



UM606

LINEAR INTEGRATED CIRCUIT

CONSTANT VOLTAGE AND CONSTANT CURRENT CONTROLLER

DESCRIPTION

The UTC **UM606**, for a constant voltage/constant current mode SMPS (switch mode power supplies) application which is a highly integrated solution, it contains one 1.21V voltage reference with $\pm 1\%$ accuracy, one current sensing circuit and two operational amplifiers. The UTC **UM606** is an ideal voltage controller for use in adapters and battery chargers because the voltage reference it's combining with one operational amplifier. And the UTC **UM606** is an ideal current limiter for output low side current sensing because the other low voltage reference is combining with the other operational amplifier.

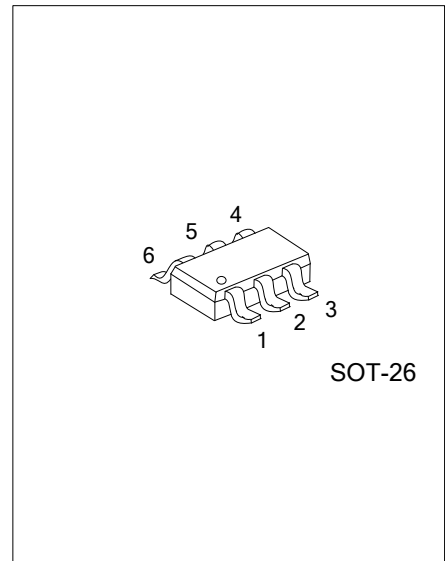
FEATURES

- *Constant Voltage and Constant Current Control
- *Precision Internal Voltage Reference
- *Few External Components
- *Easy Compensation

ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
UM606xL-AG6-R	UM606xG-AG6-R	SOT-26	Tape Reel

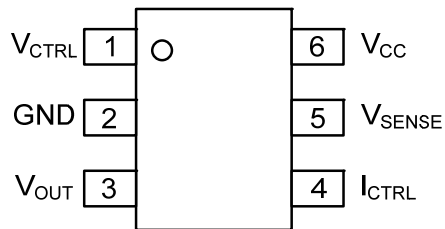
<p>UM606xL-AG6-R</p> <p>(1) Packing Type (2) Package Type (3) Lead Free (4) Reference Voltage</p>	<p>(1) R: Tape Reel (2) AG6: SOT-26 (3) L: Lead Free, G: Halogen Free (4) refer to Marking Information</p>
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MARKING

PACKAGE	CODE	MARKING
SOT-26 (For UM606)	-	<p>L: Lead Free G: Halogen Free</p>
SOT-26 (For UM606x)	D	<p>L: Lead Free G: Halogen Free Reference Voltage</p>

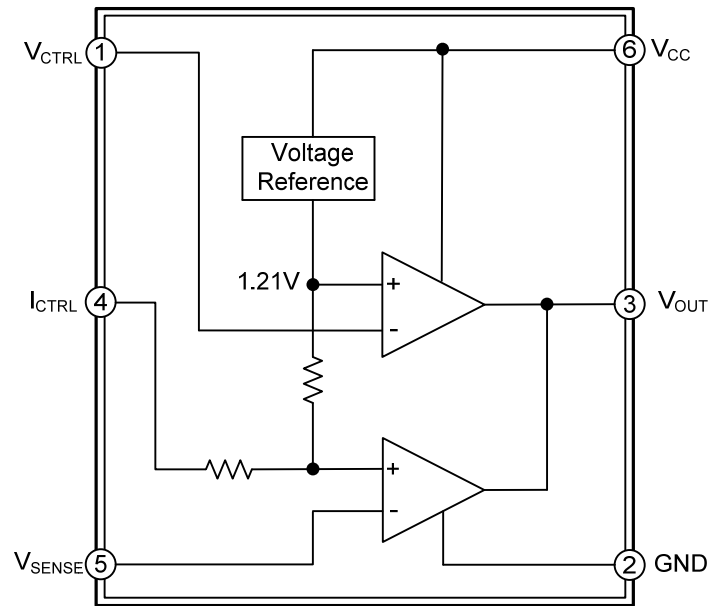
PIN CONFIGURATION



PIN DESCRIPTION

PIN NO.	PIN NAME	FUNCTION
1	V_{CTRL}	Input pin of the voltage control loop
2	GND	Ground
3	V_{OUT}	Output pin. sinking current only
4	I_{CTRL}	Input pin of the current control loop
5	V_{SENSE}	Input pin of the current control loop
6	V_{CC}	Power supply

