

UTC UM601/A LINEAR INTEGRATED CIRCUIT

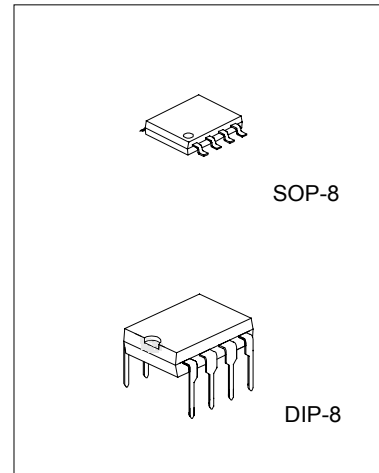
VOLTAGE AND CURRENT CONTROLLER

DESCRIPTION

The UTC UM601/A integrated circuit incorporates a high stability series band gap voltage reference, two ORed operational amplifiers and a current source.

This IC compares the DC voltage and the current level at the output of a switching power supply to an internal reference. It provides a feedback through an optocoupler to the PWM controller IC in the primary side.

The controlled current generator can be used to modify the level of current limitation by offsetting the information coming from the current sensing resistor.



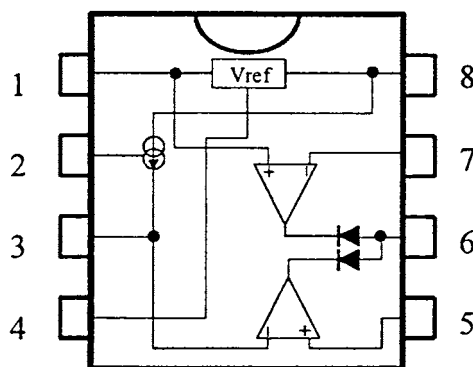
FEATURES

- *1.24V series voltage reference with 10mA output current and 1% precision (UM601A)
- *Two operational amplifiers with ORed output and 1MHz gain bandwidth product
- *Built-in current generator with enable / disable function
- *4.5 to 32V supply voltage range

APPLICATION

- *Battery charger with a constant voltage and a limited output current
- *Every types of application requiring a precision voltage regulation and current limitation
- *Voltage supervisors
- *Over voltage protection

PIN CONFIGURATION



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ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	VALUE	UNIT
DC Supply Voltage (note 1)	V _{cc}	36	V
Output Current (note 2)	I _{out}	20	mA
Power Dissipation	P _d	200	mW
Input Voltage (note 3)	V _{in}	-0.3, V _{cc} -1.5	V
Input Current	I _{in}	±1	mA
Storage Temperature	T _{stg}	-40 to +125	°C
Maximum Junction Temperature	T _j	150	°C
Thermal Resistance Junction to Ambient	T _{thja}	130 to 200	°C/W

OPERATING CONDITIONS

PARAMETER	SYMBOL	VALUE	UNIT
Supply Voltage	V _{cc}	4.5 to 32	V
Operating Free Air Temperature	T _{opr}	T _{min.} to T _{max.}	°C

ELECTRICAL CHARACTERISTICS (T_a=25°C, V_{cc}=15V, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP.	MAX	UNIT
Total Supply Current	I _{cc}	V _{cc} =15V			2	mA
Input Voltage	V _i		0		V _{cc} -1.5	V
Input Offset Voltage	V _{io}	25°C T _{min.} <T _{amb.} <T _{max.}	-5 -7	1	5 7	mV
Input Bias Current	I _{ib}	@V _{in} =1.2V on pin 7 and V _{in} =0V on pin 5 25°C T _{min.} <T _{amb.} <T _{max.}	-700 -1000	-300	0 0	nA
Output Sink Current	I _{sink}	V _{o1} =2.5V 25°C T _{min.} <T _{amb.} <T _{max.}	8	15		mA
Large Signal Voltage Gain	A _{vo}	R _L =2kΩ T _{min.} <T _{amb.} <T _{max.}	15			V/mV
Supply Voltage Rejection Ratio	SVR	T _{min.} <T _{amb.} <T _{max.}	65	90		dB
Common Mode Rejection Ratio	CMR	T _{min.} <T _{amb.} <T _{max.}		80		dB
Gain Bandwidth Product	GBP	V _{cc} =15V, F=100kHz, V _{in} =10mV, R _L =2kΩ, C _L =100pF		1		MHz
Output Leakage Current	I _{oh}	25°C T _{min.} <T _{amb.} <T _{max.}			2 7	μA

