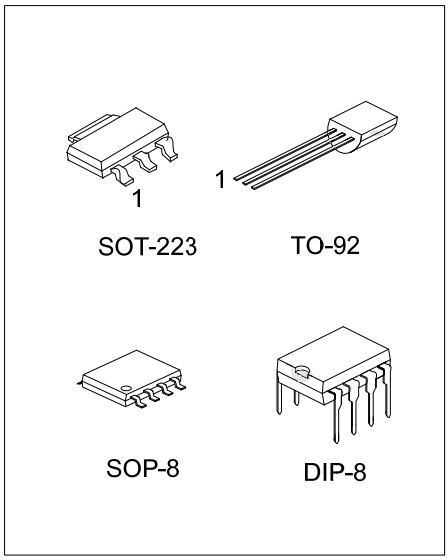
LM2954

LINEAR INTEGRATED CIRCUIT

300mA 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 with TO-92, DIP-8, SOP-8 and SOT-223 packages.

■ FEATURES

*High Accuracy Fixed Output.
*Output Voltage Programmable and Logic Controlled Shutdown And Error Flag Available for DIP and SOP Package.
*Extremely Low Quiescent Current And Dropout Voltage.
*Extremely Tight Load And Line Regulation.
*Current and Thermal Limiting.
*Very low Temperature Coefficient.

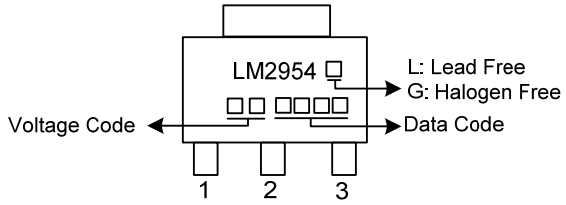
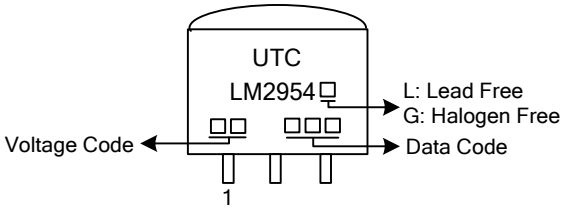
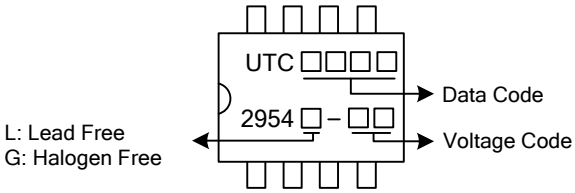
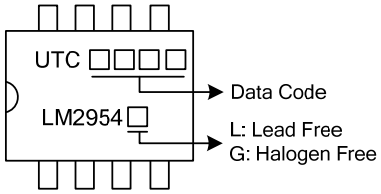
■ ORDERING INFORMATION

Ordering Number		Package	Pin assignment			Packing
Lead Free	Halogen Free		1	2	3	
LM2954L-xx-AA3-R	LM2954G-xx-AA3-R	SOT-223	I	G	O	Tape Reel
LM2954L-xx-D08-T	LM2954G-xx-D08-T	DIP-8	refer to Pin Configurations			Tube
LM2954L-xx-S08-R	LM2954G-xx-S08-R	SOP-8				Tape Reel
LM2954L-xx-S08-T	LM2954G-xx-S08-T	SOP-8				Tube
LM2954L-xx-T92-B	LM2954G-xx-T92-B	TO-92	O	G	I	Tape Box
LM2954L-xx-T92-K	LM2954G-xx-T92-K	TO-92	O	G	I	Bulk

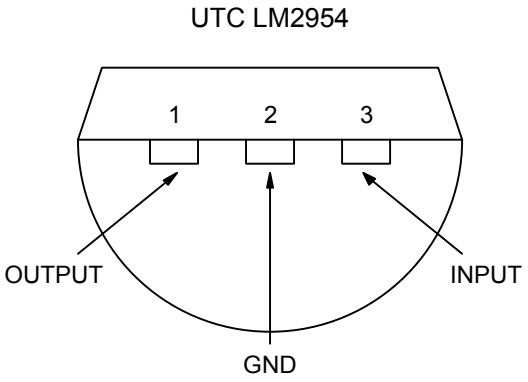
Note: 1. Pin assignment: I: V_{IN} O: V_{OUT} G: GND
2. xx: Output Voltage

LM2954L-xx-AA3-R (1)Packing Type (2)Package Type (3)Output Voltage Code (4)Lead Free	(1) B: Tape Box, K: Bulk, R: Tape Reel, T: Tube (2) AA3: SOT-223, D08: DIP-08, S08: SOP-8, T92: TO-92 (3) xx: 3.3V:33, 5.0V:50, ADJ:AD (4) G: Halogen Free, L: Lead Free

