



UM5237

Preliminary

LINEAR INTEGRATED CIRCUIT

3-TERMINAL ADJUSTABLE REGULATOR

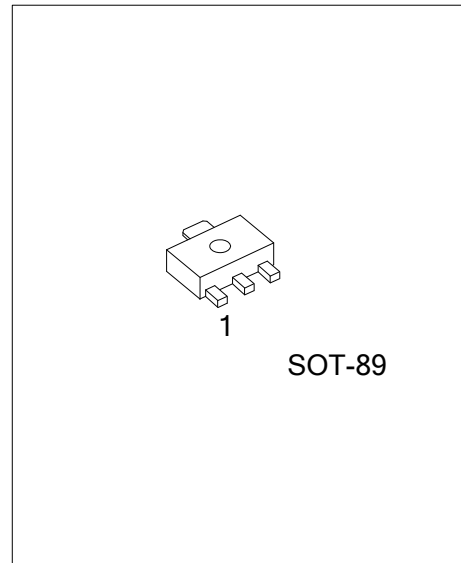
DESCRIPTION

The UTC **UM5237** is a 3-terminal adjustable regulator. It's used as a variable output voltage regulator.

The UTC **UM5237** has a less power dissipation and more exact loading voltage regulation .it's suitable for driver circuit, differential amplifier and reference voltage generator circuit, etc.

FEATURES

- * Wide Input/Output voltage range
- * Low Dropout Voltage
- * Over current protect
- * External circuit can adjust the output voltage



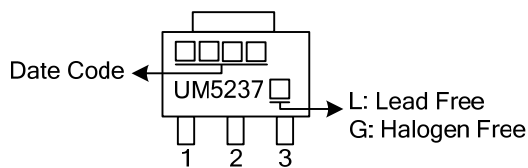
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UM5237L-AB3-R	UM5237G-AB3-R	SOT-89	O	G	I	Tape Reel

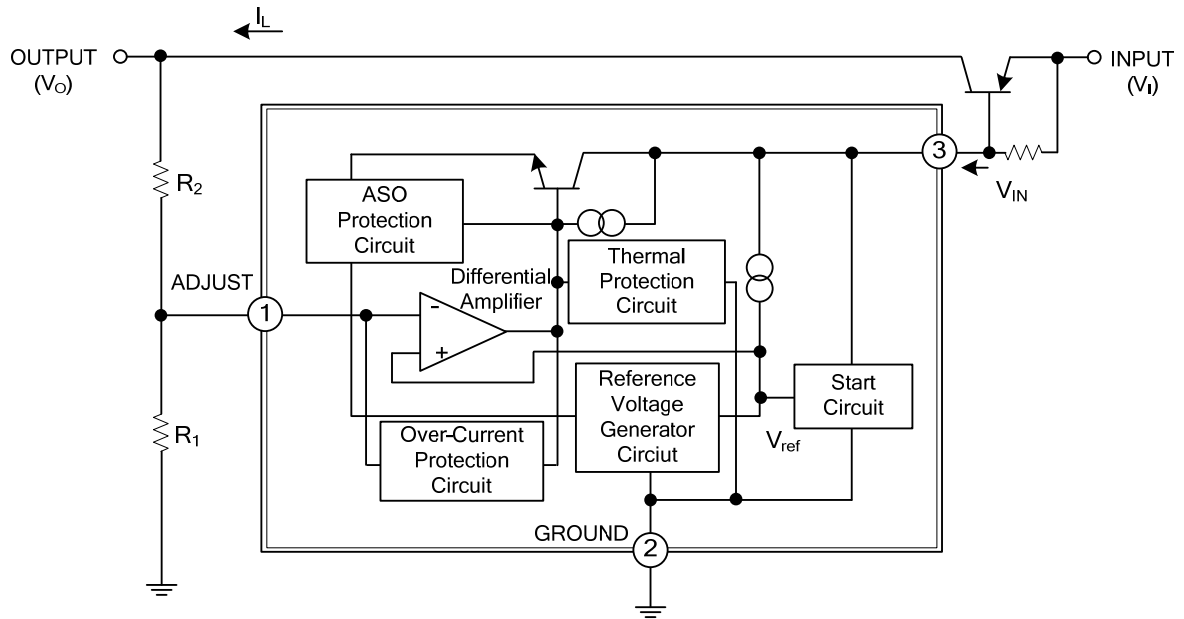
Note: Pin Assignment: O: OUTPUT G: GROUND I: INPUT

