



LM2954

LINEAR INTEGRATED CIRCUIT

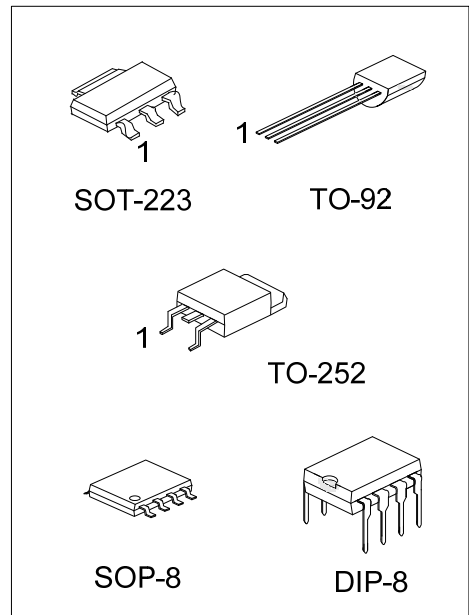
300mA LOW-DROPOUT VOLTAGE REGULATOR

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-252, 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
- *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-AA3-A-R	LM2954G-xx-AA3-A-R	SOT-223	G	O	I	Tape Reel
LM2954L-xx-TN3-R	LM2954G-xx-TN3-R	TO-252	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	refer to Pin Configurations			Tape Reel
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

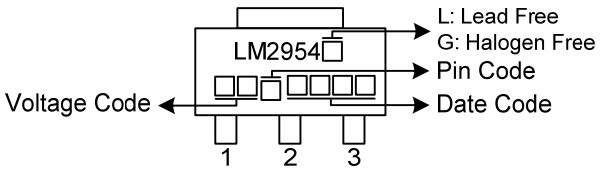
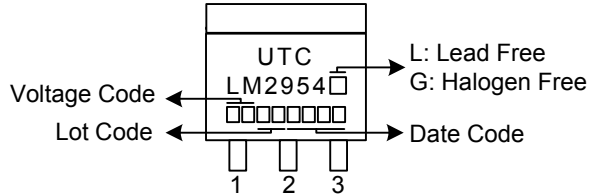
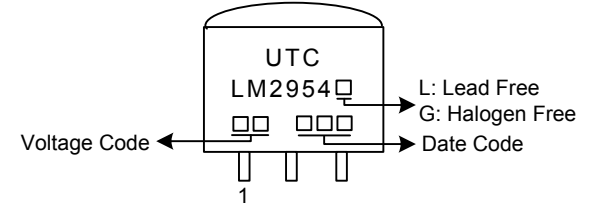
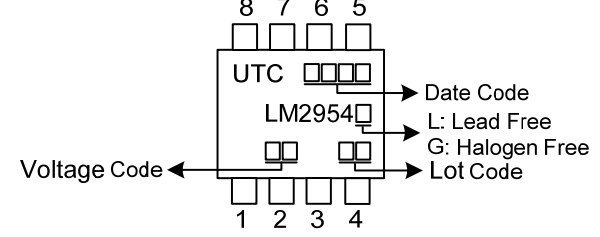
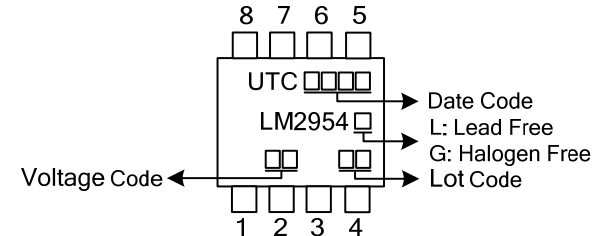
Note: Pin assignment: I: V_{IN} O: V_{OUT} G: GND

