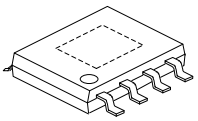
1MHZ STEP-UP PWM CONVERTER WITH 5.5A SWITCH CURRENT



HSOP-8

■ DESCRIPTION

The UTC **UU12551** is a current-mode boost DC/DC converter with a 5.5A, 0.1Ω internal power MOSFET to provide this regulator highly power efficient. The UTC **UU12551** operates at 1MHz allowing for easy filtering and low noise. Internal compensation makes the user to set system easily, which allows the use of small, low-ESR ceramic output capacitors.

Fault protection includes over-current latch off, input UVLO and thermal shutdown. This device uses current mode control scheme that provides fast transient response. In shutdown mode, the supply current is less than 1uA.

The UTC **UU12551** provides a very compact system solution and good thermal conductance.

■ FEATURES

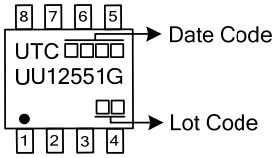
* Adjustable Output Voltage up to 12V
* Internal 0.1Ω, 5.5A, 18V Power MOSFET
* Internal Soft-Start
* Fixed 1MHz Switching Frequency
* Current Mode Operation
* 12V Output at 1A from 5V Input for UTC UU12551
* Cycle-by-Cycle current limit
* Adjustable Over Current Protection
* Input Under Voltage Lockout
* Over-Temperature Protection
* RoHS Compliant

■ ORDERING INFORMATION

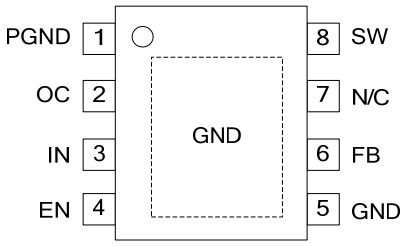
Ordering Number	Package	Packing
UU12551G-SH2-R	HSOP-8	Tape Reel

UU12551G-SH2-R (1)Packing Type (2)Package Type (3)Green Package	(1) R: Tape Reel (2) SH2: HSOP-8 (3) G: Halogen Free and Lead Free

■ MARKING



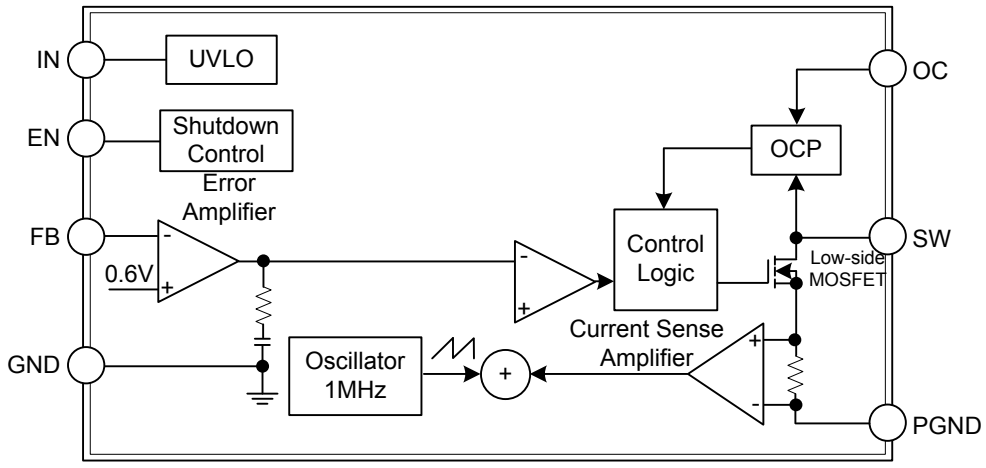
■ PIN CONFIGURATION



■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	PGND	Ground Pin.
2	OC	Current Limit Setting Pin. Connect a resistor from OC to GND to set the peak switching current. It can be left floating.
3	IN	Power Supply Input Pin. Connecting a ceramic bypass capacitor between IN and GND to eliminate noise.
4	EN	Enable Input Pin. This pin provides a digital control to turn the converter on or off. Connect to V_{IN} with a 100KΩ resistor for self-startup. EN cannot be left floating.
5	GND	Ground Pin.
6	FB	Voltage Feedback Input Pin. Connecting FB and V_{OUT} with a resistive voltage divider. This IC senses feedback voltage via FB and regulate it at 0.6V.
7	N/C	Not connected
8	SW	Power Switch Output. It is the output pin that internal MOSFET. Connect the inductor and output rectifier to SW.
EP	GND	Ground Pin. The exposed pad is connected to GND.