<p>UM5237G-AB3-R</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Halogen Free</p>	<p>(1) R: Tape Reel</p> <p>(2) AB3: SOT-89</p> <p>(3) G: Halogen Free, L: Lead Free</p>
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MARKING INFORMATION



■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING ($T_A=25^\circ\text{C}$, unless otherwise noted)

PARAMETER	SYMBOL	RATINGS	UNIT
Input Voltage	V_{IN}	30	V
Drive Current	I_D	30	mA
Input/Output Voltage Difference	$V_{IN}-V_{OUT}$	28	V
Internal Power Dissipation	P_D	500	mW
Operating Temperature	T_{OPR}	-20~+75	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55~+150	$^\circ\text{C}$

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.

■ RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage Range	V_{IN}	3.5~30	V
Output Voltage Range	V_{OUT}	1.5~25	V

■ ELECTRICAL CHARACTERISTICS

Test circuit (a) is used with $T_A=25^\circ\text{C}$, $V_I=15\text{V}$, $V_O=12\text{V}$, $I_L=200\text{mA}$, $C_{REF}=1\mu\text{A}$, $R_1=4.3\text{K}\Omega$

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Voltage	V_{IN}	Between Pin 1 and Pin 2	3.5		30	V
Output Voltage	V_{OUT}	$R_2 \approx 0.82 \sim 108\text{K}\Omega$	1.5		28	V
Minimum Input/Output Voltage Difference	$V_{IN}-V_{OUT}$			0.2		V
Reference Voltage	V_{REF}	Between Pin 2 and Pin 3	1.2	1.26	1.32	V
Input Voltage Regulation	R_{eq-in}	$V_I=15 \sim 20\text{V}$		0.02	0.1	%/V
Loading Voltage Regulation	R_{eq-L}	$I_L=10 \sim 200\text{mA}$		0.02	0.1	%
Bias Current	I_B	$I_L=0$ (disregarding the current in resistors R_1 , R_2)		1.7	3.0	mA
Output Voltage Thermal Coefficient	TC_{VO}	$T_A=0 \sim 75^\circ\text{C}$		0.02		%/ $^\circ\text{C}$
Ripple Rejection	RR	$f=120\text{Hz}$ measured with circuit (b)		68		dB
Output Noise Voltage	V_{NO}	$f=20\text{Hz} \sim 100\text{KHZ}$		25		μVrms

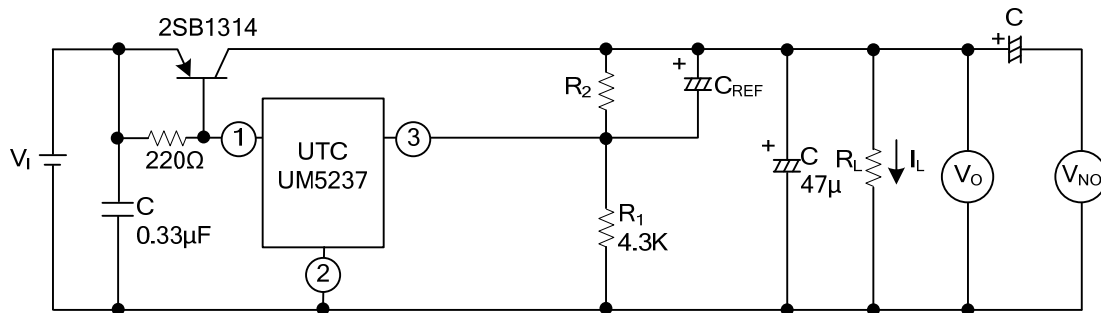
■ TEST CIRCUIT

(a) Standard test circuit

$$V_O = V_{REF} \left(1 + \frac{R_2}{R_1} \right) \approx 1.26 \times \left(1 + \frac{R_2}{4.3} \right) (V)$$

