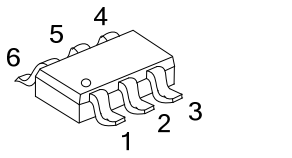
2A, 18V SYNCHRONOUS FAST RESPONSE BUCK CONVERTER



SOT-26

■ DESCRIPTION

The UTC **UD18203** is a monolithic synchronous buck regulator with built-in main switch and synchronous switch power MOSFETs. It operates over a wide input voltage range from 4.5V to 18V and achieves 2A continuous output current.

It adopts PWM architecture to achieve fast transient response and high efficiency at light loads. It operates at pseudo-constant frequency of 500kHz under heavy load conditions. Internal soft-start minimizes the inrush supply current at initial startup.

■ FEATURES

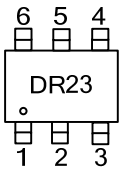
* 4.5V~18V Input Voltage Range
* Up to 2A Output Current
* 140/130mΩ Internal Power MOSFET Switch
* PWM Architecture to Achieve Fast Transient Response
* Build-in soft start function
* 500kHz Switching Frequency
* Thermal Shutdown Protection

■ ORDERING INFORMATION

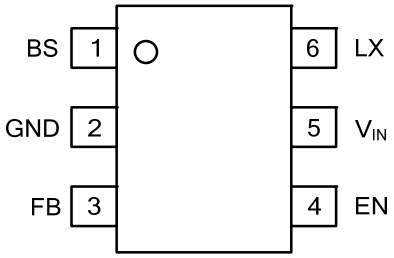
Ordering Number		Package	Packing
Lead Free	Halogen Free		
UD18203L-AG6-R	UD18203G-AG6-R	SOT-26	Tape Reel

UD18203G-AG6-R (1)Packing Type (2)Package Type (3)Green Package	(1) R: Tape Reel (2) AG6: SOT-26 (3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