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	RATINGS	UNIT
Input Supply Voltage	V_{IN}	0~6	V
SW Voltage	V_{SW}	0~18	V
EN, FB and OC Voltage		0~6	V
Junction Temperature	T_J	150	°C
Storage Temperature	T_{STG}	-65~150	°C

Notes: 1. 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.
2. Stresses exceed those ratings may damage the device.

■ RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	RATINGS	UNIT
Input Supply Voltage	V_{IN}	2.6~5.5	V
Ambient Temperature	T_A	-40~85	°C

Note: If out of its operation conditions, the device is not guaranteed to function.

■ THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	RATINGS	UNIT
Junction To Ambient	θ_{JA}	105	°C/W
Junction to Case	θ_{JC}	50	°C/W

■ ELECTRICAL CHARACTERISTICS (V_{IN}=3.3V, T_A=25°C, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Supply Voltage		V_{IN}		2.6		5.5	V
Input average Supply Current		I_{IN}	V_{EN}=V_{IN}, No loading		400		uA
Shutdown Supply Current		I_{IN}	V_{EN}=0V		0.5	3	μA
Feedback Voltage		V_{FB}		0.588	0.6	0.612	V
Output Voltage		V_{OUT}	V_{OUT}=5V	-3		3	%
Low-side MOSFET On Resistance (Note)		$R_{DS(ON)}$	UU12551 I_{SW}=1A		100		mΩ
Low-Side MOSFET Current Limit (Note)			UU12551		5.5		A
Adjustable Over Current (Note)			With External Resistor: 20k~43k	2.1		4.9	A
Oscillation Frequency		F_{OSC}		0.8	1	1.2	MHz
Maximum Duty Cycle		D_{MAX}			90		%
Input UVLO Threshold		V_{UVLO}	V_{IN} Rising		2.4		V
Under Voltage Lockout Threshold Hysteresis					200		mV
EN Threshold Voltage	Logic Low	V_{IL}				0.6	V
	Logic High	V_{IH}		0.96			
Thermal Shutdown Threshold (Note)					150		°C

Note: Guaranteed by design.

■ TYPICAL APPLICATION CIRCUIT

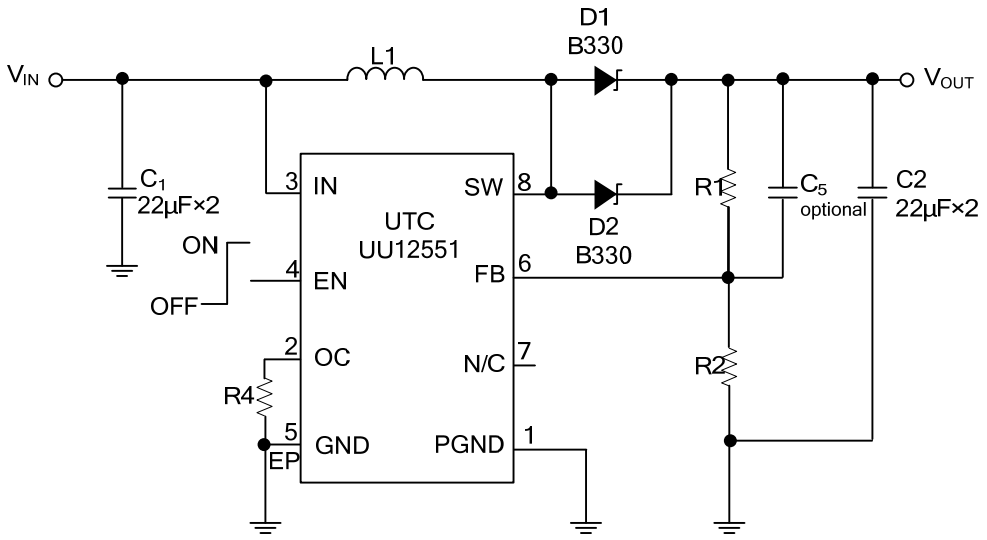


Table 1 Recommended Component Selection

V_{OUT}(V)	R1(Ω)	R2(Ω)	L1(H)	C2(F)
5	73.4k	10k	2.2µH	22µF×2
12	190k	10k	2.2µH	22µF×2