



UD18204

Advance

CMOS IC

18V/2A HIGH EFFICIENCY SYNCHRONOUS RECTIFIED STEP-DOWN DC/DC CONVERTER

DESCRIPTION

The UTC **UD18204** is a high efficiency synchronous step-down DC/DC converter output up current to 2A continuous output current supplied.

UTC **UD18204** built-in over-current protection, thermal protection and Under Voltage Lockout (UVLO) circuit is provided to prevent start-up until the input voltage to 4.5V.

UTC **UD18204** is designed as the power saving mode to reduce the switching frequency to improve the light load efficiency.

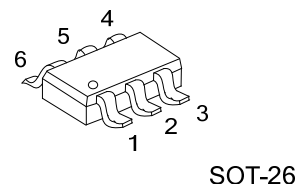
FEATURES

- * Input Voltage Supply Range from 4.5V to 18V
- * High Efficiency up to 90%
- * Adjustable Output Voltage from 0.6V to 12V
- * Power Saving Mode (PSM) during the light Load Operation
- * Typical 500kHz Frequency Operation
- * Current Mode Operation
- * Over-temperature Protection
- * Over-current Protection

ORDERING INFORMATION

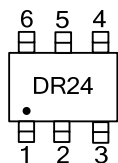
Ordering Number	Package	Packing
UD18204G-AG6-R	SOT-26	Tape Reel

UD18204G-AG6-R	
(1)Packing Type	(1) R: Tape Reel
(2)Package Type	(2) AG6: SOT-26
(3)Green Package	(3) G: Halogen Free and Lead Free

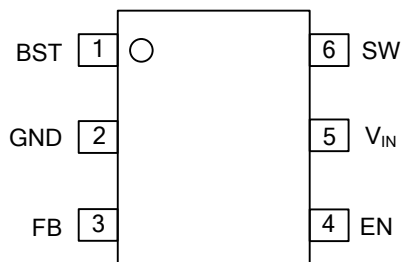


SOT-26

MARKING



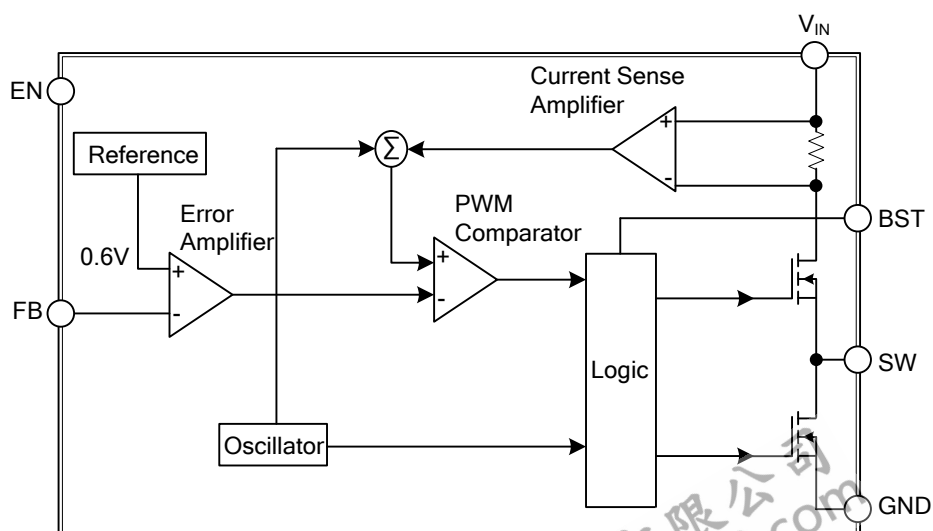
PIN CONFIGURATION



PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	BST	High Side Gate Drive Boost Input. It is required to connect SW and BST by a capacitor.
2	GND	Ground.
3	FB	Voltage Feedback. It is necessary to connect this pin to set the DC output voltage.
4	EN	Enable (floating of this pin not recommended).
5	V _{IN}	Power Supply.
6	SW	Power Switch Output.

BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	RATINGS	UNIT
Input Supply Voltage	V_{IN}	+21	V
SW Voltage	V_{SW}	+21	V
EN Voltage	V_{EN}	-0.3 ~ $V_{IN}+0.3$	V
Other Pins		-0.3 ~ 6	V
Boost Voltage		$V_{SW}+6$	V
Power Dissipation	P_D	0.8	W
Junction Temperature Range	T_J	-40 ~ +150	°C
Storage Temperature Range	T_{STG}	-65 ~ +150	°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.

