

UTC LM2954 LINEAR INTEGRATED CIRCUIT

300 mA LOW-DROPOUT VOLTAGE REGULATOR

DESCRIPTION

The UTC LM2954 is a monolithic integrated voltage regulator with low dropout voltage, and low quiescent current. It includes many features that suitable for different applications.

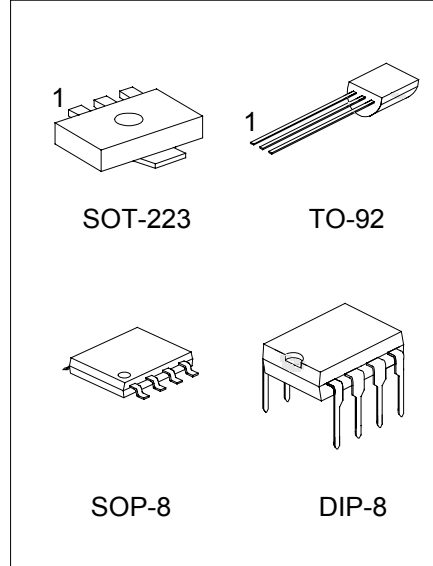
Available in 3-pin TO-92, DIP-8, SOP-8 and SOT-223 packages.

FEATURES

- *High accuracy 3.3, 5V fixed output for TO-92, DIP-8 and SOP-8 package.
- *Extremely low quiescent current and dropout voltage.
- *Extremely tight load and line regulation.
- *Current and thermal limiting.
- *Very low temperature coefficient.
- *Logic controlled shutdown and error flag available for DIP and SOP package.
- *Output voltage programmable for DIP and SOP package.

APPLICATIONS

- *Battery powered equipment.
- *High efficient linear regulator down to 1.24V.
- *Cellular phones.



ORDERING INFORMATION

PART NUMBER	TEMPERATURE RANGE	PACKAGE	ACCURACY
UTC LM2954-5.0	-40°C ~ +125°C	3-Pin TO-92 plastic	1.0%
UTC LM2954-3.3	-40°C ~ +125°C	3-Pin TO-92 plastic	1.0%
UTC LM2954	-40°C ~ +125°C	8-Pin SOP-8 plastic	1.0%
UTC LM2954	-40°C ~ +125°C	8-Pin DIP-8 plastic	1.0%

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PIN CONFIGURATIONS

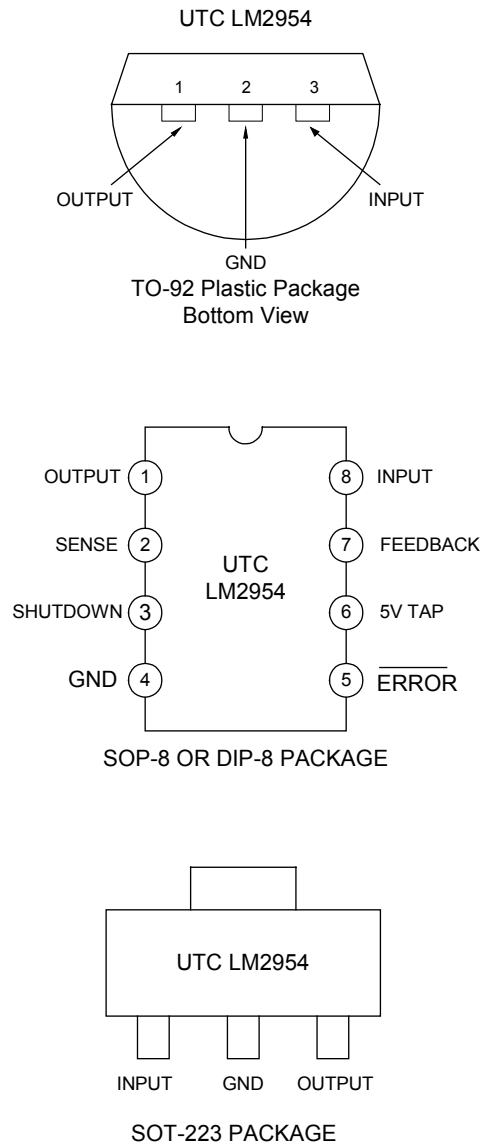
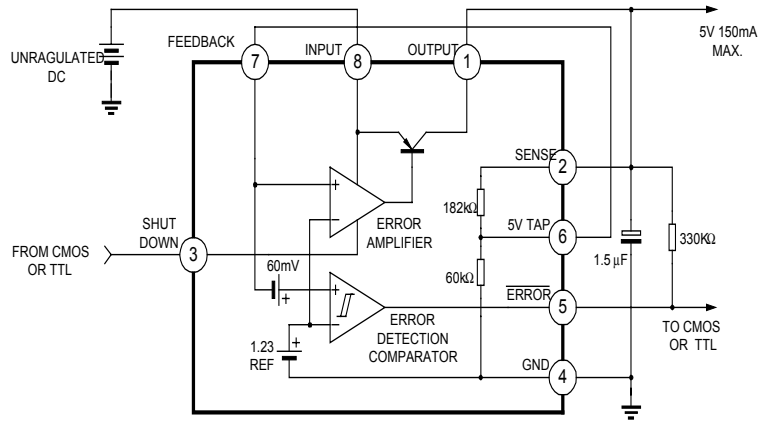


