

UTC LP2950/2951 LINEAR INTEGRATED CIRCUIT

100 mA LOW-DROPOUT VOLTAGE REGULATOR

DESCRIPTION

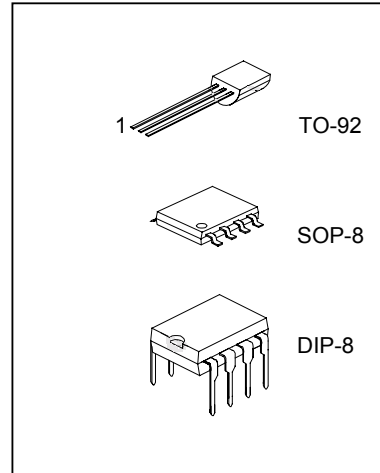
The UTC LP2950/2951 is a monolithic integrated voltage regulator with low dropout voltage, and low quiescent current. It includes many features that suitable for different applications. Available in 3-pin TO-92, DIP-8 and SOP-8 packages.

FEATURES

- *High accuracy 2.5, 3.0, 3.3, 3.6 or 5V fixed output for TO-92, 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.



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PIN CONFIGURATIONS

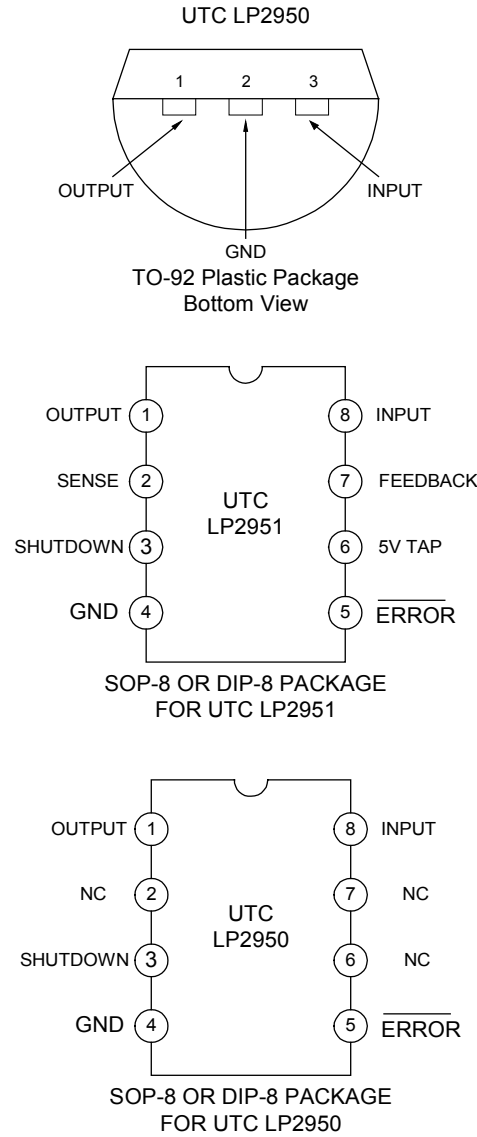
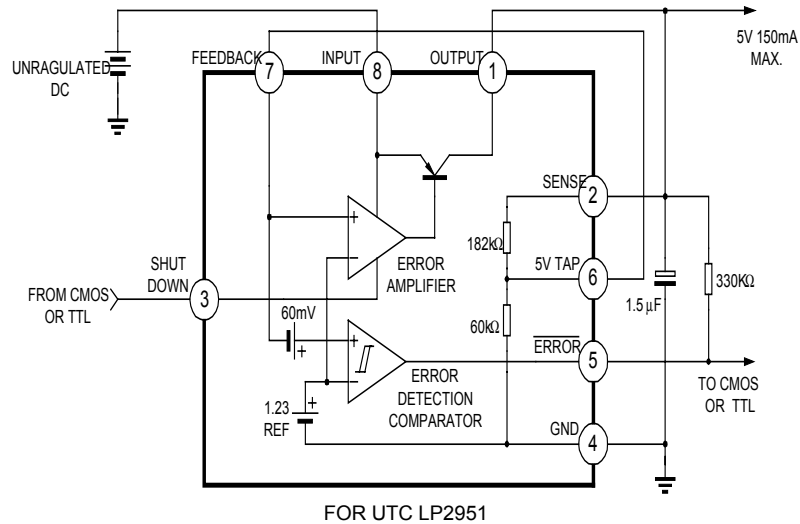


Fig.1

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BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	VALUE	UNIT
Supply Voltage	V _{cc}	-0.3~+18	V
Feedback Voltage	V _{feedback}	-1.5~+18	V
Shutdown Voltage	V _{shutdown}	-0.3~+18	V
Comparator Output Voltage	V _{co}	-0.3~+18	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 $C_L=1\mu\text{F}$, unless otherwise specified)