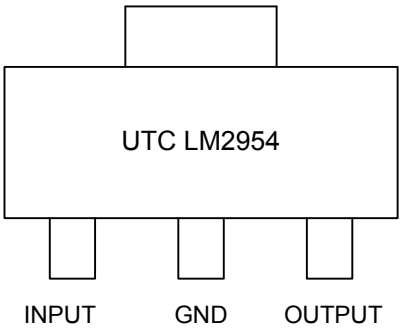
■ MARKING INFORMATION

PACKAGE	VOLTAGE CODE	MARKING
SOT-223	33:3.3V 50:5.0V	
TO-92	3.3:3.3V 5.0:5.0V	
SOP-8/DIP-8	3.3:3.3V 5.0:5.0V	
	ADJ	

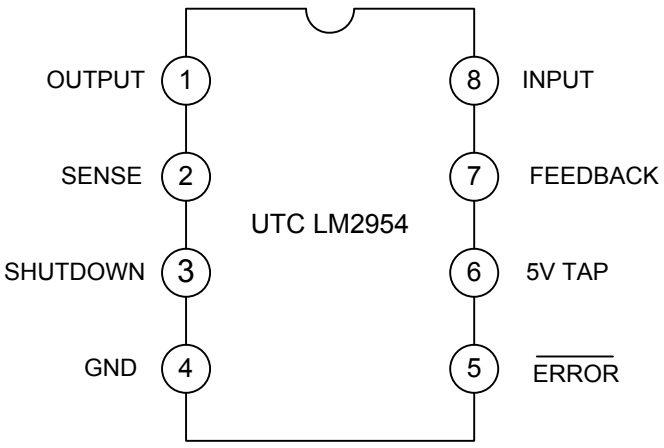
■ PIN CONFIGURATIONS



TO-92 Plastic Package Bottom View

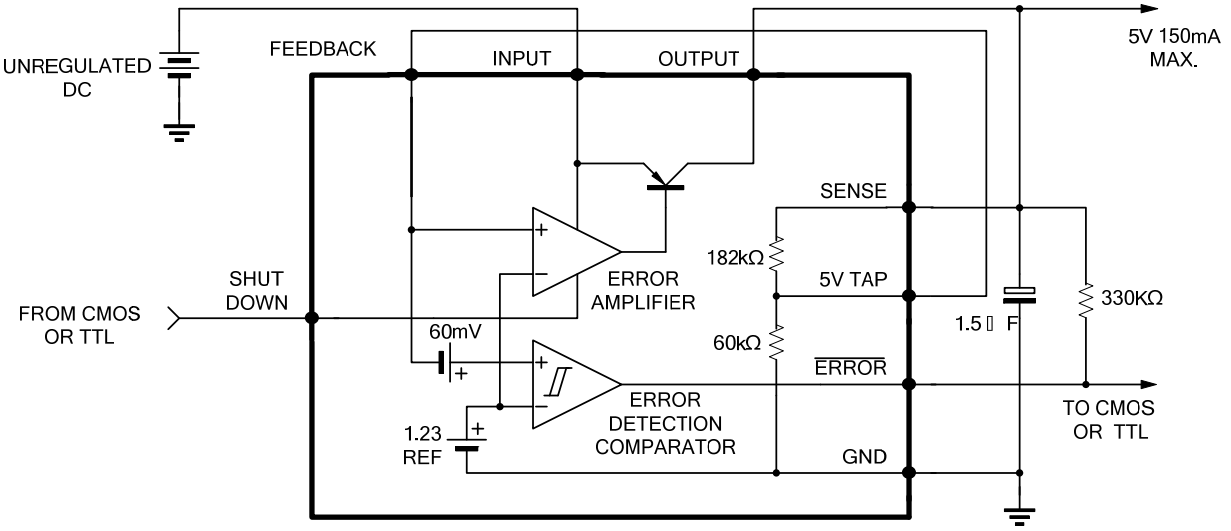


SOT-223 Package



SOP-8 or DIP-8 Package

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	VALUE	UNIT
Supply Voltage	V_{CC}	-0.3 ~ +30	V
Feedback Voltage	V_{FB}	-1.5 ~ +30	V
Shutdown Voltage	V_{SHDN}	-0.3 ~ +30	V
Comparator Output Voltage	V_{OUT}	-0.3 ~ +30	V
Junction Temperature	T_J	+125	°C
Operating Temperature	T_{OPR}	-40 ~ +85	°C
Storage temperature	T_{STG}	-40 ~ +150	°C

Note: 1.Absolute maximum ratings are those values beyond which the device which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.
2.The device is guaranteed to meet performance specification within 0°C~+70°C operating temperature range and assured by design from -20°C~+85°C, characteristic and correlation with static process control.

