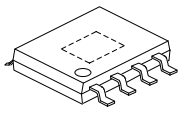
3A, 1MHz, HIGH EFFICIENCY



HSOP-8

■ DESCRIPTION

The UTC **UC3658** is a high-efficiency 1MHz synchronous step-down DC-DC regulator IC capable of delivering up to 3A output current. The UTC **UC3658** operates over a wide input voltage ranging form 3~5.5V 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 provides the system reset function and facilitates the output sequencing design.

■ FEATURES

* Low $R_{DS(ON)}$ for internal switches (top/bottom) 100mΩ/70mΩ, 3A
* 3~5.5V input voltage range
* 1MHz switching frequency minimizes the external components
* Internal softstart limits the inrush current
*100% dropout operation
* Output power good indicator
* RoHS compliant and halogen free
* Compact and thermally enhanced SO8 package with exposed paddle

■ ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
UC3658L-SH2-R	UC3658G-SH2-R	HSOP-8	Tape Reel

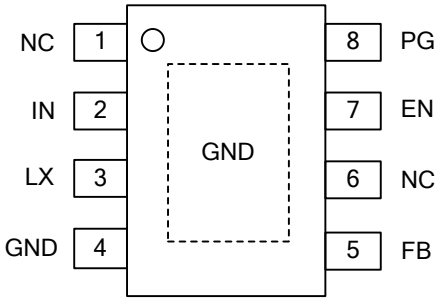
UC3658L-SH2-T (1)Packing Type (2)Package Type (3)Lead Free	(1) R: Tape Reel (2) SH2: HSOP-8 (3) L: Lead Free, G: Halogen Free

■ MARKING INFORMATION

PACKAGE	MARKING
HSOP-8	UTC □□□□ UC3658□ □□ Date Code L: Lead Free G: Halogen Free Lot Code

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■ PIN CONFIGURATION



■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1, 6	NC	No connections
2	IN	Input pin. Decouple this pin to GND pin with at test 1μF ceramic cap
3	LX	Inductor pin. Connect this pin to the switching node of inductor
4, paddle	GND	Ground pin
5	FB	Output feedback pin. Connect this pin to the center point of the output resistor divide (as shown in figure 1)to program the output voltage: V_{OUT}=0.6*(1+R_1/R_2)
7	EN	Enable control. Pull high to turn on. Do not float
8	PG	Power good indicator. When the output voltage exceeds 90% of regulation point, it becomes open drain; low otherwise

■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Input Voltage	V_{IN}	6.0	V
Enable, FB Voltage	V_{FB}	V_{IN}+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. The device is not guaranteed to function outside its operating conditions.

■ RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Input Voltage	V_{IN}	3 ~ 5.5	V
Junction Temperature	T_J	-40 ~ 125	°C
Ambient Temperature	T_A	-40 ~ 85	°C

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	143	°C/W
Junction to Case	θ_{JC}	14	°C/W

■ ELECTRICAL CHARACTERISTICS (V_{IN}=3.6V, V_{OUT}=2.5V, L=2.2uH, C_{OUT}=10uF, T_A=25°C, I_{MAX}=1A unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Voltage Range	V_{IN}		3		5.5	V
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	$R_{DS(ON),P}$			0.1		Ω
NEET RON	$R_{DS(ON),N}$			0.07		Ω
PFET Current Limit	I_{LIM}		3.6			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}=100mA		1		MHz
Min On Time				50		ns
Max Duty Cycle			100			%
Thermal Shutdown Temperature				150		°C

■ TYPICAL APPLICATION CIRCUIT

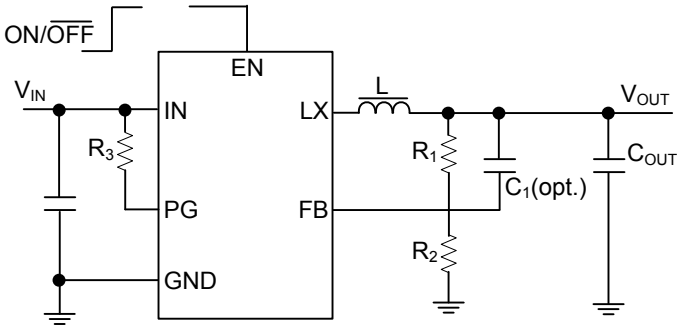


Figure 1. Schematic Diagram

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