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS (T_A=25°C, unless otherwise specified.)

PARAMETER	SYMBOL	RATINGS	UNIT
DC Supply Voltage	V _{CC}	20	V
Input Voltage	V _{IN}	-0.3 ~ V _{CC}	V
Junction Temperature	T _J	+150	°C
Operating Temperature	T _{OPR}	-40~+105	°C
Storage Temperature	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.

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ _{JA}	250	°C/W
Junction to Case	θ _{JC}	92	°C/W

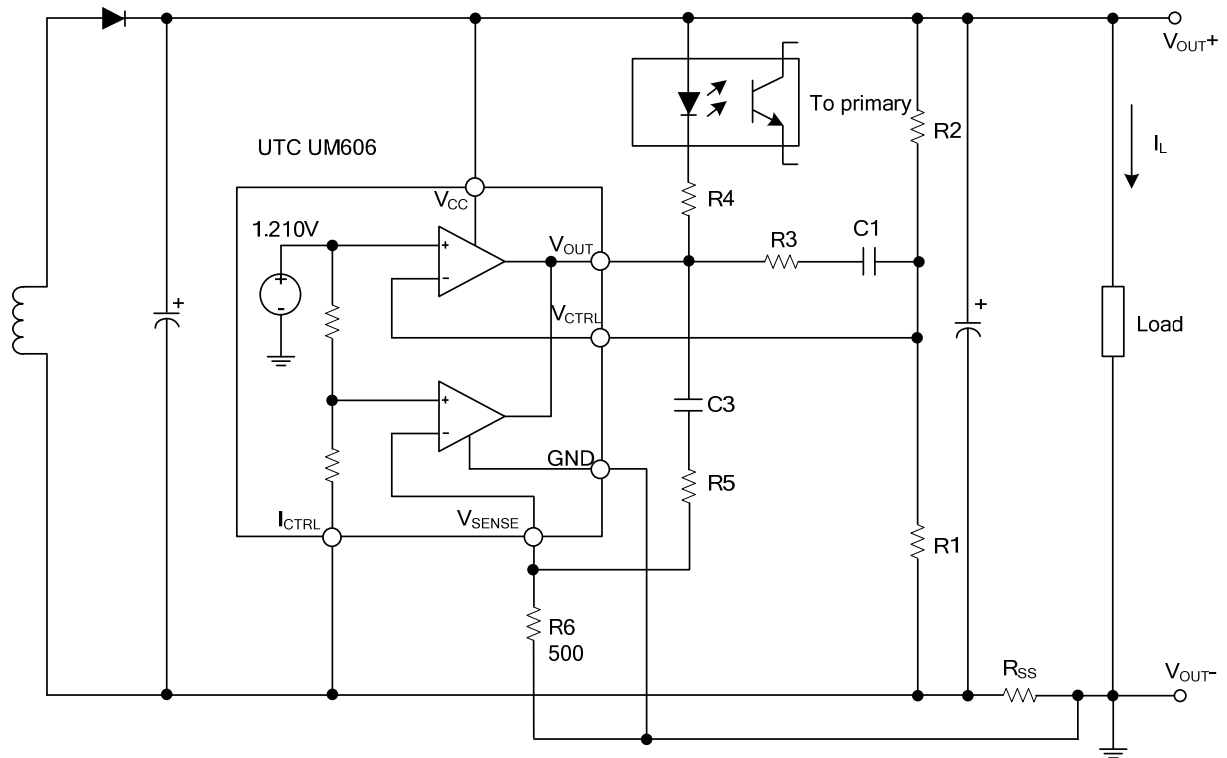
■ RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V _{CC}	2.5 ~ 18	V

