



LD2127/A

Preliminary

LINEAR INTEGRATED CIRCUIT

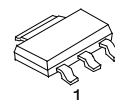
LOW DROP FIXED AND ADJUSTABLE POSITIVE VOLTAGE REGULATORS

DESCRIPTION

The UTC LD2127/A is a low dropout, 3-terminal positive voltage regulator designed to provide output current up to 800mA/1A. There are adjustable versions ($V_{REF}=1.0V$) and various fixed versions.

FEATURES

- * Low dropout voltage
- * Suitable for SCSI-2 active termination if V_{OUT} set to 2.85V
- * Output current up to 0.8A for 2127 and 1.0A for 2127A
- * Built-in current limit and over temperature protection
- * Ultra low Adjustment Current (7 μ A typ.)
- * Ultra low minimum Load (0.3mA typ.)
- * Stable with low ESR ceramic output capacitor (MLCC)



SOT-223

ORDERING INFORMATION

Ordering Number		Package	② Pin Assignment	Packing
Lead Free	Halogen Free			
LD2127①L-xx-AA3-②-R	LD2127①G-xx-AA3-②-R	SOT-223	A: AOI B: OAI C: AIO D: IAO	Tape Reel

Note: Pin Assignment: I: V_{IN} O: V_{OUT} A: ADJ

LD2127①L-xx-AA3-②-R

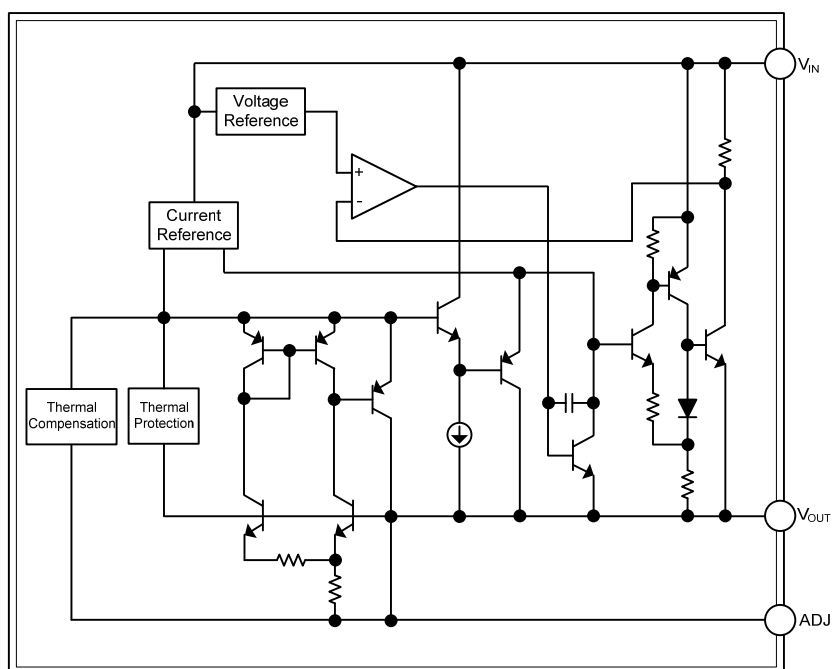
- (1) Packing Type
- (2) Pin Assignment
- (3) Package Type
- (4) Output Voltage Code
- (5) Lead Free
- (6) Current Code

- (1) R: Tape Reel
- (2) refer to Pin Assignment
- (3) AA3: SOT-223
- (4) xx: refer to Marking Information
- (5) L: Lead Free, G: Halogen Free
- (6) Blank: 800mA, A: 1A

MARKING INFORMATION

PACKAGE	VOLTAGE CODE	MARKING
SOT-223	AD :ADJ	Current Code ← Voltage Code ← → L: Lead Free → G: Halogen Free → Pin Code → Date Code

BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING (T_A=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
DC Input Voltage	V _{IN}	18	V
Power Dissipation	P _D	Internally limited	W
Junction Temperature	T _J	+150	°C
Storage temperature	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.