Fig. 1

UTC LM2954 LINEAR INTEGRATED CIRCUIT

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	VALUE	UNIT
Supply Voltage	V _{cc}	-0.3 ~ +30	V
Feedback Voltage	V _{feedback}	-1.5 ~ +30	V
Shutdown Voltage	V _{shutdown}	-0.3 ~ +30	V
Comparator Output Voltage	V _{co}	-0.3 ~ +30	V
Storage temperature	T _{str}	-65 ~ +150	°C
Operating Junction Temperature	T _j	-40 ~ +125	°C

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ELECTRICAL CHARACTERISTICS

(Tested at $T_J=25^{\circ}\text{C}$, $V_{IN}=6\text{V}$, $I_L=100\mu\text{A}$ and $C_L=1\text{F}$, unless otherwise specified)

PARAMETER	PART NUMBER	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	UTC LM2954-3.3 UTC LM2954-5.0 UTC LM2954	$T_J=25^{\circ}\text{C}$ (note 1)	3.27 4.95	3.3 5.0	3.33 5.05	V
	UTC LM2954-3.3 UTC LM2954-5.0 UTC LM2954	$-25^{\circ}\text{C} \leq T_J \leq +85^{\circ}\text{C}$ (note 1)	3.23 4.9	3.3 5.0	3.36 5.1	V
	UTC LM2954-3.3 UTC LM2954-5.0 UTC LM2954	$100\mu\text{A} \leq I_L \leq 300\text{mA}$ $T_J \leq T_J(\text{max})$ (note 1)	3.23 4.9	3.3 5.0	3.36 5.1	V
Output Voltage Temperature Coefficient			20		100	ppm/ $^{\circ}\text{C}$
Line Regulation		$6\text{V} \leq V_{IN} \leq 30\text{V}$		0.1	0.2	%
Load Regulation		$100\mu\text{A} \leq I_L \leq 300\text{mA}$		0.2	0.5	%
Dropout Voltage		$I_L=100\text{mA}$	50	80	150	mV
		$I_L=200\text{mA}$ (note 2)	380	450	600	
Ground Current		$I_L=100\mu\text{A}$	0.75	0.12	0.14	mA
		$I_L=200\text{mA}$	8	12	14	
Dropout Ground Current		$V_{IN}=4.5\text{V}$, $I_L=100\mu\text{A}$	110	170	200	μA
Current Limit		$V_{out}=0$	300			mA
Output Noise 10Hz to 100KHz		$C_L=1\mu\text{F}$ $C_L=200\mu\text{F}$ $C_L=3.3\mu\text{F}$ (Bypass=0.01 μF) pins 7 to (utc2954)			430 160 100	μV
For 8-Pin Version Only						
Reference Voltage			1.22	1.235	1.25	V
Reference Voltage		(Note 4)	1.19		1.27	V
Feedback Pin Bias Current				20	40	nA
Reference Voltage Temperature Coefficient				50		ppm/ $^{\circ}\text{C}$
Feedback Bias Current Temperature Coefficient				0.1		nA/ $^{\circ}\text{C}$
Error Comparator						
Output Leakage Current		$V_{OH}=30\text{V}$			1	μA
Output Low Voltage		$V_{IN}=4.5\text{V}$ $I_{OL}=400\mu\text{A}$			250	mV
Upper Threshold Voltage		(Note 3)	3.2			% V_O
Lower Threshold Voltage		(Note 3)			7.6	% V_O
Hysteresis		(Note 3)		15		mV
Shutdown Input						

UTCLM2954 LINEAR INTEGRATED CIRCUIT

PARAMETER	PART NUMBER	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Input Logic Voltage		Low(Regulator ON) High(Regulator OFF)	2.0	1.3	0.70	V
Shutdown Pin Input Current		V _{shutdown} =2.4V		30	50	μA
		V _{shutdown} =30V		450	600	μA
Regulator Output Current Shutdown		V _{shutdown} >=2V, V _{IN} <=30V, V _{out} =0, Feedback pin tied to 5V Tap.		3	10	μA

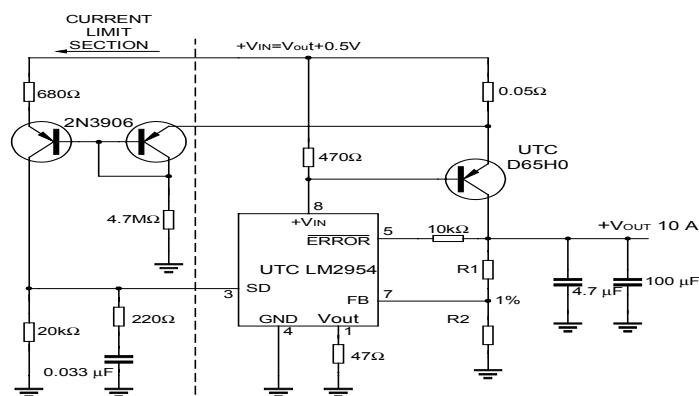
Note 1: Additional conditions for 8-pin versions are feedback tied to 5V Tap an Output tied to Output Sense ($V_{out}=5V$) and $V_{shutdown} \leq 0.8V$.

Note 2: Dropout Voltage is defined as the input to output differential at which the output voltage drops 100mV below its nominal value measured at 1V differential.

Note 3: Comparator thresholds are expressed in terms of percentage value of voltage output.

Note 4: $V_{ref} \leq V_{out} \leq (V_{in} - 1V)$, $2.3V \leq V_{in} \leq 30V$, $100\mu A \leq I_L \leq 100mA$, $T_J \leq T_{JMAX}$

APPLICATION CIRCUIT (10A LOW DROPOUT REGULATOR)



$$V_{out} = 1.23V * (1 + R1/R2)$$

For 5V output use internal resistors. Wire pin 6 to 7 and wire pin 2 to +Vout

Fig.2

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