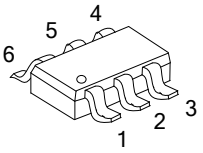
CONSTANT VOLTAGE AND CONSTANT CURRENT CONTROLLER



SOT-26

■ 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 ±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

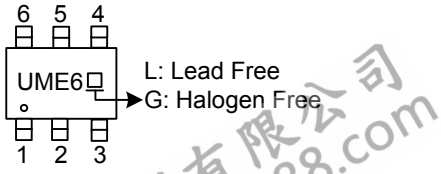
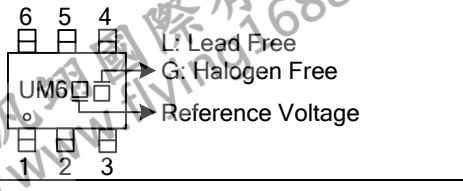
Ordering Number		Package	Packing
Lead Free	Halogen Free		
UM606xL-AG6-R	UM606xG-AG6-R	SOT-26	Tape Reel

UM606xG-AG6-R

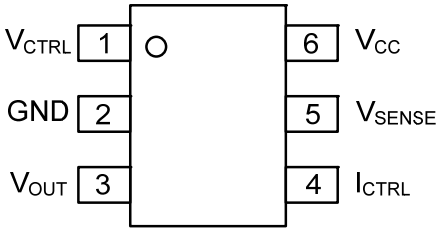
(1) Packing Type
(2) Package Type
(3) Green Package
(4) Reference Voltage

(1) R: Tape Reel
(2) AG6: SOT-26
(3) G: Halogen Free and Lead Free, L: Lead Free
(4) refer to Marking Information