<p>LM2954G-xx-AA3-A-R</p>	<p>(1) R: Tape Reel, T: Tube, B: Tape Box, K: Bulk (2) refer to Pin Assignment (3) AA3: SOT-223, D08: DIP-08, S08: SOP-8, T92: TO-92 (4) xx: refet to MARKING INFORMATION (5) G: Halogen Free and Lead Free, L: Lead Free</p>
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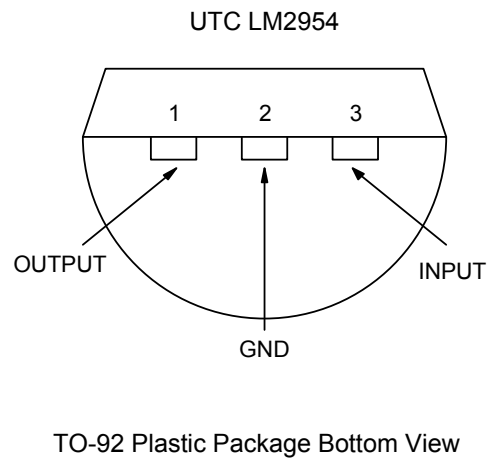
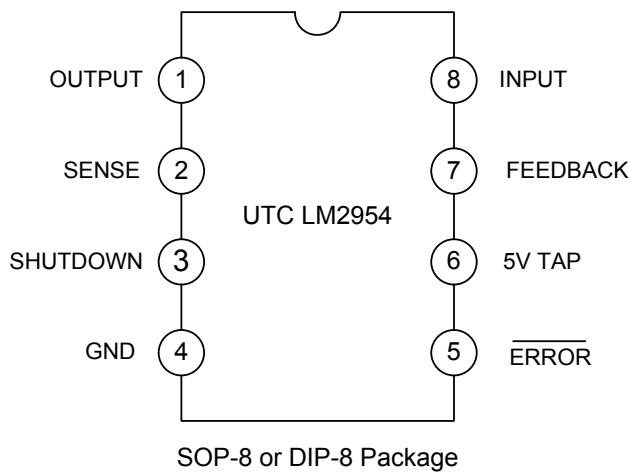
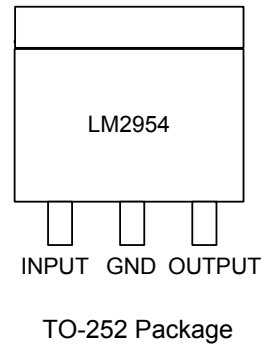
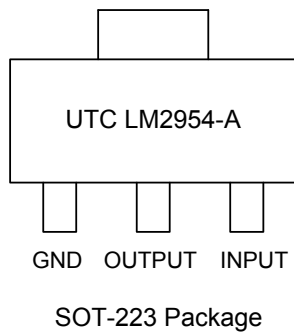
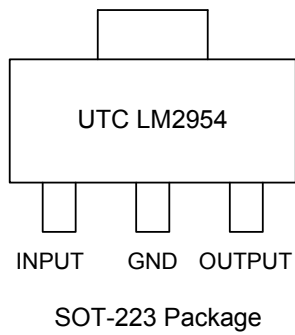
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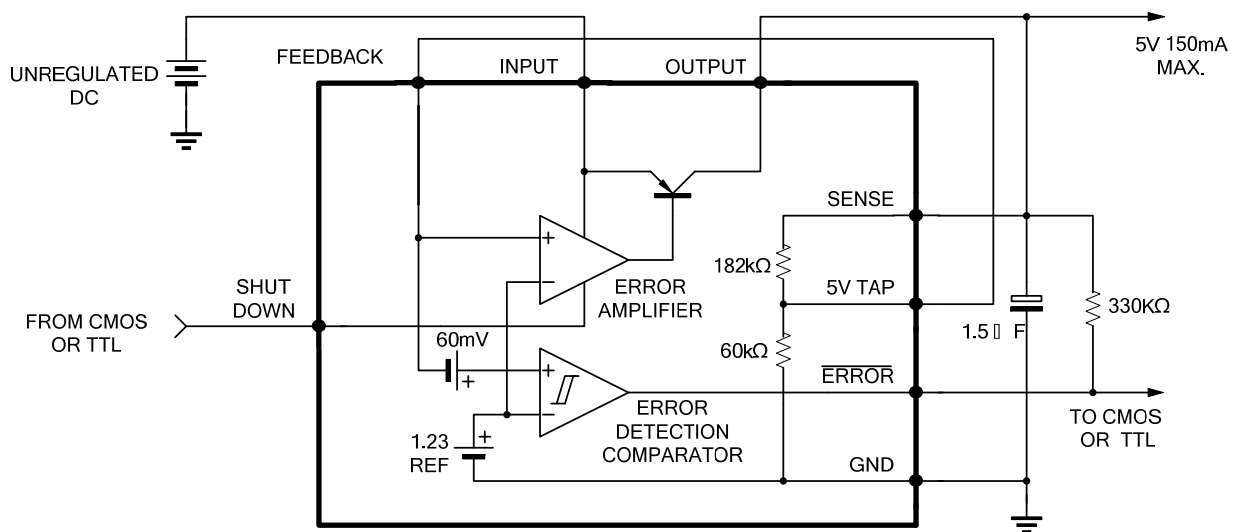
MARKING INFORMATION

PACKAGE	VOLTAGE CODE	MARKING
SOT-223	33:3.3V 50:5.0V	
TO-252		
TO-92		
DIP-8	33:3.3V 50:5.0V AD:ADJ	
SOP-8		

PIN CONFIGURATIONS



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: 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.

