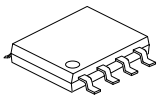
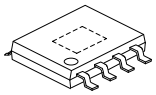
LM39102

CMOS IC

1A LOW-VOLTAGE LOW-DROPOUT REGULATOR



SOP-8



HSOP-8

■ 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

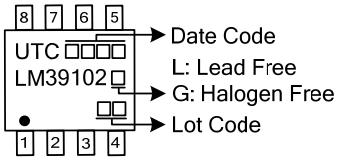
* Adjustable output voltages refer to 1.24V
* Dropout Voltage 410mV at 1A output
  Ideal for 3.0V~2.5V conversion
  Ideal for 2.5V~1.8V or 1.5V conversion
* ON/OFF control function
* 1% initial accuracy
* Built-in current limiting and thermal shutdown
* Reversed-battery protection
* Reversed-leakage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

■ ORDERING INFORMATION

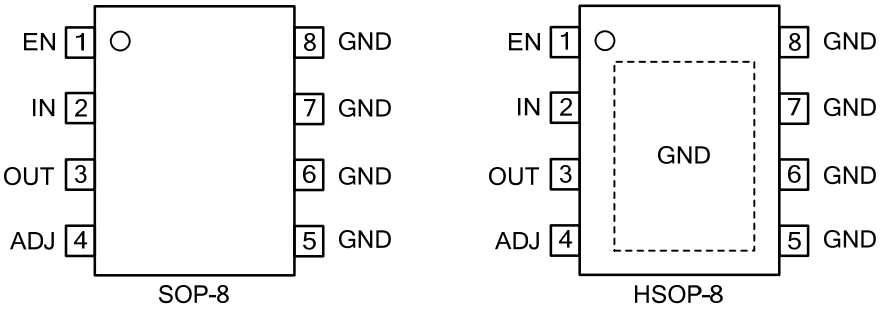
Ordering Number		Package	Packing
Lead Free	Halogen Free		
LM39102L-S08-R	LM39102G-S08-R	SOP-8	Tape Reel
LM39102L-SH2-R	LM39102G-SH2-R	HSOP-8	Tape Reel

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

■ MARKING



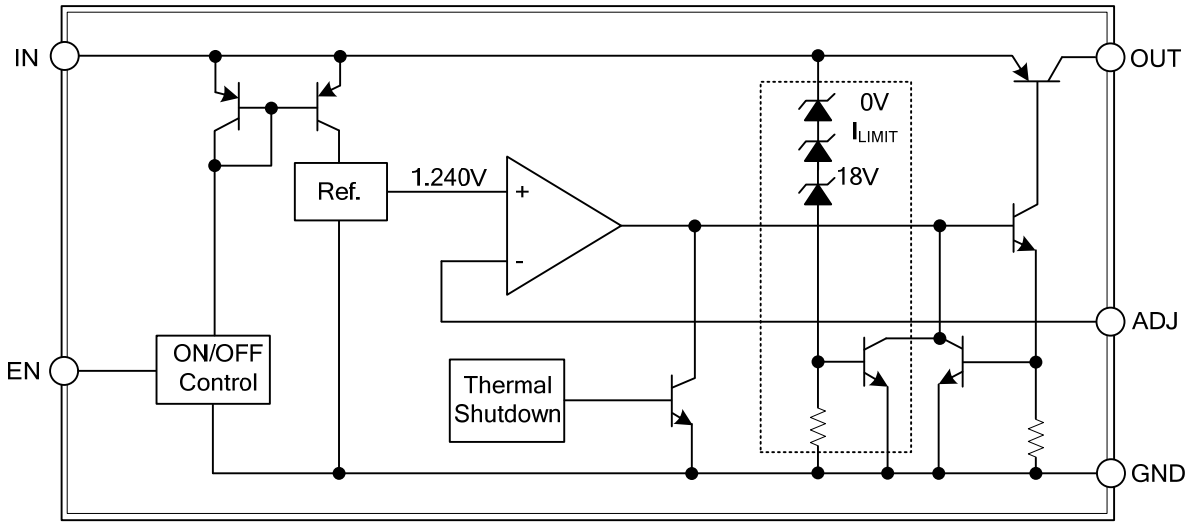
■ PIN CONFIGURATION



■ 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	SOP-8	θ_{JC}	50	°C/W
	HSOP-8		45	°C/W

■ ELECTRICAL CHARACTERISTICS

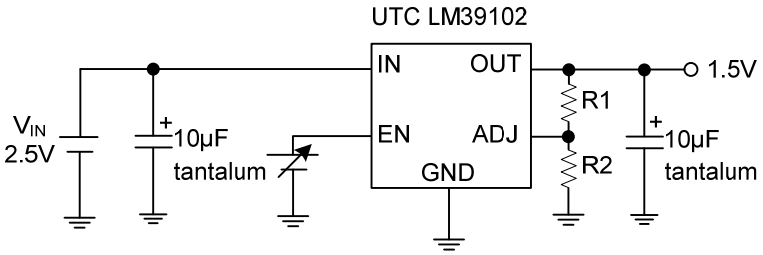
(V_{IN}=V_{OUT}+1V, V_{EN}=2.25V, T_J=25°C, bold values indicate 0°C≤T_J≤+125°C, unless noted)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	10mA	-1		1	%
		10mA≤I_{OUT}≤1A, V_{OUT}+1V≤V_{IN}≤8V	-2		2	%
Line Regulation		I_{OUT}=10mA, V_{OUT}+1V≤V_{IN}≤16V		0.06	0.5	%
Load Regulation		V_{IN}=V_{OUT}+1V, 10mA≤I_{OUT}≤1A		0.2	1	%
Output Voltage Temperature Coefficient (Note 1)	$\Delta V_{OUT}/\Delta T$			40	100	ppm/°C
Dropout Voltage (Note 2)	V_{DO}	I_{OUT}=100mA, ΔV_{OUT}=-1%		150	200	mV
					250	mV
		I_{OUT}=500mA, ΔV_{OUT}=-1%		275		mV
		I_{OUT}=750mA, ΔV_{OUT}=-1%		330	500	mV
		I_{OUT}=1A, ΔV_{OUT}=-1%		410	550	mV
					630	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
					4	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/°C
Adjust Pin Bias Current Temperature Coefficient				0.1	99.2	nA/°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°C and $T_{J(min)}$ is 0°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}≤V_{OUT}≤(V_{IN}-1V), 2.25V≤V_{IN}≤16V, 10mA≤I_L≤1A.

■ TYPICAL APPLICATION CIRCUIT



1.5V/1A Adjustable Regulator