■ ELECTRICAL CHARACTERISTICS (V_{CC}=5V, T_A=25°C, unless otherwise specified.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
Reference Voltage	V _{REF}		UM606	1.198	1.21	1.222	V
			UM606D	1.186	1.21	1.234	
Current Control Loop Reference	V _{SENSE}	I _{OUT} =2.5mA	UM606	196	200	204	mV
			UM606D	66.5	70	73.5	
Low Output Voltage	V _{OL}	@10mA Sinking Current	UM606		200		mV
			UM606D		100		
Total Supply Current	I _{CC}	V _{CC} =5V	UM606		0.6	1.2	mA
			UM606D		0.5	1.0	
Input Bias Current	I _{IB}			50		nA	
Current Out of Pin I _{CTRL}	I _{IBI}	@-200mV	UM606		25		µA
			UM606D		18		
Output Short Circuit Current.	I _{OS}	Output to V _{CC} . Sink Current Only		27	50	mA	
Transconduction Gain (V _{CTRL})	G _{mv}	Sink Current Only	1	3.5		mA/mV	
Transconduction Gain (I _{CTRL}).	G _{mi}		1.5	7		mA/mV	

■ TYPICAL APPLICATION CIRCUIT(Cont.)

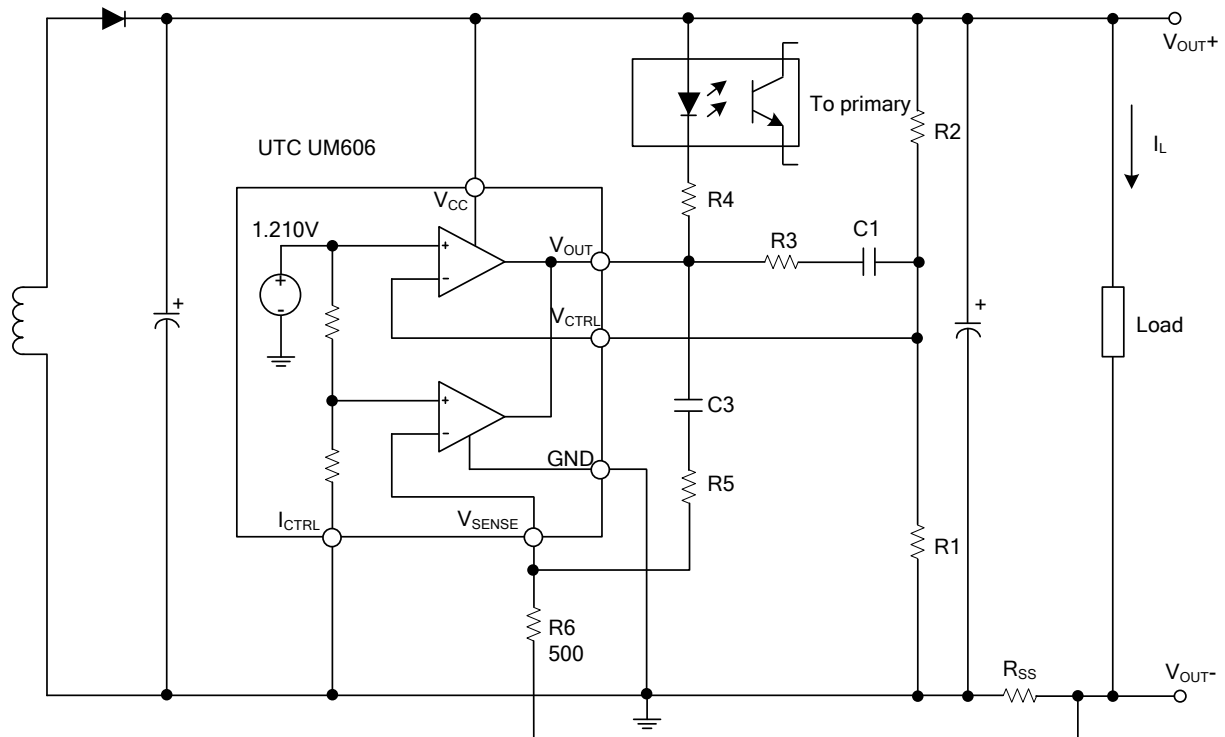


$$V_{OUT} = [V_{REF} + (I_L \times R_{SS})] \times \frac{R1 + R2}{R1} - (I_L \times R_{SS}) \text{ (V)}$$

$$\text{Current Limit} = \frac{V_{SENSE}}{R_{SS}} \text{ (A)}$$

Figure 2. Typical Application 2 of UTC UM606

■ TYPICAL APPLICATION CIRCUIT(Cont.)

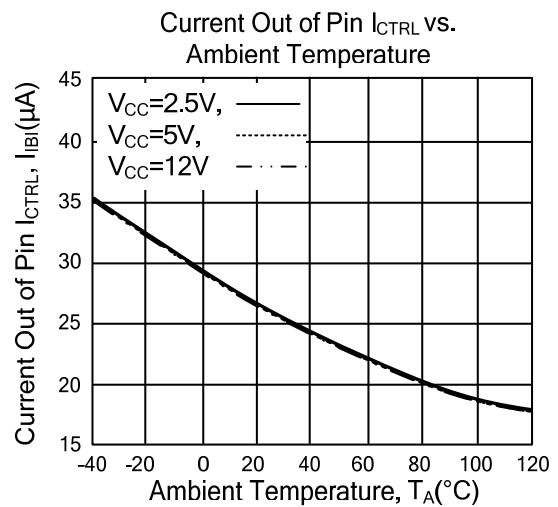
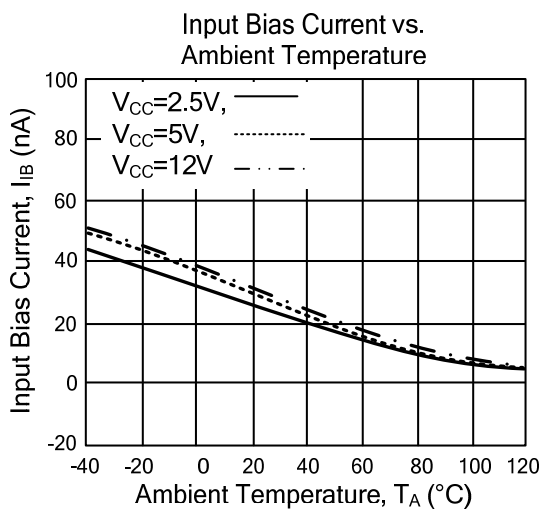
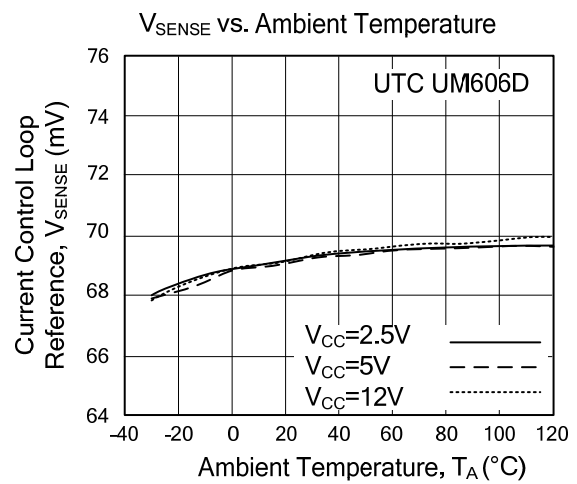
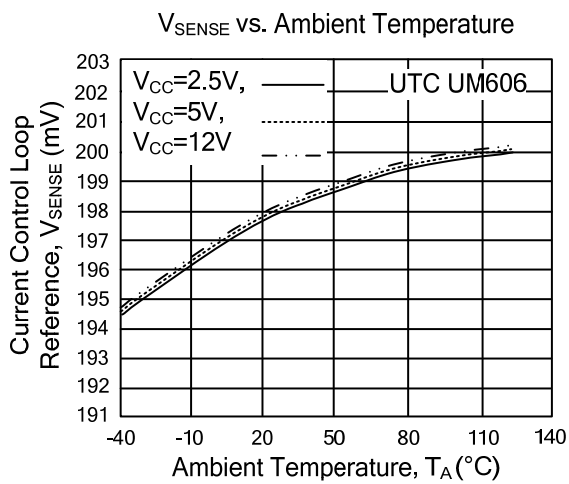
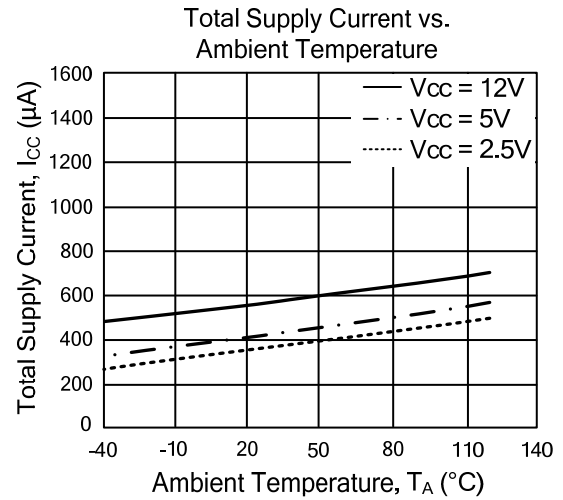
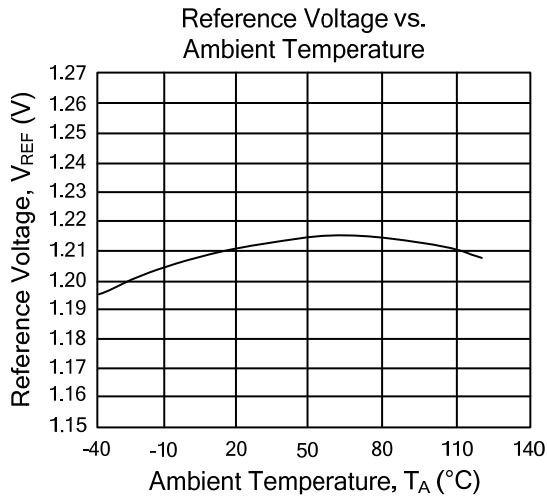