■ RECOMMENDED OPERATING RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Input Voltage	V _{IN}	15	V
Operating Junction Temperature	T _J	0 ~ +125	°C

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ _{JA}	165	°C/W
Junction to Case	θ _{JC}	15	°C/W

■ ELECTRICAL CHARACTERISTICS

(T_A=25°C, refer to the test circuits, T_J=0 ~ 125°C, C_O=10μF unless otherwise specified)

For LD2127/A-ADJ

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Reference Voltage	V _{REF}	V _{IN} -V _{OUT} =2V, I _{OUT} =10mA, T _J =25°C	0.98	1.0	1.02	V
Reference Voltage	V _{REF}	V _{IN} -V _{OUT} =1.4~10V LD2127A : I _{OUT} =10~1000mA	0.98	1.0	1.02	V
Line Regulation	ΔV _{OUT}	V _{IN} -V _{OUT} =1.5 ~ 13.75V, I _{OUT} =10mA		0.5		%
Load Regulation	ΔV _{OUT}	V _{IN} -V _{OUT} =3V LD2127 : I _{OUT} =10~800mA LD2127A : I _{OUT} =10~1000mA		2.0		%
Temperature stability	ΔV _{OUT}			0.50		%
Long Term Stability	ΔV _{OUT}	1000 hrs, T _J =125°C		0.3		%
Operating Input Voltage	V _{IN}				15	V
Adjustment Pin Current	I _{ADJ}	V _{IN} ≤15V		7	10	μA
Adjustment Pin Current Change	ΔI _{ADJ}	V _{IN} -V _{OUT} =1.4~10V, LD2127A : I _{OUT} =10 ~ 1000mA		0.3	2	μA
Minimum Load Current	I _{O(MIN)}	V _{IN} =15V		0.3	1	mA
Current Limit	I _{LIMIT}	V _{IN} -V _{OUT} =5V, T _J =25°C	LD2127	800		mA
			LD2127A	1000		
Output Noise (%V _O)	e _N	B=10Hz ~ 10KHz, T _J =25°C		0.003		%
Supply Voltage Rejection	SVR	I _{OUT} =40mA, f=120Hz, T _J =25°C, V _{IN} -V _{OUT} =3V, V _{RIPPLE} =1V _{PP}	75			dB
Dropout Voltage	V _D	I _{OUT} =100mA		1.05	1.15	V
		I _{OUT} =500mA		1.15	1.25	
		I _{OUT} =800mA		1.18	1.28	
		I _{OUT} =1A		1.22	1.35	
Thermal Regulation		T _A =25°C, 30ms Pulse		0.01	0.10	%/W
Thermal Shutdown	OTP			150		°C

■ APPLICATION NOTE of LD2127/A ADJUSTABLE

The **LD2127/A** adjustable has a reference voltage of between the OUT and ADJ pins. I_{ADJ} is $7\mu A$ typ. ($10\mu A$ max.) and ΔI_{ADJ} is $0.3\mu A$ typ. ($2\mu A$ max.).

R_1 is normally fixed to $1.2k\Omega$.

From figure 1 we obtain:

$$V_{OUT} = V_{REF} + R_2(I_{ADJ} + I_{R1}) = V_{REF} + R_2(I_{ADJ} + V_{REF}/R_1) = V_{REF}(1 + R_2/R_1) + R_2 \times I_{ADJ}$$

Usually R_2 value is in the range of few $k\Omega$, so the $R_2 \times I_{ADJ}$ product could be neglected; then the above expression becomes: $V_{OUT} = V_{REF}(1 + R_2/R_1)$

For better load regulation, realize a good Kelvin connection of R_1 and R_2 is important. Particularly R_1 connection must be realized very close to OUT and ADJ pin, while R_2 ground connection must be placed as near as possible to the negative Load pin. Ripple rejection can be improved by introducing a $10\mu F$ electrolytic capacitor placed in parallel to the R_2 resistor (See Fig. 2)

The UTC **LD2127/A** also supports MLCC. See Fig.3 for adjustable output.