■ MARKING

PACKAGE	CODE	MARKING
SOT-26 (For UM606)	-	
SOT-26 (For UM606x)	D	

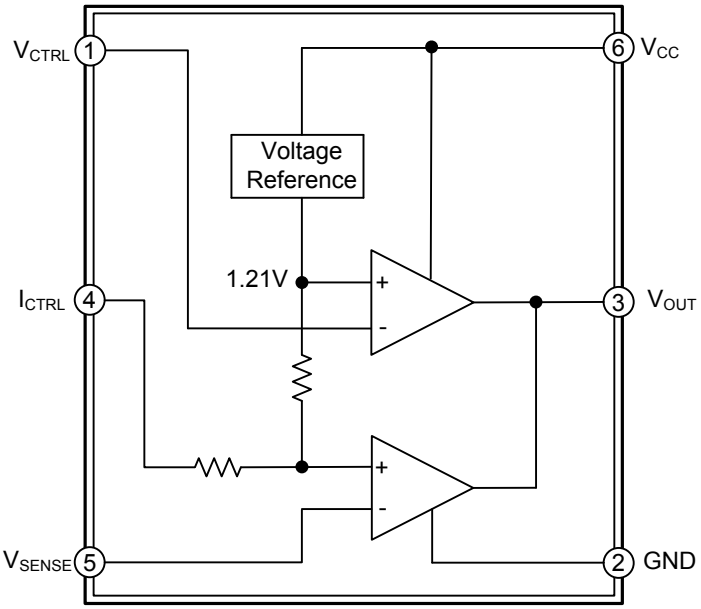
■ PIN CONFIGURATION



■ 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

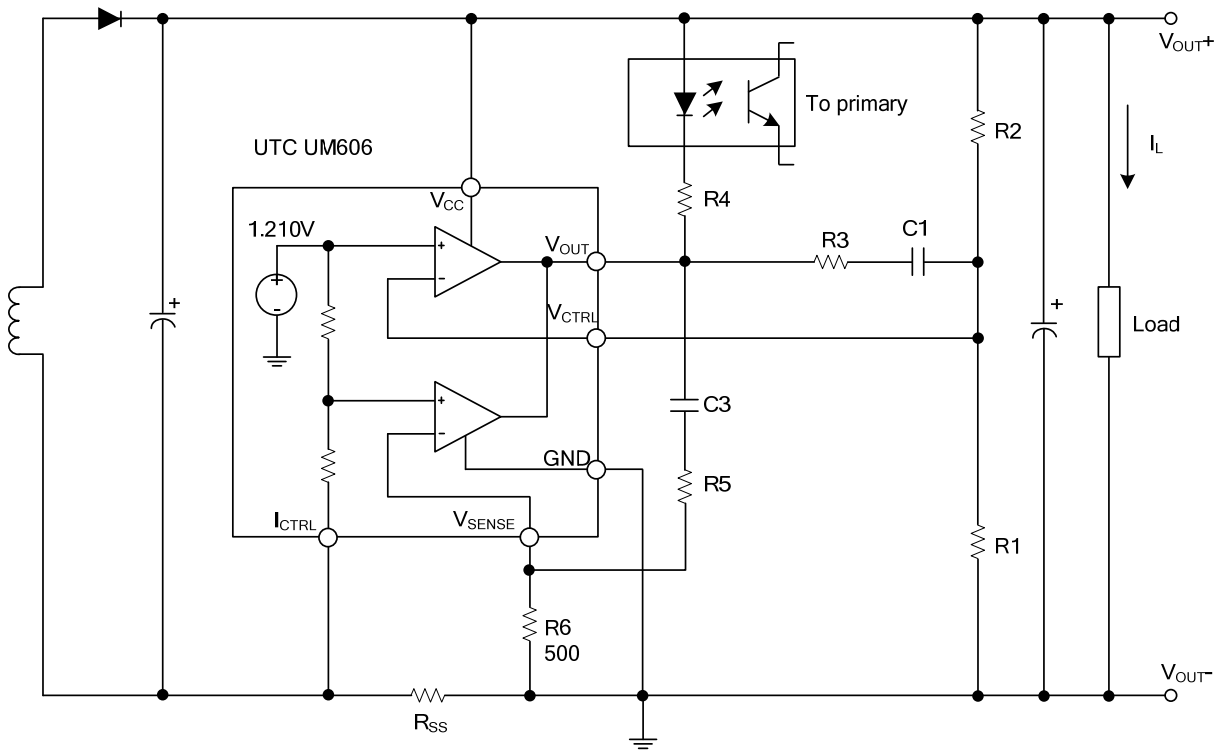
■ RECOMMENDED OPERATING CONDITIONS

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})	Gmv	Sink Current Only		1	3.5		mA/mV
Transconduction Gain (I_{CTRL}).	Gmi			1.5	7		mA/mV

■ TYPICAL APPLICATION CIRCUIT

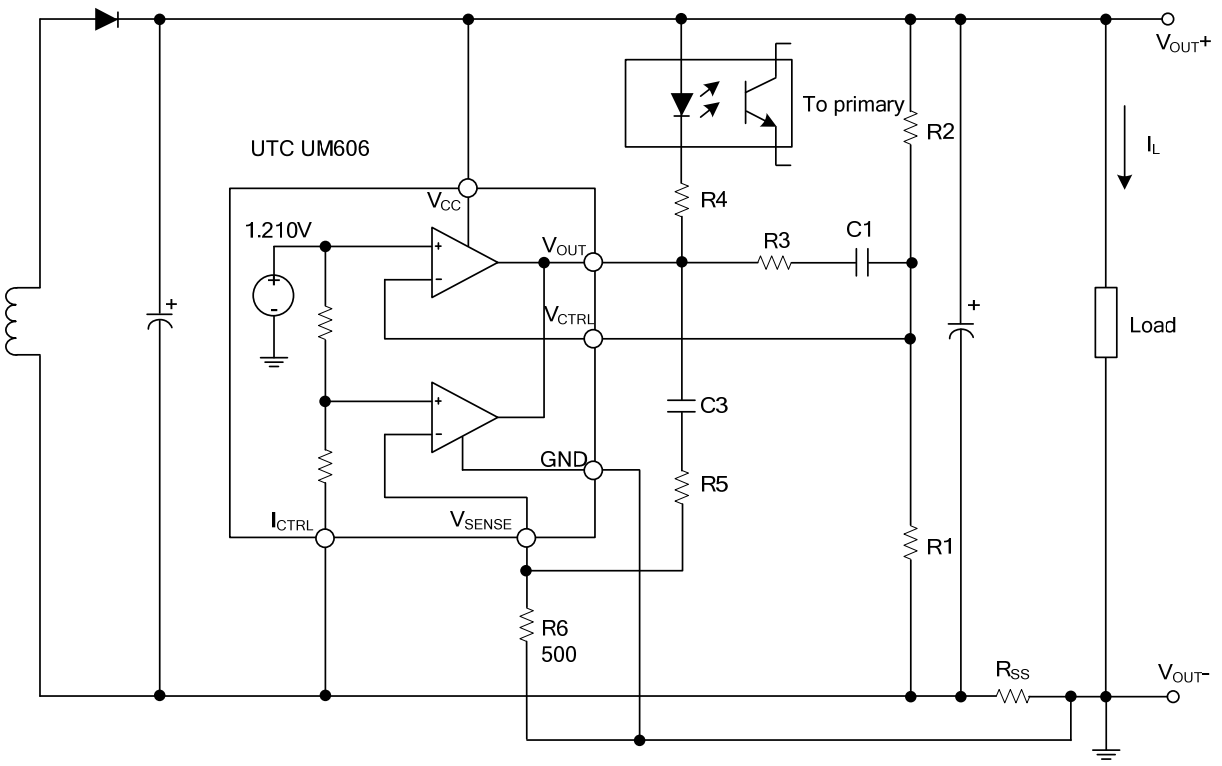


$$V_{OUT} = V_{REF} \times \frac{R1+R2}{R1} \quad (V)$$

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

Figure 1. Typical Application 1 of UTC **UM606**

■ TYPICAL APPLICATION CIRCUIT(Cont.)

