

UTC UNISONIC TECHNOLOGIES CO., LTD

LM337A

Preliminary

LINEAR INTEGRATED CIRCUIT

1.5A, ADJUSTABLE OUTPUT, **NEGATIVE VOLTAGE** REGULATOR

DESCRIPTION

The UTC LM337A is an adjustable 3-terminal negative voltage regulator capable of supplying in excess of 1.5A over an output voltage range of -1.25V to -37V. This voltage regulator is exceptionally easy to use and requires only two external resistors to set the output voltage. Further, it employs internal current limiting, thermal shutdown and safe area compensation, making it essentially blow-out proof.

The UTC LM337A serves a wide variety of applications including local, on card regulation. This device can also be used to make a programmable output regulator, or by connecting a fixed resistor between the adjustment and output, the UTC LM337A can be used as a precision current regulator.

TO-220 TO-252

FEATURES

- * Output current in excess of 1.5A
- * Output adjustable between -1.25V and -37V
- * Internal short circuit current limiting constant with temperature
- * Output transistor safe-area compensation

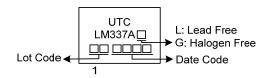
ORDERING INFORMATION

Ordering Number		Deskere	Pin Assignment			De alvie e	
Lead Free	Halogen Free	Package	1	2	3	Packing	
LM337AL-TA3-T	LM337AG-TA3-T	TO-220	ADJ	-	0	Tube	
LM337AL-TN3-R	LM337AG-TN3-R	TO-252	ADJ	I	0	Tape Reel	
Noto: Din Assignment: I: Inn	it O: Output						

Note: Pin Assignment: I: Input O: Output

LM337AG- <u>TA3</u> -T	
(1)Packing Type	(1) T: Tube, R: Tape Reel
(2)Package Type	(2) TA3: TO-220, TN3: TO-252
(3)Green Package	(3) G: Halogen Free and Lead Free L: Lead Free

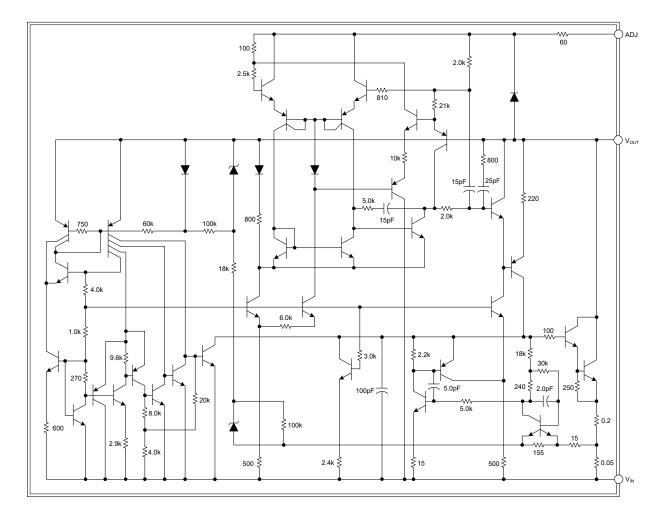
MARKING



PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	ADJ	Adjust pin
2	V _{IN}	Input voltage pin for the regulator
3	Vout	Output voltage pin for the regulator

BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	RATINGS	UNIT
Input-Output Voltage Differential	VI - Vo	40	V
Power Dissipation	PD	Internally Limited	W
Operating Junction Temperature Range	TJ	-25 ~ +85	°C
Storage Temperature Range	T _{STG}	-65 ~ +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.

THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
lunation to Ambient	TO-220	0	60	°C/W
Junction to Ambient	TO-252	θյΑ	112	°C/W
Junction to Case	TO-220	0	5	°C/W
	TO-252	θις	12	°C/W

■ ELECTRICAL CHARACTERISTICS (|VI-Vo| = 5.0V, Io = 0.5A)

