



LM39102

CMOS IC

1A LOW-VOLTAGE LOW-DROPOUT REGULATOR

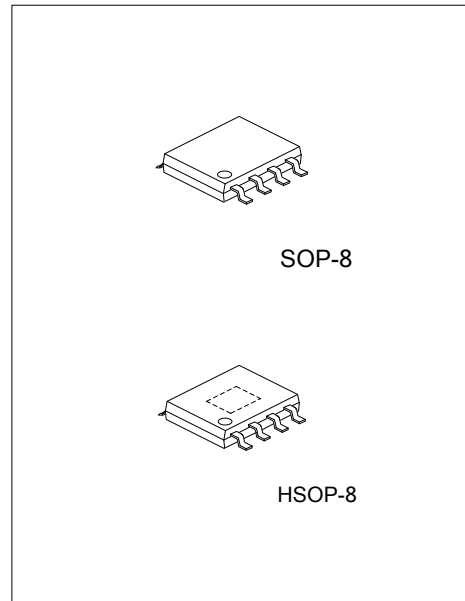
DESCRIPTION

The UTC **LM39102** is a low-dropout linear voltage regulator that provide low-voltage, high-current output.

The UTC **LM39102** can be used in a wide field because of Adjustable Output. UTC **LM39102** is fully protected with over current limiting, thermal shutdown, and reversed-battery protection.

FEATURES

- * Adjustable output voltages refer to 1.24V
- * Dropout Voltage 410mV at 1A output
 - Ideal for 3.0V~2.5V conversion
 - Ideal for 2.5V~1.8V or 1.5V conversion
- * ON/OFF control function
- * 1% initial accuracy
- * Built-in current limiting and thermal shutdown
- * Reversed-battery protection
- * Reversed-leakage protection
- * Fast transient response

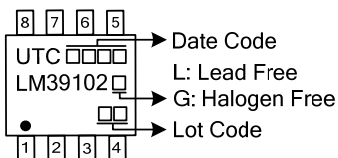


ORDERING INFORMATION

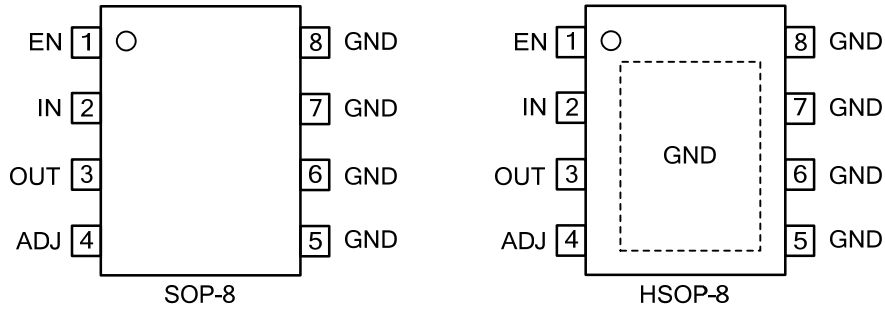
Ordering Number		Package	Packing
Lead Free	Halogen Free		
LM39102L-S08-R	LM39102G-S08-R	SOP-8	Tape Reel
LM39102L-SH2-R	LM39102G-SH2-R	HSOP-8	Tape Reel

<p>LM39102G-S08-R</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Green Package</p>	<p>(1) R: Tape Reel</p> <p>(2) S08: SOP-8, SH2: HSOP-8</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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MARKING



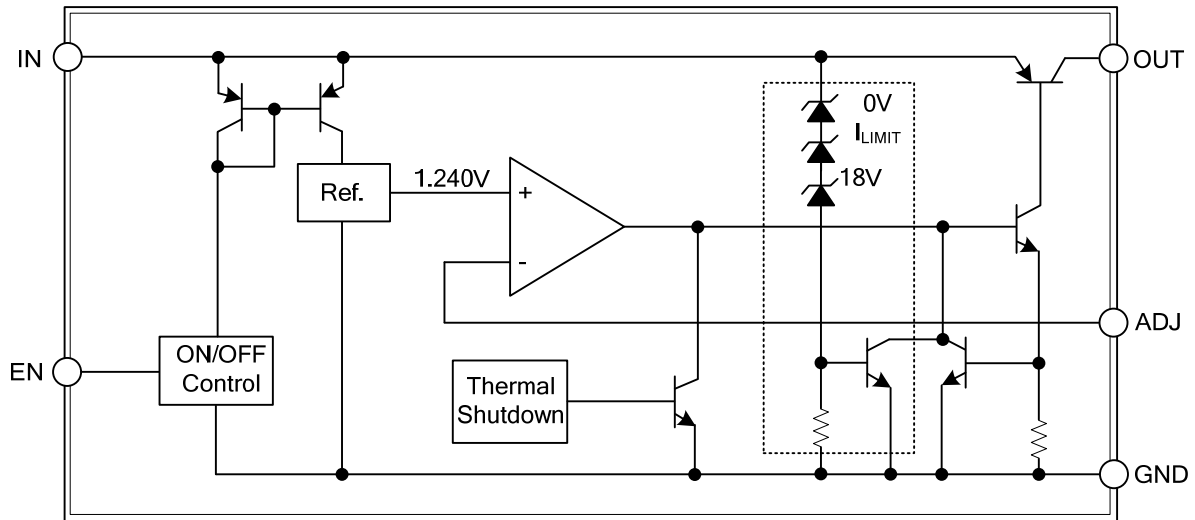
■ PIN CONFIGURATION



■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	EN	ON/OFF control terminal
2	IN	Power Supply
3	OUT	Regulator output
4	ADJ	Adjustment terminal: feedback input
5, 6, 7, 8	GND	Ground

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{IN}	18V	V
Enable Voltage	V_{EN}	+20	V
Junction Temperature	T_J	-40 ~ +125	°C
Storage Temperature	T_{STG}	-65 ~ +150	°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.