■ RECOMMEND OPERATING CONDITIONS (Note 2)

PARAMETER	SYMBOL	RATINGS	UNIT
Input Voltage	V_{IN}	4.5 ~ 18	V
Junction Temperature Range	T_J	<+135	°C
Operating Temperature Range	T_{OPR}	-40 ~ +85	°C

Note: The device is not guaranteed to function outside of the recommended operating conditions.

■ THERMAL CHARACTERISTICS

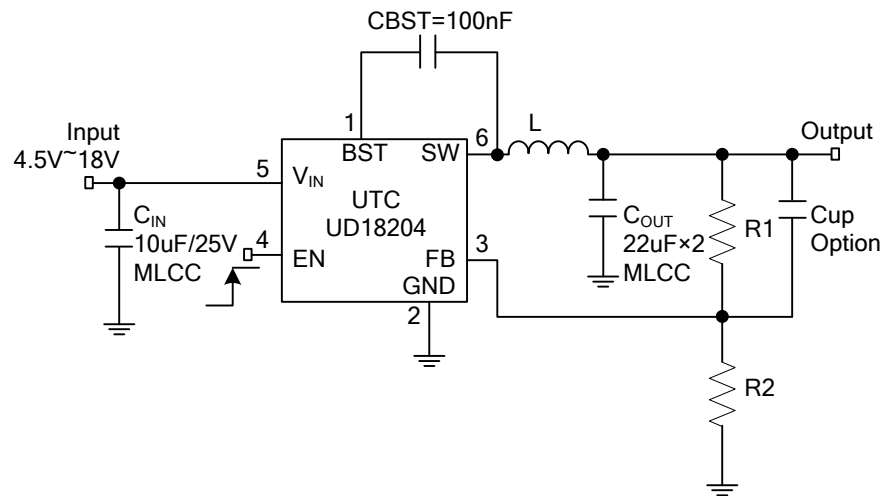
PARAMETER	SYMBOL	RATINGS	UNIT
Junction To Ambient	θ_{JA}	270	°C/W
Junction to Case	θ_{JC}	85	°C/W

■ ELECTRICAL CHARACTERISTICS

(Recommended Operating Conditions, Unless Otherwise Noted; $V_{IN}=12V$; $T_A=25^\circ C$)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_{CC}		4.5		18	V
Shutdown Supply Current		$V_{EN}=0V$		10		μA
Regulated Feedback Voltage		$4.5V \leq V_{IN} \leq 18V$	0.584	0.6	0.616	V
Current Limit	I_{LIMIT}	$V_O=1V$		3	5	A
High Side On Resistance				0.12		Ω
Low Side On Resistance				0.08		Ω
Oscillation Frequency			400	500	600	kHz
Short Circuit Oscillation Frequency		$V_{FB}=0V$		167		kHz
Minimum On Time				50		ns
Under Voltage Lockout Threshold		V_{IN} Rising		4.1		V
Thermal Shutdown Threshold				155		°C
EN High Level			2.8			V
EN Low Level					0.6	V

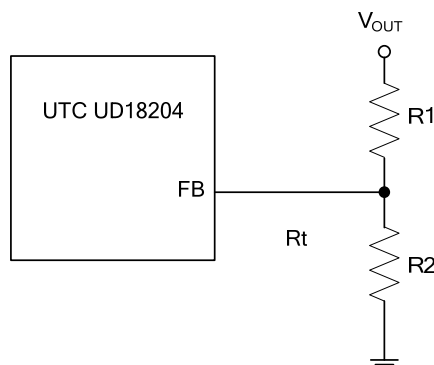
■ TYPICAL APPLICATION CIRCUIT



■ APPLICATION INFORMATION

Output Voltage

The output voltage is set using the FB pin and a T-type resistor connected to the output as the circuit shown below.



The output voltage (V_{OUT}) can be calculated according to the voltage of the FB pin (V_{FB}) and ratio of the feedback resistors by the following equation, where (V_{FB}) is 0.6V:

$$V_{OUT} = 0.6 \times \frac{(R_1 + R_2)}{R_2}$$

Recommended component values

Application 1 (Typical) without Rt			
V_{OUT} (V)	L (uH)	R1 (KΩ)	R2 (KΩ)
1	4.7	86.6 (1%)	130 (1%)
1.2	4.7	86.6 (1%)	86.6 (1%)
1.5	4.7	86.6 (1%)	57.6 (1%)
1.8	4.7	86.6 (1%)	43.2 (1%)
2.5	6.8	86.6 (1%)	27.4 (1%)
3.3	6.8	86.6 (1%)	19.1 (1%)
5	6.8	86.6 (1%)	11.8 (1%)

UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice.