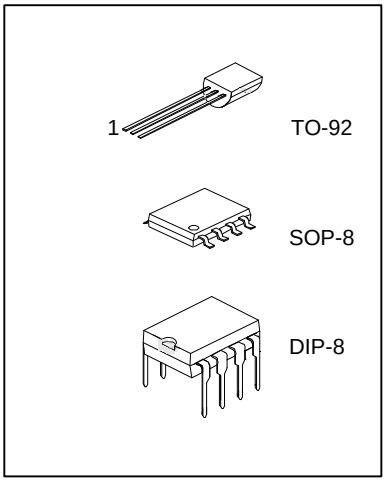
UTC LP2950/2951 LINEAR INTEGRATED CIRCUIT

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 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.

ORDERING INFORMATION

PART NUMBER	TEMPERATURE RANGE	PACKAGE	ACCURACY
UTC LP2950-5.0	-40 ~ +125°C	3-Pin TO-92 plastic	2.0%
UTC LP2950-3.0	-40 ~ +125°C	3-Pin TO-92 plastic	1.0%
UTC LP2950-3.3	-40 ~ +125°C	3-Pin TO-92 plastic	2.0%
UTC LP2950-3.6	-40 ~ +125°C	3-Pin TO-92 plastic	2.0%
UTC LP2950-5.0	-40 ~ +125°C	8-Pin SOP-8 plastic	2.0%
UTC LP2950-3.0	-40 ~ +125°C	8-Pin SOP-8 plastic	1.0%
UTC LP2950-3.3	-40 ~ +125°C	8-Pin SOP-8 plastic	2.0%
UTC LP2951	-40 ~ +125°C	8-Pin SOP-8 plastic	2.0%
UTC LP2951	-40 ~ +125°C	8-Pin DIP-8 plastic	2.0%

PIN CONFIGURATIONS

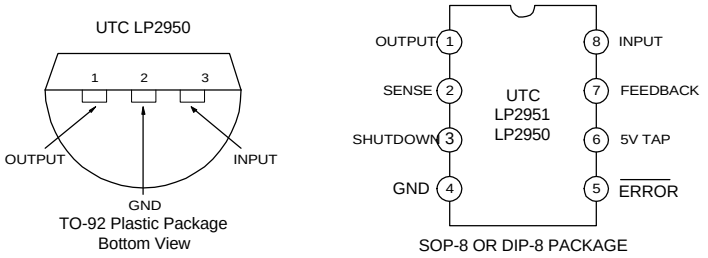
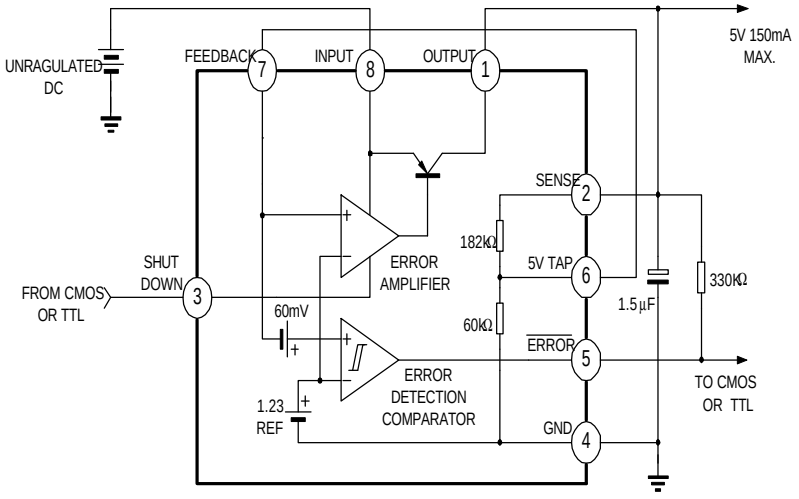


Fig. 1

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	VALUE	UNIT
Supply Voltage	Vcc	-0.3~+30	V
Feedback Voltage	Vfeedback	-1.5~+30	V
Shutdown Voltage	Vshutdown	-0.3~+30	V
Comparator Output Voltage	Vco	-0.3~+30	V
Storage Temperature	Tstr	-65~+150	°C
Operating Junction Temperature	Tj	-40~+125	°C

ELECTRICAL CHARACTERISTICS

(Tested at Tj=25°C,V_{IN}=6V,I_L=100μA and C_L=1F.unless otherwise specified)

PARAMETER	PART NUMBER	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Voltage	UTC LP2950-3.0	T_J=25°C	2.97	3.0	3.03	V
	UTC LP2950-3.3		3.26	3.3	3.37	
	UTC LP2950-3.6		3.53	3.6	3.67	
	UTC LP2950-5.0	(note 1)	4.90	5.0	5.10	
	UTC LP2951					
	UTC LP2950-3.0	-25°C<=T_J<=<=+85°C	2.97	3.0	3.03	V
	UTC LP2950-3.3		3.26	3.3	3.37	
	UTC LP2950-3.6		3.53	3.6	3.67	
	UTC LP2950-5.0	(note 1)	4.90	5.0	5.10	
	UTC LP2951					
Output Voltage	UTC LP2950-3.0	100μA<=I_L<=100 mA	2.97	3.0	3.03	V
	UTC LP2950-3.3	Tj<=Tj(max)	3.26	3.3	3.37	
	UTC LP2950-3.6		3.53	3.6	3.67	
	UTC LP2950-5.0	(note 1)	4.90	5.0	5.10	
	UTC LP2951					
Output Voltage Temperature Coefficient			20		100	ppm/°C
Line Regulation		6V<=V_{IN}<=30V	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		Vout=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 8-Pin version only						
Reference Voltage			1.22	1.235	1.25	V
Reference Voltage		(Note 7)	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
Error Comparator						
Output Leakage Current		V_{OH}=30V			1	μA
Output Low Voltage		V_{IN}=4.5V I_{OL}=400μA			250	mV