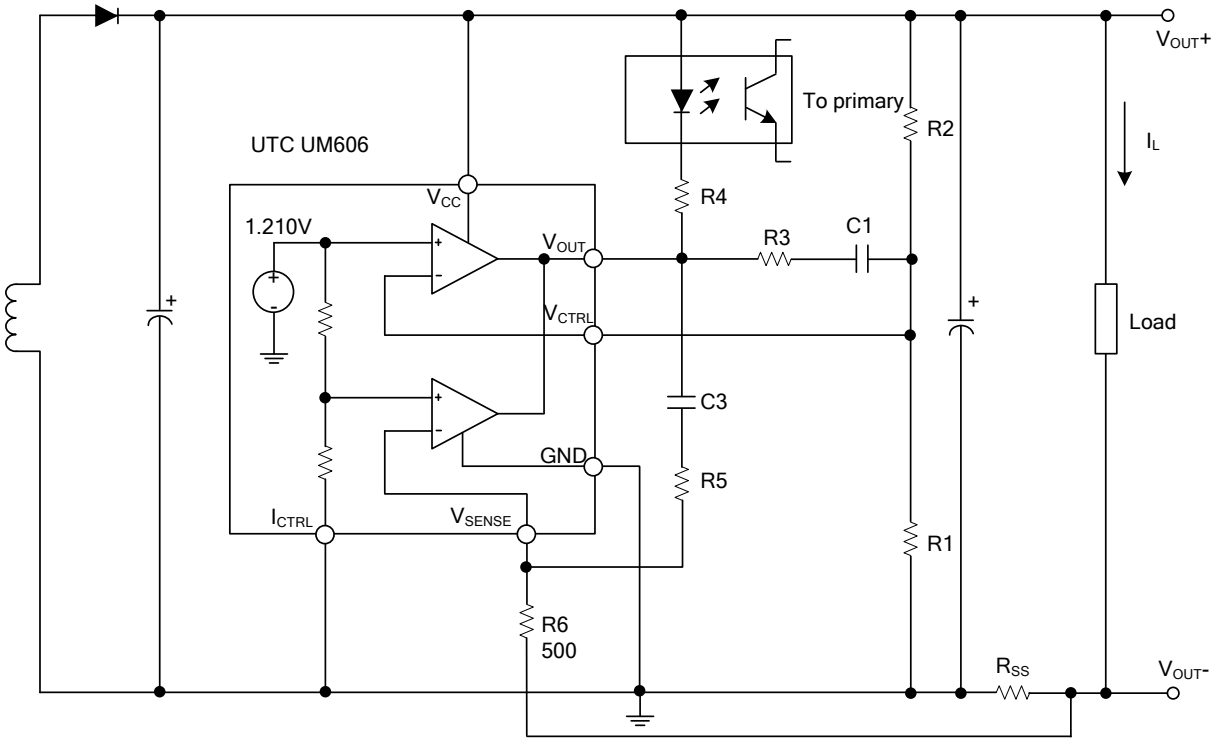


$$V_{OUT} = [V_{REF} + (I_L \times R_{SS})] \times \frac{R1+R2}{R1} - (I_L \times R_{SS}) \quad (V)$$

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

Figure 2. Typical Application 2 of UTC **UM606**

■ TYPICAL APPLICATION CIRCUIT(Cont.)



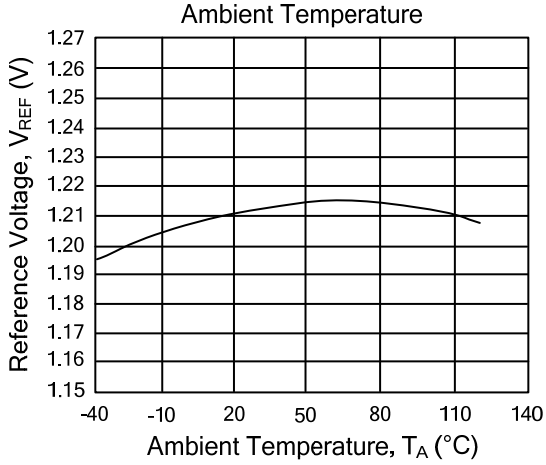
$$V_{OUT} = V_{REF} \times \frac{R1+R2}{R1} - (I_L \times R_{SS}) \quad (V)$$