■ ELECTRICAL CHARACTERISTICS(T_J=25°C, V_{IN}=6V, I_L=100μA, C_L=1μF, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	LM2954-3.3	V_{OUT}	T_J=25°C	3.23	3.3	3.37	V
	LM2954-5.0			4.90	5.0	5.10	
Output Voltage Temperature Coefficient		T_CV_O		20		100	ppm/°C
Line Regulation		$\triangle V_{OUT}$	6V≦V_{IN}≦30V		0.1	0.2	%
Load Regulation		$\triangle V_{OUT}$	100μA≦I_L≦300mA		0.2	0.5	
Dropout Voltage		V_D	I_L=100mA			400	mV
			I_L=200mA (note 2)	380	450	600	
Ground Current		I_{GND}	I_L=100μA	0.075	0.12	0.23	mA
			I_L=200mA	8	12	14	
Dropout Ground Current		I_D	V_{IN}=4.5V,I_L=100μA			230	μA
Current Limit		I_{LIMIT}	V_{OUT}=0	300			mA
Output Noise (10Hz to 100KHz)		e_N	C_L=1μF			430	μV
			C_L=200μF			160	
			C_L=3.3μF			100	
LM2954-ADJ FOR 8-PIN VERSION ONLY							
Reference Voltage		V_{REF}		1.22	1.235	1.25	V
Reference Voltage		V_{REF}	V_{REF}≦V_{OUT}≦(V_{IN}-1V), 2.3V≦V_{IN}≦18V, 100μA≦I_L≦100mA, T_J≦T_{JMAX}	1.19		1.27	V
Feedback Pin Bias Current		$I_{B(FB)}$			20	40	nA
Reference Voltage Temperature Coefficient		T_CV_{REF}			50		ppm/°C
Feedback Bias Current Temperature Coefficient		T_CI_O			0.1		nA/°C

■ ELECTRICAL CHARACTERISTICS(Cont.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
ERROR COMPARATOR						
Output Leakage Current	$I_{O(LEAK)}$	V_{OH}=30V			1	μA
Output Low Voltage	V_{OL}	V_{IN}=4.5V, I_{OL}=400μA			250	mV
Upper Threshold Voltage	$V_{THD(UP)}$	(Note 3)	3.2			$\%V_{OUT}$
Lower Threshold Voltage	$V_{THD(LOW)}$	(Note 3)			7.6	$\%V_{OUT}$
Hysteresis	V_{HYS}	(Note 3)		15		mV
SHUTDOWN INPUT						
Input Logic Voltage	$V_{I(LOG)}$	Low (Regulator ON)		1.3	0.70	V
		High (Regulator OFF)	2.0			
Shutdown Pin Input Current	$I_{I(SHDN)}$	V_{SHDN}=2.4V		30	50	μA
		V_{SHDN}=30V		450	600	μA
Regulator Output Current Shutdown	$I_{O(SHDN)}$	$V_{SHDN} \geqq 2V$, $V_{IN} \leqq 30V$, V_{OUT}=0, Feedback pin tied to 5V Tap.		3	10	μA

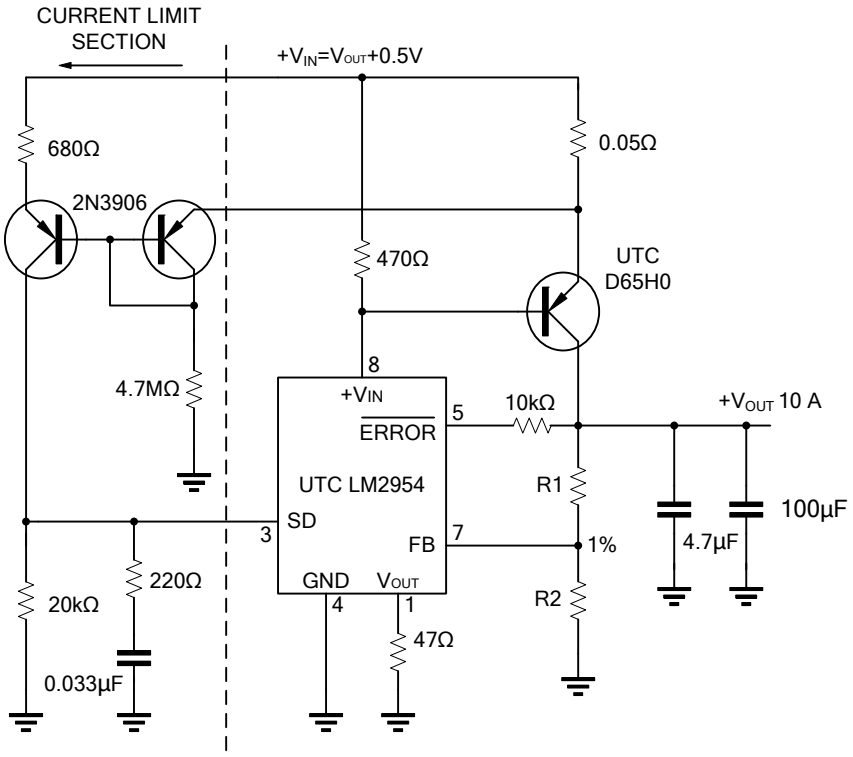
Note 1: Additional conditions for 8-pin versions are feedback tied to 5V Tap an Output tied to Output Sense (V_{OUT}=5V) and $V_{SHDN} \leqq 0.8V$.

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 (10A Low Dropout Regulator)

For 8 Pins



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

For 5V output use internal resistors.Wire pin 6 to 7 and wire pin 2 to +V_{OUT}

For 3 Pins