



## UCM102

CMOS IC

### HIGH-SIDE CURRENT MONITOR

#### DESCRIPTION

The UTC **UCM102** is a high-side current sense monitor. It uses UTC's advanced technology to provide customers with a minimum operating current, high accuracy and high side voltage, etc.

The UTC **UCM102** is suitable for portable battery equipment.

#### FEATURES

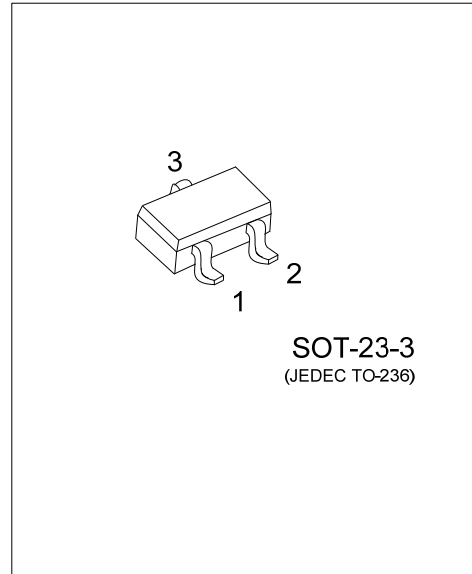
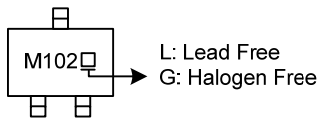
- \* Low operating current
- \* High side voltage (2.5~20V)
- \* High accuracy (typ.=1%)

#### ORDERING INFORMATION

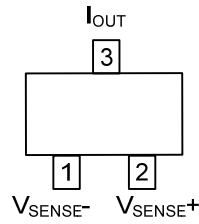
Ordering Number		Package	Packing
Lead Free	Halogen Free		
UCM102L-AE2-R	UCM102G-AE2-R	SOT-23-3	Tape Reel

<p>UCM102G-AE2-R</p> <ul style="list-style-type: none"> <li>(1) Packing Type</li> <li>(2) Package Type</li> <li>(3) Green Package</li> </ul>	<ul style="list-style-type: none"> <li>(1) R: Tape Reel</li> <li>(2) AE2: SOT-23-3</li> <li>(3) G: Halogen Free and Lead Free, L: Lead Free</li> </ul>
--	--

#### MARKING



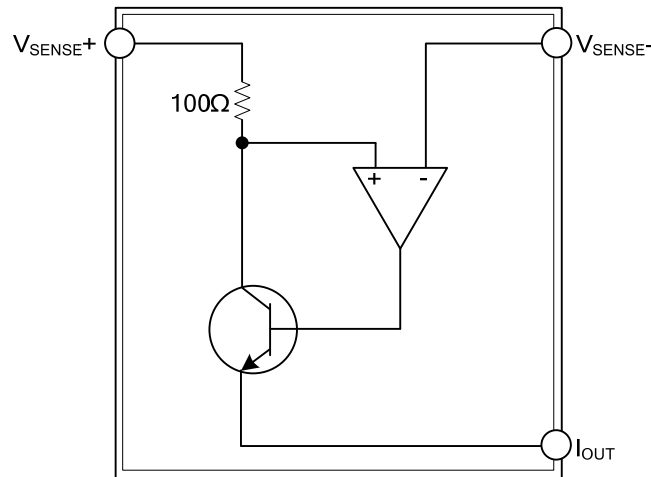
■ PIN CONFIGURATION



■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	$V_{SENSE-}$	Connection to load/battery
2	$V_{SENSE+}$	Supply voltage
3	$I_{OUT}$	Output current, proportional to $V_{IN}-V_{LOAD}$

■ BLOCK DIAGRAM



## ■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	RATINGS	UNIT
Voltage on any Pin (Relative to I <sub>OUT</sub> )		-0.6 ~ 20	V
Continuous Output Current	I <sub>OUT</sub>	25	mA
Continuous Sense Voltage (Note 2)	V <sub>SENSE</sub>	-0.5 ~ +5	V
Power Dissipation (T <sub>A</sub> =25°C)   Derate to Zero at 125°C	P <sub>D</sub>	450	mW
Operating Temperature	T <sub>A</sub>	-40 ~ +85	°C
Storage Temperature	T <sub>STG</sub>	-55 ~ +125	°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.

## ■ RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
V <sub>CC</sub> Range	V <sub>IN</sub>	2.5		20	V

## ■ ELECTRICAL CHARACTERISTICS (Test Conditions T<sub>A</sub>=25°C, V<sub>IN</sub>=5V, R<sub>OUT</sub>=100Ω.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Current	I <sub>OUT</sub> (Note 1)	V <sub>SENSE</sub> =0V	1	4	15	μA
		V <sub>SENSE</sub> =10mV	90	104	120	μA
		V <sub>SENSE</sub> =100mV	0.975	1.002	1.025	mA
		V <sub>SENSE</sub> =200mV	1.95	2.0	2.05	mA
		V <sub>SENSE</sub> =1V	9.6	9.98	10.2	mA
Sense Voltage	V <sub>SENSE</sub> (Note 2)		0		2500	mV
V <sub>SENSE</sub> - input current	I <sub>SENSE-</sub>				100	nA
Accuracy	Acc	R <sub>SENSE</sub> =0.1Ω, V <sub>SENSE</sub> =200mV	-2.5		2.5	%
Transconductance, I <sub>OUT</sub> /V <sub>SENSE</sub>	G <sub>m</sub>			10000		μA/V
Bandwidth	BW	V <sub>SENSE(DC)</sub> =10mV, Pin=-40dBm (Note 3)		300		kHz
		V <sub>SENSE(DC)</sub> =100mV, Pin= -20dBm (Note 3)		2		MHz

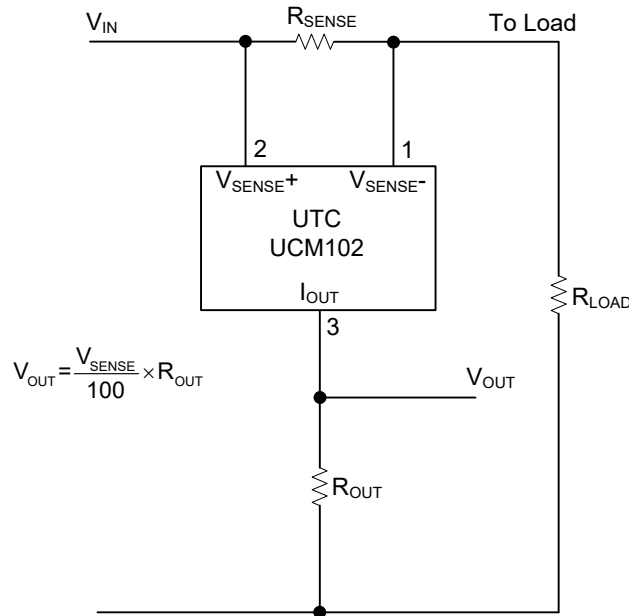
Notes: 1. Includes input offset voltage contribution.

2. V<sub>SENSE</sub> is defined as the differential voltage between V<sub>SENSE+</sub> and V<sub>SENSE-</sub>

$$\begin{aligned}
 V_{SENSE} &= V_{SENSE+} - V_{SENSE-} \\
 &= V_{IN} - V_{LOAD} \\
 &= I_{LOAD} \times R_{SENSE}
 \end{aligned}$$

3. -20dBm=63mVp-p into 50Ω

■ TYPICAL APPLICATION CIRCUIT



UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. UTC reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.