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT	
Output Voltage	V_{OUT}	$T_J=25^\circ\text{C}$	LM2954-3.3	3.23	3.3	3.37	V
			LM2954-5.0	4.90	5.0	5.10	
Line Regulation	ΔV_{OUT}	$6\text{V} \leq V_{IN} \leq 30\text{V}$		0.1	0.2	%	
Load Regulation	ΔV_{OUT}	$100\mu\text{A} \leq I_L \leq 300\text{mA}$		0.2	0.5		
Dropout Voltage	V_D	$I_L=100\text{mA}$			400	mV	
		$I_L=200\text{mA}$ (Note 2)	380	450	600		
Ground Current	I_{GND}	$I_L=100\mu\text{A}$		0.12	0.23	mA	
		$I_L=200\text{mA}$		12	14		
Dropout Ground Current	I_D	$V_{IN}=4.5\text{V}$, $I_L=100\mu\text{A}$		0.85	1.2	mA	
Current Limit	I_{LIMIT}	$V_{OUT}=0$	300			mA	

FOR LM2954-ADJ 8-PIN VERSION ONLY

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Reference Voltage	V_{REF}		1.22	1.235	1.25	V
Reference Voltage	V_{REF}	$V_{REF} \leq V_{OUT} \leq (V_{IN}-1\text{V})$, $2.3\text{V} \leq V_{IN} \leq 18\text{V}$, $100\mu\text{A} \leq I_L \leq 100\text{mA}$, $T_J \leq T_{JMAX}$	1.19		1.27	V
Feedback Pin Bias Current	$I_{B(FB)}$			20	40	nA

ERROR COMPARATOR

Output Leakage Current	$I_{O(LEAK)}$	$V_{OH}=30\text{V}$			1	μA
Output Low Voltage	V_{OL}	$V_{IN}=4.5\text{V}$, $I_{OL}=400\mu\text{A}$			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

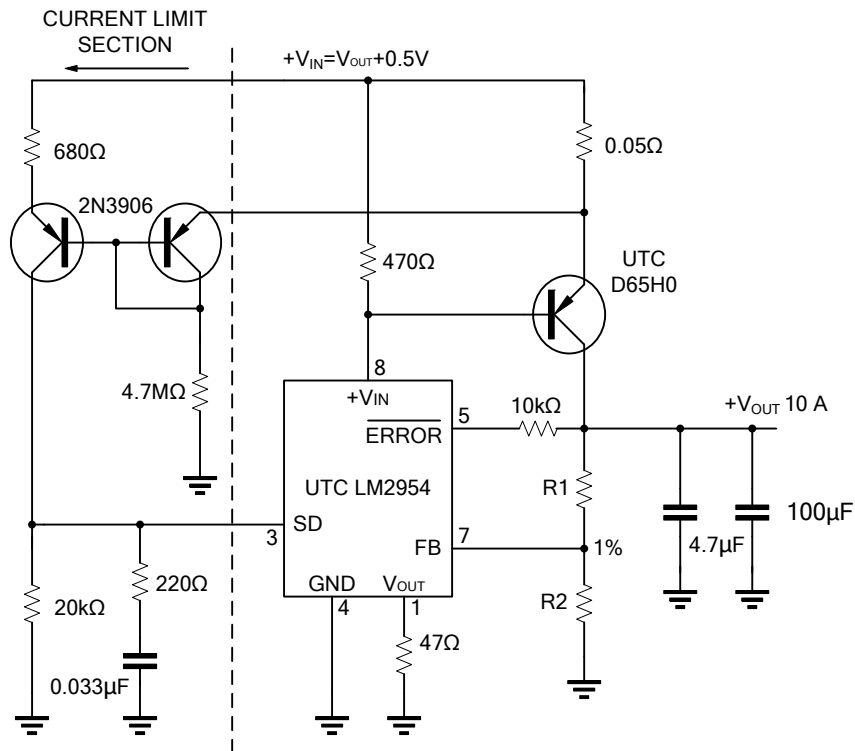
Input Logic Voltage	$V_{I(LOG)}$	Low (Regulator ON)		1.3	0.70	V
		High (Regulator OFF)	2.0			
Shutdown Pin Input Current	$I_{I(SHDN)}$	$V_{SHDN}=2.4\text{V}$		30	50	μA
		$V_{SHDN}=30\text{V}$		450	600	μA
Regulator Output Current Shutdown	$I_{O(SHDN)}$	$V_{SHDN} \geq 2\text{V}$, $V_{IN} \leq 30\text{V}$, $V_{OUT}=0$, 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 ($V_{OUT}=5\text{V}$) and $V_{SHDN} \leq 0.8\text{V}$.

- 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.
- Comparator thresholds are expressed in terms of percentage value of voltage output.

■ APPLICATION CIRCUIT (10A Low Dropout Regulator)

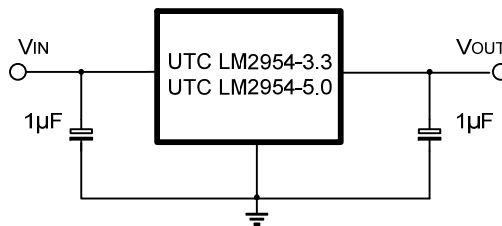
For 8 Pins



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

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

For 3 Pins



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