PARAMETER	PART NUMBER	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Voltage	UTC LP2950-2.5	T _J =25°C	2.45	2.5	2.55	V
	UTC LP2950-3.0		2.94	3.0	3.06	
	UTC LP2950-3.3		3.23	3.3	3.36	
	UTC LP2950-3.6		3.53	3.6	3.67	
	UTC LP2950-5.0		4.90	5.0	5.10	
	UTC LP2951	(note 1)				
	UTC LP2950-2.5	-25°C<=T _J <=+85°C	2.45	2.5	2.55	V
	UTC LP2950-3.0		2.94	3.0	3.06	
	UTC LP2950-3.3		3.23	3.3	3.36	
	UTC LP2950-3.6		3.53	3.6	3.67	
	UTC LP2950-5.0		4.90	5.0	5.10	
	UTC LP2951	(note 1)				
Output Voltage	UTC LP2950-2.5	100μA<=I _L <=100 mA T _J <=T _J (max)	2.45	2.5	2.55	V
	UTC LP2950-3.0		2.94	3.0	3.06	
	UTC LP2950-3.3		3.23	3.3	3.36	
	UTC LP2950-3.6		3.53	3.6	3.67	
	UTC LP2950-5.0		4.90	5.0	5.10	
	UTC LP2951	(note 1)				
Output Voltage Temperature Coefficient			20		100	ppm/°C
Line Regulation		6V<=V _{IN} <=18V	0.03	0.1	0.2	%
Load Regulation		100μA<=I _L <=100 mA	0.04	0.1	0.2	%
Dropout Voltage		I _L =100μA	50	80	150	mV
		I _L =100mA (note 2)	380	450	600	
Ground Current		I _L =100μA	75	120	140	μA
		I _L =100mA	8	12	14	mA
Dropout Ground Current		V _{IN} =4.5V, I _L =100μA	110	170	200	μA
Current Limit		V _{out} =0	160	200	220	mA
Output Noise 10Hz to 100KHz		C _L =1μF			430	μV
		C _L =200μF			160	
		C _L =3.3μF			100	
		(Bypass=0.01μF pins 7 to (utc2951))				
For LP2951 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/°C
Feedback Bias Current temperature Coefficient				0.1		nA/°C

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PARAMETER	PART NUMBER	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Error Comparator						
Output Leakage Current		V _{OH} =18V			1	μA
Output Low Voltage		V _{IN} =4.5V I _{OL} =400μA			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						
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} =18V		450	600	μA
Regulator Output Current Shutdown		V _{shutdown} >=2V, V _{IN} <=18V, 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 and Output tied to Output Sense (V_{out}=5V) and V_{shutdown}<=0.8V.

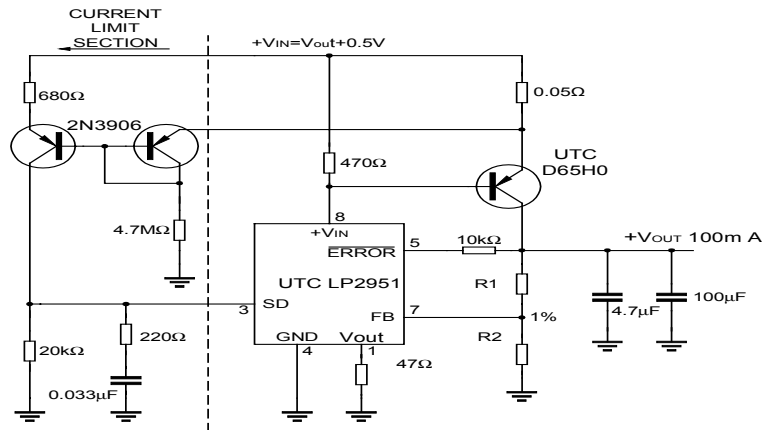
Note 2: Dropout Voltage is defined as the input to output differential at which the output voltage drops 100mV below its nominal value measured at 1V differential.

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

Note 4: V_{ref}≤V_{out}≤(V_{in}-1V), 2.3V≤V_{in}≤30V, 100μA≤I_L≤100mA, T_J≤T_{JMAX}

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APPLICATION CIRCUIT (10 Ampere 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

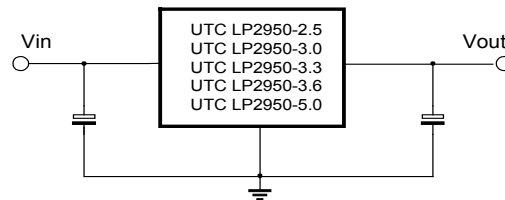


Fig.3

UTC LP2950/2951 LINEAR INTEGRATED CIRCUIT

TYPICAL PERFORMANCE CHARACTERISTICS

