



## UCM102

Preliminary

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.

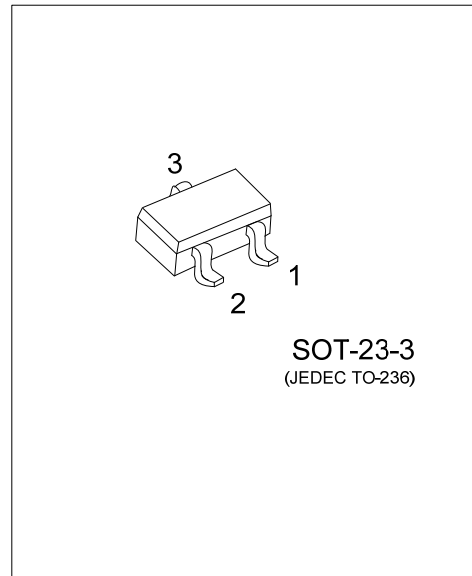
#### FEATURES

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

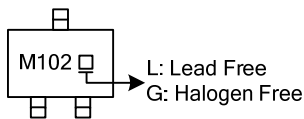
#### ORDERING INFORMATION

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

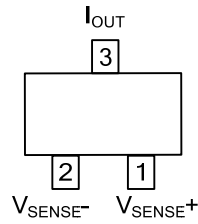
<p>UCM102G-AE2-R</p> <ul style="list-style-type: none"> <li>(1) Packing Type</li> <li>(2) Package Type</li> <li>(3) Green Package</li> </ul>	<ul style="list-style-type: none"> <li>(1) R: Tape Reel</li> <li>(2) AE2: SOT-23-3</li> <li>(3) G: Halogen Free and Lead Free, L: Lead Free</li> </ul>
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####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



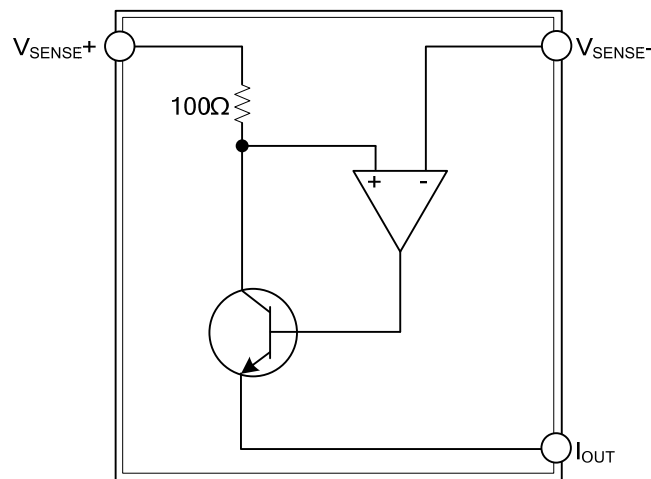
■ PIN CONFIGURATION



■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	$V_{SENSE+}$	Supply voltage
2	$V_{SENSE-}$	Connection to load/battery
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.

### ■ 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
V <sub>CC</sub> Range	V <sub>IN</sub>		2.5		20	V
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>.

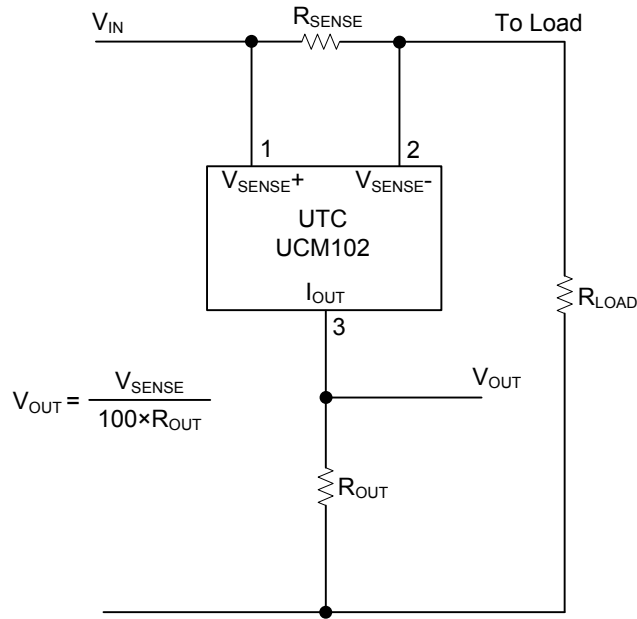
$$V_{SENSE} = V_{SENSE+} - V_{SENSE-}$$

$$= V_{IN} - V_{LOAD}$$

$$= I_{LOAD} \times R_{SENSE}$$

3. -20dBm=63mVp-p into 50Ω

■ TYPICAL APPLICATION CIRCUIT



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