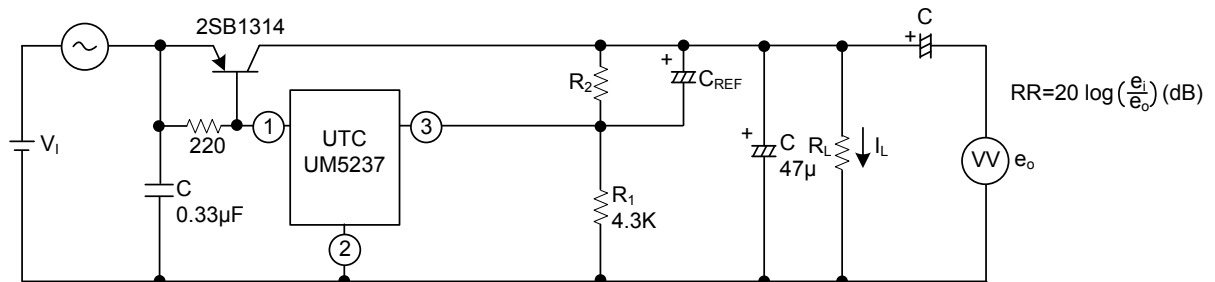
$$R_2 = R_1 \left(\frac{V_O}{V_{REF}} - 1 \right) \approx 4.3 \times \left(\frac{V_O}{1.26} - 1 \right) (K\Omega)$$

($R_1 = 4.3K\Omega$, $V_{REF} \approx 1.26V$)



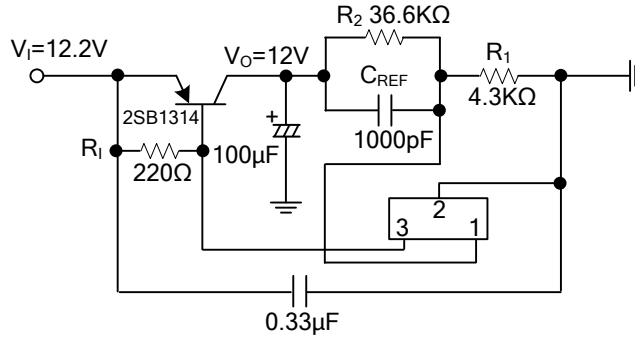
(b) Ripple rejection test circuit

$f = 120Hz$, $e_i = 0.1V_{rms}$



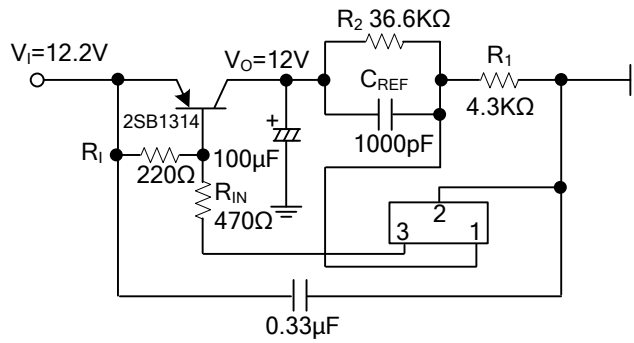
■ TYPICAL APPLICATION CIRCUIT

1. Standard Application Circuit

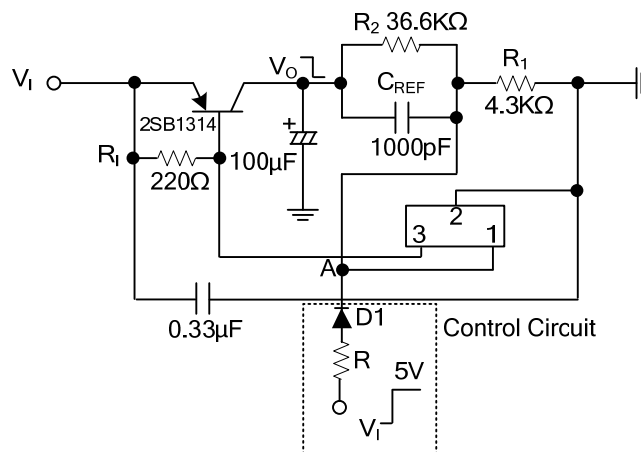


$$V_O = V_{REF} \times \left(1 + \frac{R_2}{R_1} \right) V, \quad V_{REF} = 1.26V$$

2. Maximum Drive Current Controller Application Circuit



3. Output Voltage ON/OFF Controller



Set control circuit resistor R so that voltage of point A is more than 1.5V and less than 5V

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