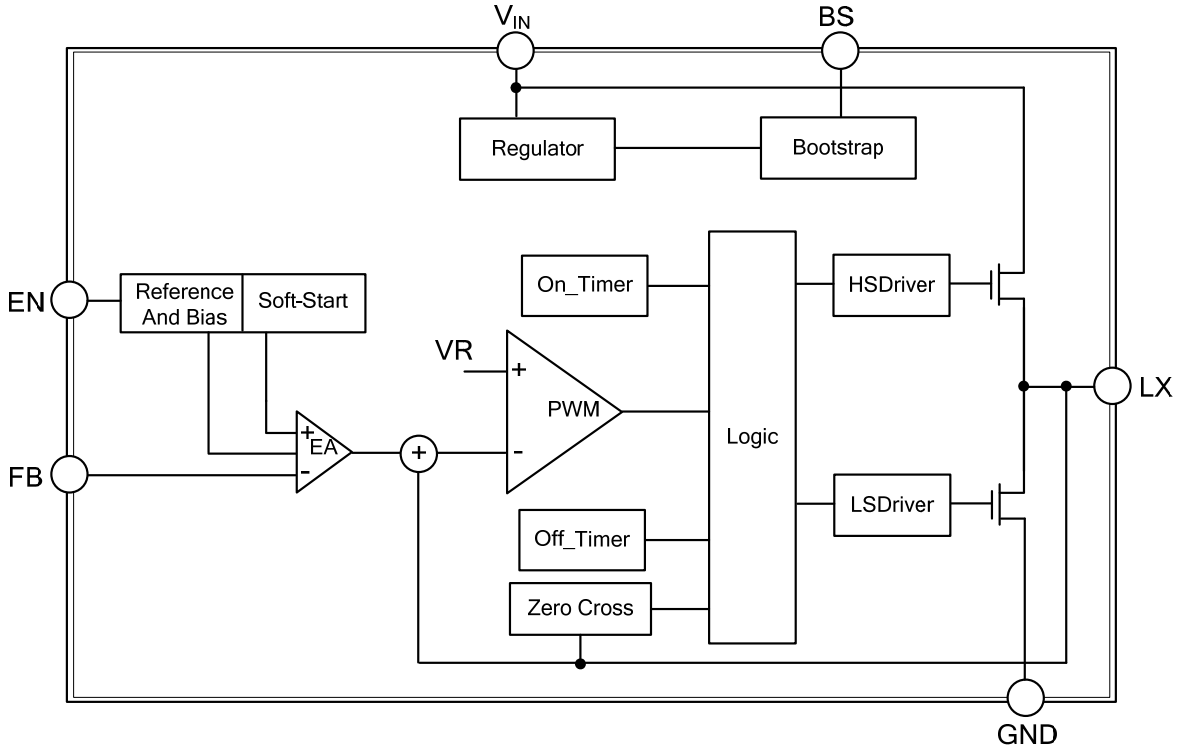
■ PIN CONFIGURATION



■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	BS	Bootstrap Pin. Decouple this pin to LX with 0.1μF ceramic cap.
2	GND	Ground Pin.
3	FB	Feedback Pin. Connect this pin to the center of output resistor divider to program the output voltage.
4	EN	Enable Pin. Pull high to turn on, do not floating.
5	V_{IN}	Input Pin. Decouple this pin to GND with at least 1μF ceramic cap.
6	LX	Switch Pin. Connect this pin to the inductor.

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING (Note 2)

PARAMETER	SYMBOL	RATINGS	UNIT
IN Pin Voltage	V_{IN}	19	V
LX, EN Pins Voltage		V_{IN}+0.3	V
FB, BS-LX Voltage		6	V
Junction Temperature	T_J	+125	°C
Operating Temperature	T_{OPR}	-20 ~ +85	°C
Storage Temperature	T_{STG}	-55 ~ +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. Exceeding these ratings may damage the device.

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	270	°C/W
Junction to Case	θ_{JC}	90	°C/W

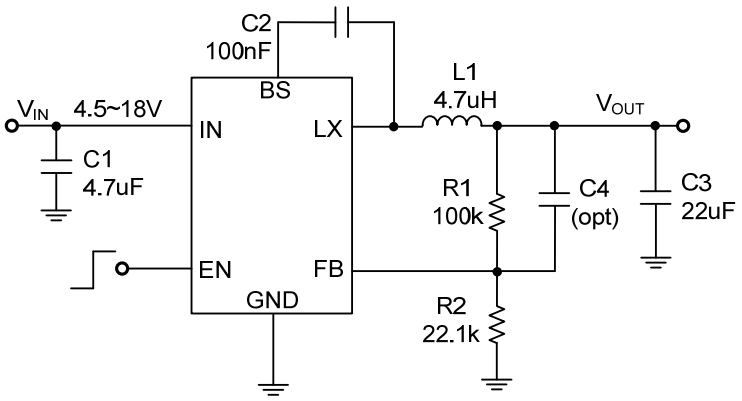
■ ELECTRICAL CHARACTERISTICS

(V_{IN}=12V, V_{OUT}=1.2V, T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Voltage Range	V_{IN}		4.5		18	V
Input UVLO	UVLO				4.5	V
Quiescent Current	I_Q	Non Switching		650		μA
Shutdown Current	I_{SD}	V_{EN}=0V		5	10	μA
FB Pin Voltage	V_{FB}		0.588	0.6	0.612	V
EN Pin Voltage High	V_{ENH}		1.5			V
EN Pin Voltage Low	V_{ENL}				0.4	V
On Time (Note)	T_{ON}	V_{IN}=12V, V_{OUT}=1.2V, I_{OUT}=1A		200		ns
Valley Current Limit	I_L			2.5		A
Top-Switch $R_{DS(ON)}$	$R_{DS(ON)\_T}$			140		mΩ
Bottom-Switch $R_{DS(ON)}$	$R_{DS(ON)\_B}$			130		mΩ
Thermal Shutdown	T_{SD}			150		°C
Thermal Shutdown Protection hysteresis	T_{SH}			15		°C

Note: Guaranteed by design.

■ TYPICAL APPLICATION CIRCUIT



$V_{OUT}=V_{FB} \times (1+R1/R2)$, $V_{FB}=0.6V$