rising Threshold	V_{ENH}		1.5			V
EN Falling Threshold	V_{ENL}				0.4	V
Input UVLO Threshold	V_{UVLO}				2.9	V
UVLO Hysteresis	V_{HYS}			0.2		V
Oscillator Frequency	F_{OSC}	$I_{OUT}=100\text{mA}$		1		MHz
Min ON Time				50		ns
Max Duty Cycle			100			%
Thermal Shutdown Temperature	T_{SD}			150		$^{\circ}\text{C}$

■ TYPICAL APPLICATION CIRCUIT



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