

UTC UNISONIC TECHNOLOGIES CO., LTD

P1484

LINEAR INTEGRATED CIRCUIT

3A, 23V, 340KHZ SYNCHRONOUS RECTIFIED **STEP-DOWN CONVERTER**

DESCRIPTION

The UTC P1484 is a synchronous buck regulator. The device provides3A of continuous load current over a wide input voltage of 5V~23V. Current mode control provides fast transient response and cycle-bycycle current limit. An adjustable soft-start prevents inrush current at turn-on

The UTC P1484 can provide low-ripple power, high efficiency, and perfect transient characteristics. The duty ratio varies linearly from 0% to 92% in the PWM control. The error amplifier circuit and soft-start circuit included in this device can prevent overshoot at startup. An enable function, an over current protect (OCP) function and short circuit protect (SCP) are also build inside, and when OCP happens, the operation frequency will be reduced.

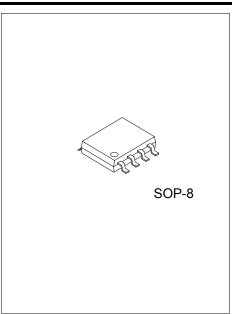
FEATURES

- * 3A Output Current
- * Wide 6V~23V Operating Input Range
- * Integrated Power MOSFET Switches
- * Programmable Soft-Start
- * Stable with Low ESR Ceramic Output Capacitors
- * Fixed 340KHz Frequency
- * Cycle-by-Cycle Over Current Protection

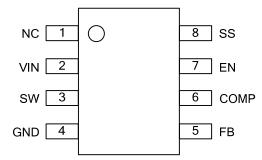
ORDERING INFORMATION

Ordering Number		Dookogo	Decking	
Lead Free	Halogen Free Package		Packing	
P1484L-S08-R	P1484G-S08-R	SOP-8	Tape Reel	
P1484L-S08-T	P1484G-S08-T	SOP-8	Tube	

P1484 <u>G-S08-R</u>	(1) R: Tape Reel, T: Tube
(2)Package Type	(2) S08: SOP-8
(3)Halogen Free	(3) G: Halogen Free, L: Lead Free



■ PIN CONFIGURATION

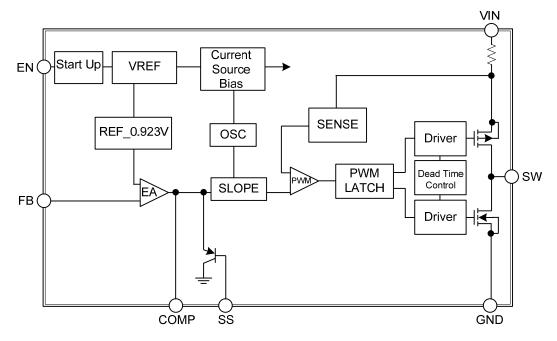


PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	NC	No Bonding
2	VIN	IC power supply pin.
3	SW	Power Switching Output.
4	GND	Ground.
5	FB	Feedback Input.
6	COMP	Compensation Node.
7	EN	Enable Input.
8	SS	Soft-Start Control Input.



BLOCK DIAGRAM





ABSOLUTE MAXIMUM RATING (Note 1)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V _{IN}	-0.3~+23	V
Switch Node Voltage	V _{SW}	25	V
All Other Pins		-0.3~+6	V
Continuous Power Dissipation ($T_A=25^{\circ}C$) (Note 2)	P _D	1.4	W
Junction Temperature	TJ	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. The maximum allowable power dissipation is a function of the maximum junction temperature T_J (MAX), the junction-to-ambient thermal resistance θ_{JA} , and the ambient temperature T_A . The maximum allowable continuous power dissipation at any ambient temperature is calculated by P_D (MAX)=(T_J (MAX) - T_A)/ θ_{JA} . Exceeding the maximum allowable power dissipation will cause excessive die temperature, and the regulator will go into thermal shutdown. Internal thermal shutdown circuitry protects the device from permanent damage.

THERMAL DATA

PARAMETER	SYMBOL	RATING	UNIT
Junction to Ambient	θ _{JA}	90	°C/W
Junction to Case	θ _{JC}	45	°C/W

Notes: Measured on JESD5 1-7, 4-layer PCB.

RECOMMENDED OPERATING CONDITIONS

Input Voltage	V _{IN}	6~23	V
Output Voltage	V _{OUT}	0.923~18	V
Ambient Operating Temperature	T _{OPR}	-40~+85	°C

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

■ ELECTRICAL CHARACTERISTICS (V_{IN}=12V, T_A=+25°C, unless otherwise specified)

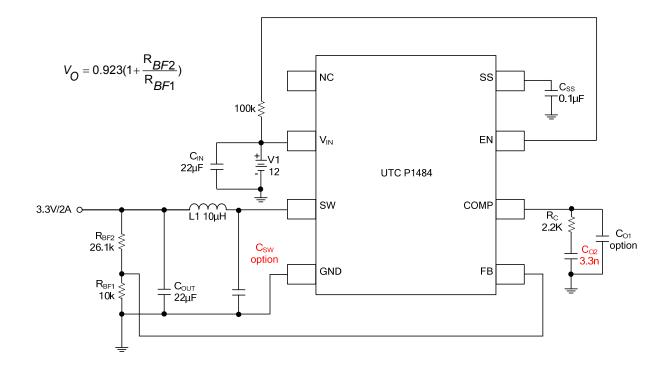
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PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Current		V _{EN} =2.0V, V _{FB} =1.0V		3.5	5	mA
Feedback Voltage	V_{FB}	6V ≤V _{IN} ≤23V	0.900	0.923	0.946	V
High-Side Switch On Resistance (Note 1)	R _{DS(ON)1}			70		mΩ
Low-Side Switch On Resistance (Note 1)	R _{DS(ON)2}			50		mΩ
High-Side Switch Leakage Current		V _{EN} =0V, V _{SW} =0V			10	μA
Upper Switch Current Limit		Minimum Duty Cycle	3.4			Α
Lower Switch Current Limit		From Drain to Source		1.1		Α
COMP to Current Sense	0			5		A/V
Transconductance	G _{cs}			5		AVV
Oscillation Frequency	F _{OSC1}		305	340	375	KHz
Short Circuit Oscillation Frequency	F _{OSC2}	V _{FB} =0V		40		KHz
Maximum Duty Cycle	D _{MAX}	V _{FB} =1.0V		92		%
EN Shutdown Threshold Voltage		V _{EN} Rising	0.8	1.2	2.0	V
Input Under Voltage Lockout Threshold		V _{IN} Rising		4		V
Soft-Start Current		V _{SS} =0V		15		μA
Thermal Shutdown (Note 1)				160		°C

Note: 1. Guaranteed by design, not tested.



P1484

TYPICAL APPLICATION CIRCUIT

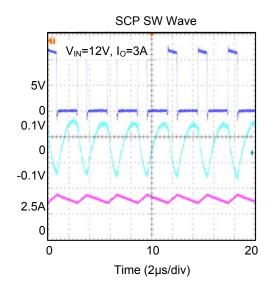


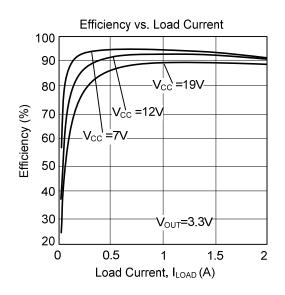


SW Wave $V_{IN}=12V, I_0=0A$ 0 0.1V 0 -0.1V 1A 0 -1A 0 0 10 1020

Time (2µs/div)

TYPICAL CHARACTERISTICS





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