■ OPERATING RATINGS (Note 1)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{IN}	+2.25 ~ +16	V
Enable Voltage	V_{EN}	+16	V
Maximum Power Dissipation	P_D	Note 2	

Notes: 1. The device is not guaranteed to function outside its operating rating.

2. $P_{D(max)} = (T_J(max) - T_A) / \theta_{JA}$, where θ_{JA} - junction-to-ambient thermal resistance.

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT	
Junction to Case	θ_{JC}	SOP-8	50	°C/W
		HSOP-8	45	°C/W

ELECTRICAL CHARACTERISTICS

($V_{IN}=V_{OUT}+1V$, $V_{EN}=2.25V$, $T_J=25^\circ C$, bold values indicate $0^\circ C \leq T_J \leq +125^\circ C$, unless noted)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	10mA	-1		1	%
		$10mA \leq I_{OUT} \leq 1A$, $V_{OUT}+1V \leq V_{IN} \leq 8V$	-2		2	%
Line Regulation		$I_{OUT}=10mA$, $V_{OUT}+1V \leq V_{IN} \leq 16V$		0.06	0.5	%
Load Regulation		$V_{IN}=V_{OUT}+1V$, $10mA \leq I_{OUT} \leq 1A$		0.2	1	%
Output Voltage Temperature Coefficient (Note 1)	$\Delta V_{OUT}/\Delta T$			40	100	ppm/ $^\circ C$
Dropout Voltage (Note 2)	V_{DO}	$I_{OUT}=100mA$, $\Delta V_{OUT}=-1\%$		150	200	mV
					250	mV
		$I_{OUT}=500mA$, $\Delta V_{OUT}=-1\%$		275		mV
		$I_{OUT}=750mA$, $\Delta V_{OUT}=-1\%$		330	500	mV
Ground Current (Note 3)	I_{GND}	$I_{OUT}=100mA$, $V_{IN}=V_{OUT}+1V$		700		μA
		$I_{OUT}=500mA$, $V_{IN}=V_{OUT}+1V$		12		mA
		$I_{OUT}=750mA$, $V_{IN}=V_{OUT}+1V$		25		mA
		$I_{OUT}=1A$, $V_{IN}=V_{OUT}+1V$		45	70	mA
Current Limit	$I_{OUT(lim)}$	$V_{OUT}=0V$, $V_{IN}=V_{OUT}+1V$		1.8	2.5	A
Enable Input						
Enable Input Voltage	V_{EN}	Logic Low (Off)			0.8	V
		Logic High (On)	2.25			V
Enable Input Current	I_{EN}	$V_{EN}=2.25V$	1	15	30	μA
					75	μA
		$V_{EN}=0.8V$			2	μA
Reference Voltage			1.228	1.240	1.252	V
			1.215		1.265	V
		Note 4	1.203		1.277	V
Adjust Pin Bias Current				40	80	nA
					120	nA
Reference Voltage Temperature Coefficient (Note 1)				20		ppm/ $^\circ C$
Adjust Pin Bias Current Temperature Coefficient				0.1	99.2	nA/ $^\circ C$

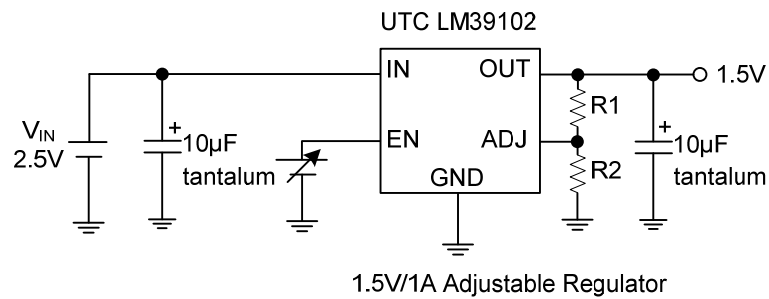
Notes: 1. Output voltage temperature coefficient is $\Delta V_{OUT(worst\ case)} + (T_{J(max)} - T_{J(min)})$ where $T_{J(max)}$ is $+125^\circ C$ and $T_{J(min)}$ is $0^\circ C$.

2. $V_{DO}=V_{IN}-V_{OUT}$ when V_{OUT} decreases to 99% of its nominal output voltage with $V_{IN}=V_{OUT}+1V$. For output voltages below 2.25V, dropout voltage is the input-to-output voltage differential with the minimum input voltage being 2.25V. Minimum input operating voltage is 2.25V.

3. I_{GND} is the quiescent current. $I_{IN}=I_{GND}+I_{OUT}$.

4. $V_{REF} \leq V_{OUT} \leq (V_{IN}-1V)$, $2.25V \leq V_{IN} \leq 16V$, $10mA \leq I_L \leq 1A$.

■ TYPICAL APPLICATION CIRCUIT



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