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

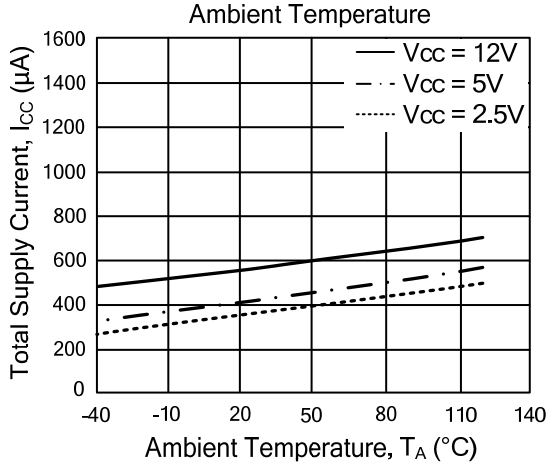
Figure 3. Typical Application 3 of UTC **UM606**

■ TYPICAL PERFORMANCE CHARACTERISTICS

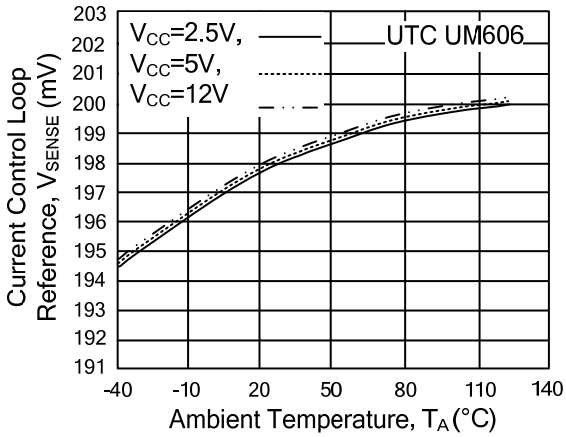
Reference Voltage vs. Ambient Temperature



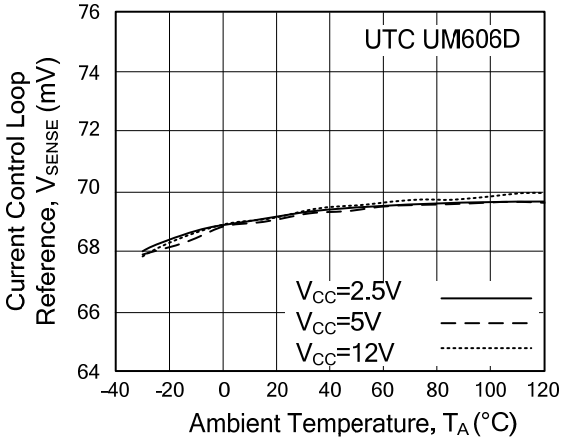
Total Supply Current vs. Ambient Temperature



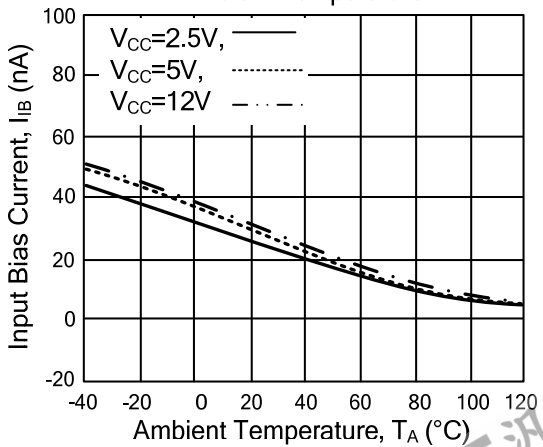
V_{SENSE} vs. Ambient Temperature



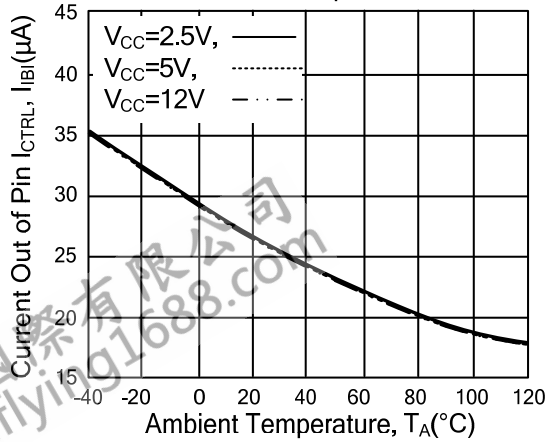
V_{SENSE} vs. Ambient Temperature



Input Bias Current vs. Ambient Temperature



Current Out of Pin I_{CTRL} vs. Ambient Temperature



■ TYPICAL PERFORMANCE CHARACTERISTICS(Cont.)

Output Short Circuit Current vs. Ambient Temperature