

**UCM102**

Preliminary

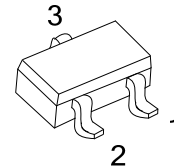
CMOS IC**HIGH-SIDE CURRENT MONITOR****DESCRIPTION**

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%)

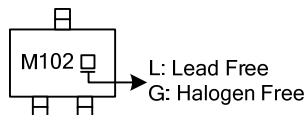


SOT-23-3
(JEDEC TO-236)

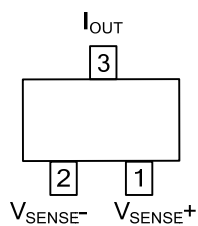
ORDERING INFORMATION

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

UCM102L-AE2-R (1) Packing Type (2) Package Type (3) Lead Free	(1) R: Tape Reel (2) AE2: SOT-23-3 (3) L: Lead Free, G: Halogen Free
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MARKING

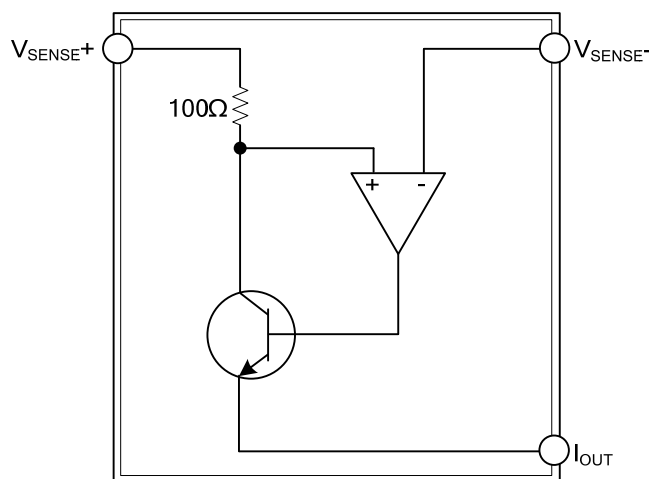
■ PIN CONFIGURATION



■ 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_{OUT})		-0.6~20	V
Continuous Output Current	I_{OUT}	25	mA
Continuous Sense Voltage (Note 2)	V_{SENSE}	-0.5~+5	V
Power Dissipation ($T_A=25^{\circ}\text{C}$) Derate to Zero at 125°C	P_D	450	mW
Operating Temperature	T_A	-40~85	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55~125	$^{\circ}\text{C}$

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 $T_A=25^{\circ}\text{C}$, $V_{IN}=5\text{V}$, $R_{OUT}=100\Omega$.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
V_{CC} Range	V_{IN}		2.5		20	V
Output Current	I_{OUT} (Note 1)	$V_{SENSE}=0\text{V}$	1	4	15	μA
		$V_{SENSE}=10\text{mV}$	90	104	120	μA
		$V_{SENSE}=100\text{mV}$	0.975	1.002	1.025	mA
		$V_{SENSE}=200\text{mV}$	1.95	2.0	2.05	mA
		$V_{SENSE}=1\text{V}$	9.6	9.98	10.2	mA
Sense Voltage	V_{SENSE} (Note 2)		0		2500	mV
V_{SENSE} - input current	I_{SENSE-}				100	nA
Accuracy	Acc	$R_{SENSE}=0.1\Omega$, $V_{SENSE}=200\text{mV}$	-2.5		2.5	%
Transconductance, I_{OUT}/V_{SENSE}	Gm			10000		$\mu\text{A/V}$
Bandwidth	BW	$V_{SENSE(DC)}=10\text{mV}$, Pin=-40dBm (Note 3)		300		kHz
		$V_{SENSE(DC)}=100\text{mV}$, Pin=-20dBm (Note 3)		2		MHz

Notes: 1. Includes input offset voltage contribution

2. V_{SENSE} is defined as the differential voltage between V_{SENSE+} and V_{SENSE-} .

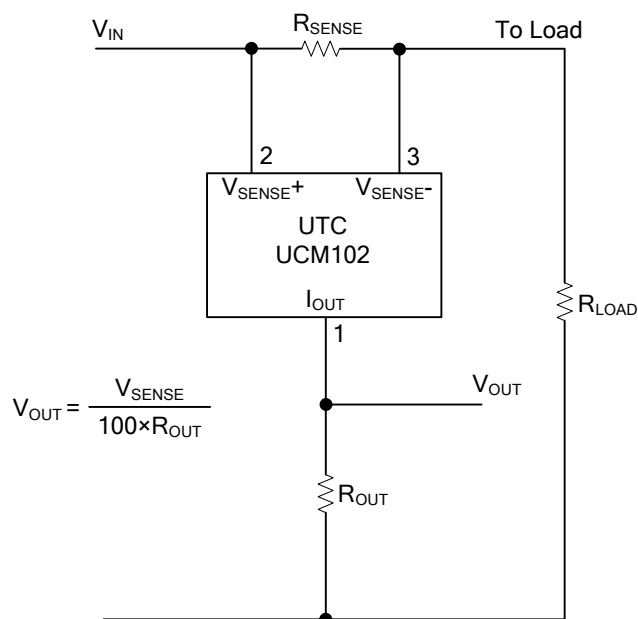
$$V_{SENSE}=V_{SENSE+}-V_{SENSE-}$$

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

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

3. -20dBm=63mVp-p into 50Ω

■ TYPICAL APPLICATION CIRCUIT



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