



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.

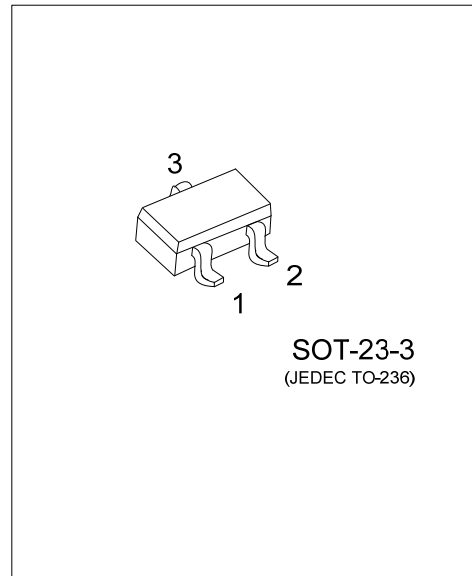
FEATURES

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

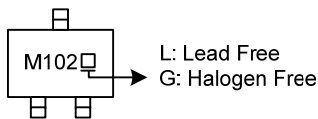
ORDERING INFORMATION

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

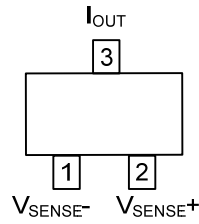


MARKING



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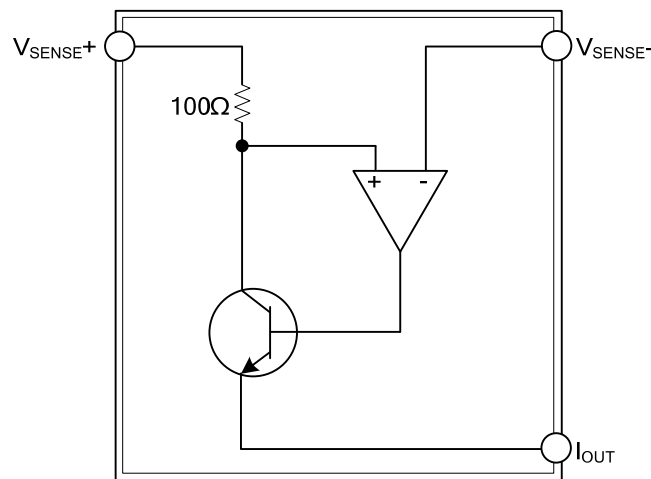
■ PIN CONFIGURATION



■ 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



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■ 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°C) Derate to Zero at 125°C | P _D | 450 | mW |
| Operating Temperature | T _A | -40~85 | °C |
| Storage Temperature | T _{STG} | -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_A=25°C, V_{IN}=5V, R_{OUT}=100Ω.)

| 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} =0V | 1 | 4 | 15 | μA |
| | | V _{SENSE} =10mV | 90 | 104 | 120 | μA |
| | | V _{SENSE} =100mV | 0.975 | 1.002 | 1.025 | mA |
| | | V _{SENSE} =200mV | 1.95 | 2.0 | 2.05 | mA |
| | | V _{SENSE} =1V | 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} =0.1Ω, V _{SENSE} =200mV | -2.5 | | 2.5 | % |
| Transconductance, I _{OUT} /V _{SENSE} | G _m | | | 10000 | | μA/V |
| Bandwidth | BW | V _{SENSE(DC)} =10mV, Pin=-40dBm (Note 3) | | 300 | | kHz |
| | | V _{SENSE(DC)} =100mV, Pin= -20dBm (Note 3) | | 2 | | MHz |

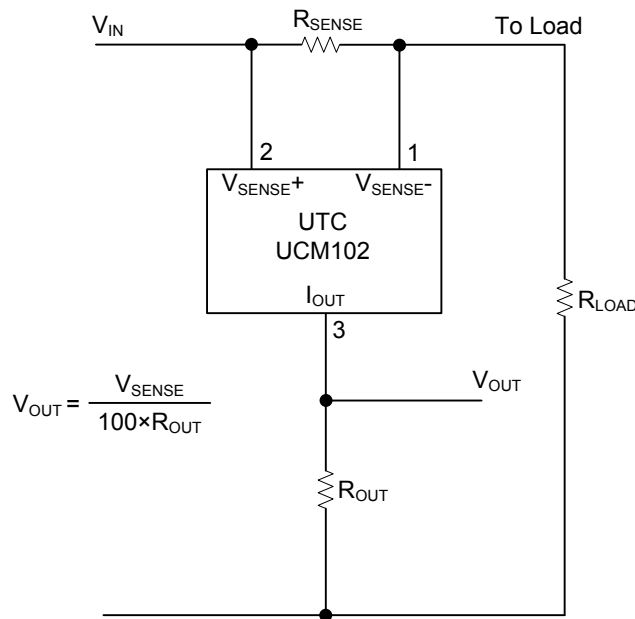
Notes: 1. Includes input offset voltage contribution.

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

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

3. -20dBm=63mVp-p into 50Ω

■ TYPICAL APPLICATION CIRCUIT



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