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Line Regulation (Note 1)	ΔV out	$T_A = +25^{\circ}C, 3.0V \le V_1 - V_0 \le 40V$			0.01	0.04	%/V
Load Regulation (Note 1)	A) (T _A = +25°C,	V₀ ≤ 5.0V			50	mV
	ΔV out	10mA ≤ I _O ≤ I _{max}	Vo ≥ 5.0V			1.0	%Vo
Adjustment Pin Current	I _{ADJ}				65	100	μA
Adjustment Pin Current Change	$\triangle I_{ADJ}$	$2.5V \le V_I-V_O \le 40V$, $10mA \le I_L \le I_{MAX}$, $P_D \le P_{MAX}$, $T_A = +25^{\circ}C$			2.0	5.0	μA
	VREF	$T_A = +25^{\circ}C, 3.0V \le V_I - V_O \le 40V$		-1.213	-1.250	-1.287	V
Reference Voltage		10mA ≤ Io ≤ I _{MAX} , P _D ≤ P _{MAX} , TJ = TLOW to THIGH		-1.20	-1.25	-1.30	V
Line Regulation (Note 1)	ΔVουτ	$3.0V \le V_1 - V_0 \le 40V$			0.02	0.07	%/V
Load Regulation (Note 1)		$10\text{mA} \le I_0 \le I_{\text{MAX}}$	Vo ≤ 5.0V		20	70	mV
			V ₀ ≥ 5.0V		0.3	1.5	%Vo
Minimum Load Current to		$ V_{I}-V_{O} \le 10V$ $ V_{I}-V_{O} \le 40V$			1.5	6.0	mA
Maintain Regulation	Ilmin				2.5	10	mA
Peak Output Current	I _{peak}	$ V_I-V_O \le 15V, P_D \le P_{MAX}$			1.5	2.2	Α
		$ V_I-V_O \le 40V, P_D \le P_{MAX}, T_J =+25^{\circ}C$			0.15	0.4	А

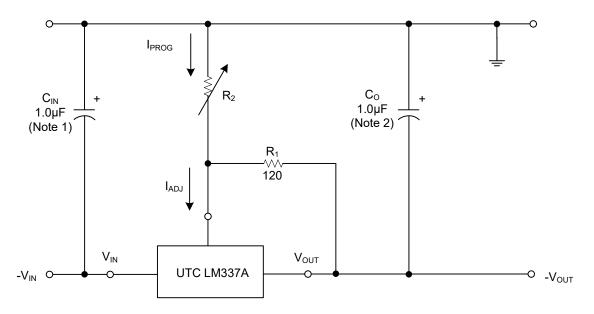
Notes: 1. Load and line regulation are specified at constant junction temperature. Change in V₀ because of heating effects is covered under the Thermal Regulation specification. Pulse testing with a low duty cycle is used.

2. C_{ADJ}, when used, is connected between the adjustment pin and ground.

3. Power dissipation within an IC voltage regulator produces a temperature gradient on the die, affecting individual IC components on the die. These effects can be minimized by proper integrated circuit design and layout techniques. Thermal Regulation is the effect of these temperature gradients on the output voltage and is expressed in percentage of output change per watt of power change in a specified time.



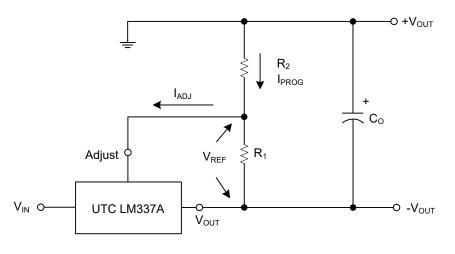
TYPICAL APPLICATION CIRCUIT



- Notes: 1. C_{in} is required if regulator is located more than 4 inches from power supply filter.
 - A 1.0µF aluminum electrolytic is recommended.
 - 2. C_{0} is necessary for stability. A 1.0 μF aluminum electrolytic is recommended.

$$V_{OUT} = -1.25V \times (1 + \frac{R2}{R1})$$

Figure 1. Standard Application



V_{REF}= -1.25V Typical

Figure 2. Basic Circuit Configuration



TYPICAL APPLICATION CIRCUIT

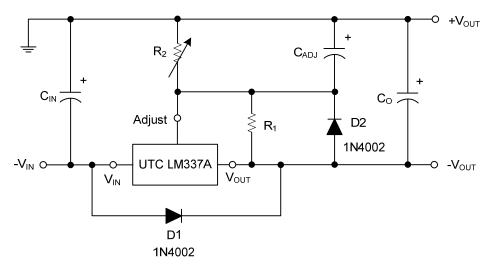


Figure 3. Voltage Regulator with Protection Diodes

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