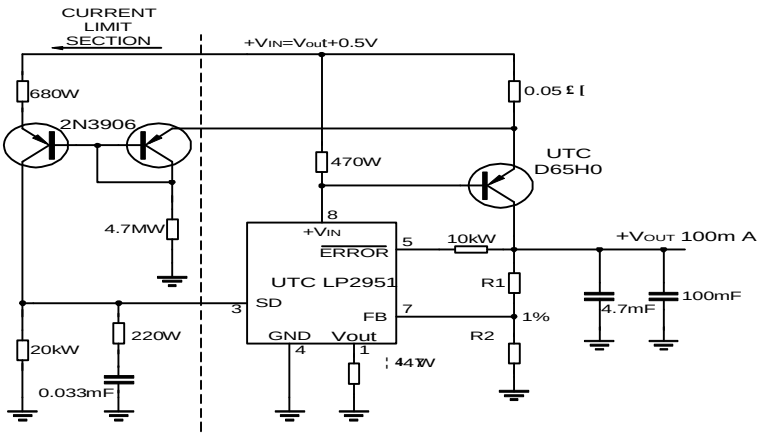
PARAMETER	PART NUMBER	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Upper Threshold Voltage		(Note 3)	3.2			%Vo
Lower Threshold Voltage		(Note 3)			7.6	%Vo
Hysteresis		(Note 3)		15		mV
Shutdown Input						
Input Logic Voltage		Low(Regulator ON) High(Regulator OFF)	 2.0	1.3	 0.70	V
Shutdown Pin Input Current		$V_{shutdown}$=2.4V		30	50	µA
		$V_{shutdown}$=30V		450	600	µA
Regulator Output Current Shutdown		Vshutdown>=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 Vshutdown<=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.

APPLICATION CIRCUIT (10 Ampere Low Dropout Regulator)



Vout=1.23V*(1+R1/R2)

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

Fig.2

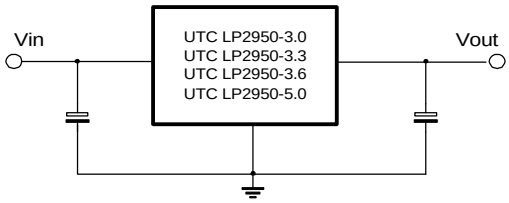


Fig. 3

TYPICAL PERFORMANCE CHARACTERISTICS

Fig.4 Dropout Characteristics

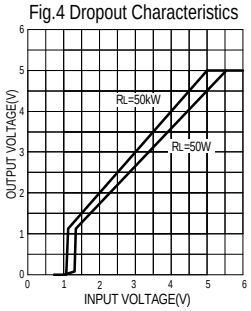


Fig.5 Input Current

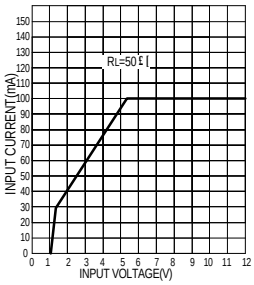


Fig. 6 Dropout Voltage

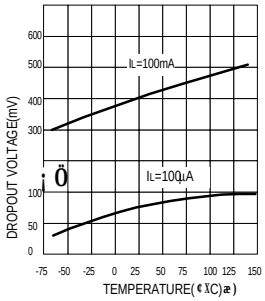


Fig. 7 Ground Pin Current

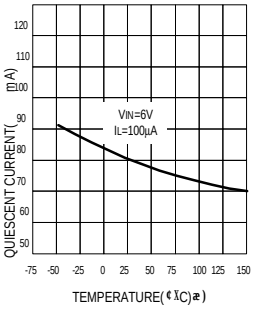


Fig. 8 Ground Pin Current

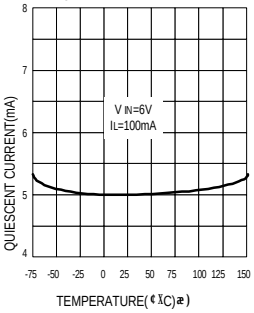


Fig. 9 Shutdown Threshold Voltage

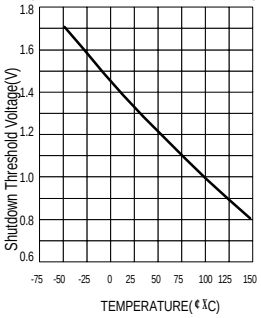


Fig. 10 Short Circuit Current

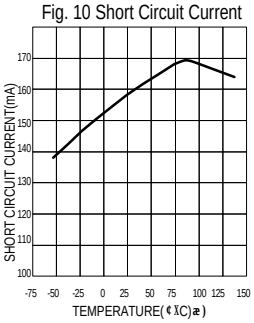


Fig. 11 Dropout Voltage