ELECTRICAL CHARACTERISTICS (T_a=25°C, V_{cc}=15V, unless otherwise specified)

VOLTAGE REFERENCE: UM601

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP.	MAX	UNIT
Reference Voltage	V _{ref}	I _{out} =1mA, T _{amb.} =25°C	1.21	1.24	1.27	V
Temperature Stability	K _{vt}	T _{min.} <T _{amb.} <T _{max.}		30	100	ppm/°C
Load Regulation	Reg _{lo}	1<I _{out} <10mA		5	15	mV
Line Regulation	Reg _{li}	5<V _{in} <32V		3.5	10	mV

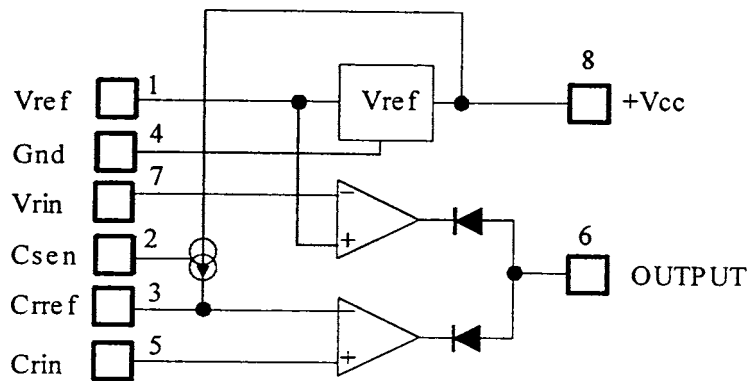
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VOLTAGE REFERENCE: UM601A

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Reference Voltage	Vref	I _{out} =1mA, T _{amb} =25°C	1.227	1.240	1.252	V
Temperature Stability	Kvt	T _{min} .<T _{amb} .<T _{max} .		30	100	ppm/°C
Load Regulation	Reglo	1<I _{out} <10mA		5	15	mV
Line Regulation	Regli	5<V _{in} <32V		3.5	10	mV

CURRENT GENERATOR UM601/UM601A

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Current Source	I _o			1.4		mA
Temperature Stability	Kcgt	T _{min} .<T _{amb} .<T _{max} .		500		ppm/°C
Line Regulation	Cglir	4.5V<V _{cc} <32V		0.003	0.030	mA
Voltage at the enable pin to have I _o =1.4mA	V _{csen}	T _{min} .<T _{amb} .<T _{max} .			0.6	V
Voltage at the enable pin to have I _o =0mA	V _{csdis}	T _{min} .<T _{amb} .<T _{max} .	2			V
Input Current on the Csen pin	I _{csen}	T _{min} .<T _{amb} .<T _{max} .			30	μA
Leakage Current	I _{csleak}	V _{cs} =2V T _{min} .<T _{amb} .<T _{max} .		0.5	2	μA



DESCRIPTION

PIN	NAME	TYPE	FUNCTION
1	Vref	OUTPUT	Voltage Reference Output 1.24V, 10mA max. Do not short circuit
7	Vrin	INPUT	Voltage Regulation Loop Input
5	Crim	INPUT	Current Limitation Loop Input, connected to the sense resistor
3	Cref	INPUT	Current Limitation Reference Input
2	Csen	INPUT	Current source enable input. This current source can be used to offset the voltage measurement on the sense resistor and therefore to modify the charge current. The current source is enabled when the input volage on pin 2 is lower than 0.8V
6	OUTPUT	OUTPUT	Output pin common to the voltage regulation and current limitation loops. This output can drive the primary side (LED) of an optocoupler
8	Vcc	INPUT	Power Supply Input (4.5 to 32VDC)
4	GND	INPUT	Ground

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