$$V_{OUT} = V_{REF} \times \frac{R1+R2}{R1} - (I_L \times R_{SS}) \quad (V)$$

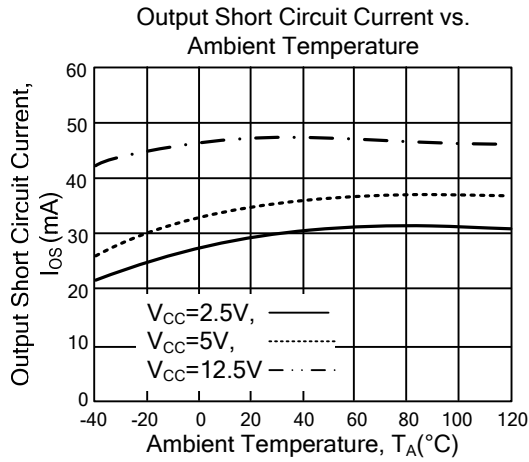
$$\text{Current Limit} = \frac{V_{SENSE} \times V_{REF}}{(V_{SENSE} + V_{REF}) \times R_{SS}} \quad (A)$$

Figure 3. Typical Application 3 of UTC UM606

TYPICAL PERFORMANCE CHARACTERISTICS



■ TYPICAL PERFORMANCE CHARACTERISTICS(Cont.)



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