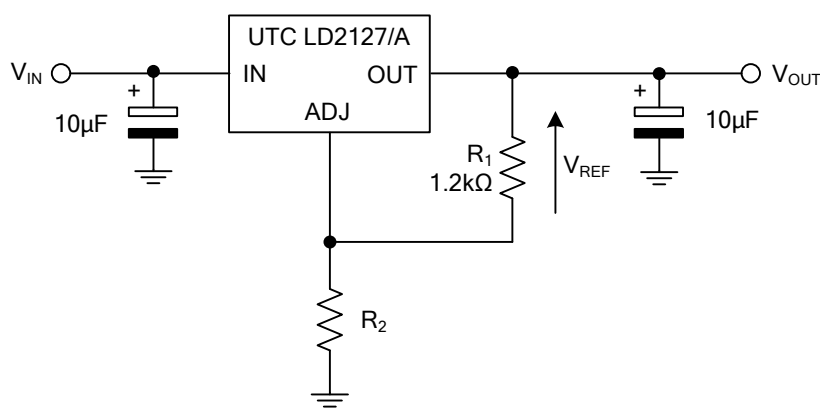


Fig.1 Adjustable Output Voltage Application Circuit

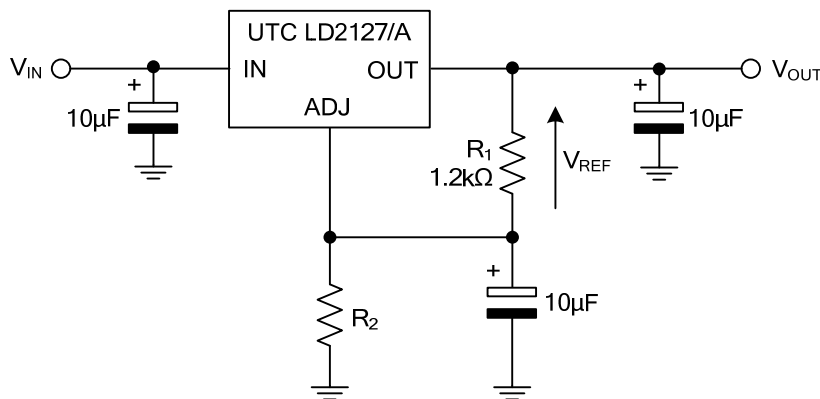


Fig.2 Adjustable Output Voltage Application with improved Ripple Rejection.

■ APPLICATION NOTE of LD2127/A ADJUSTABLE(Cont.)

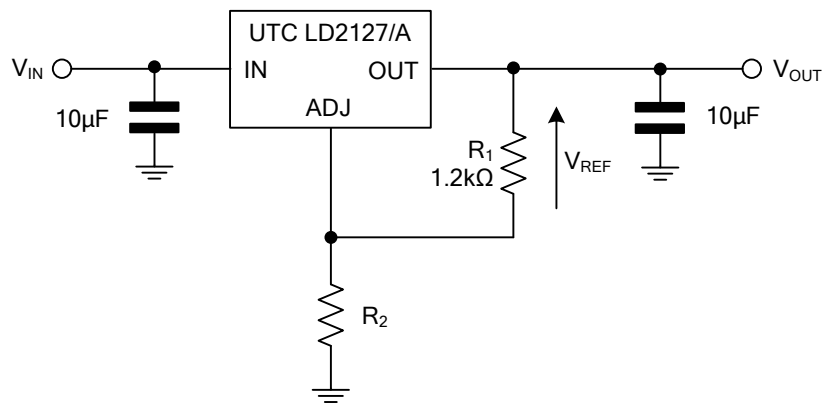
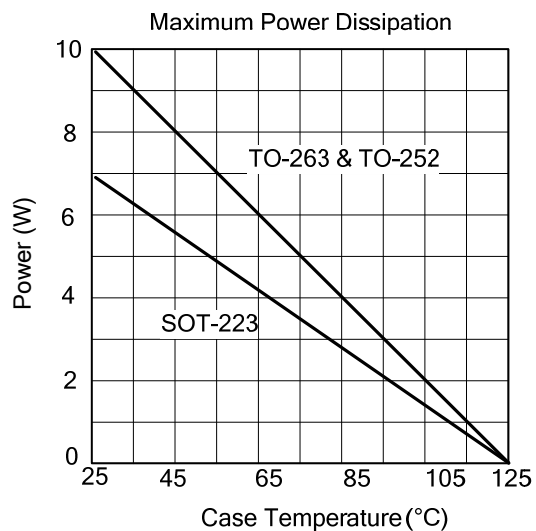


Fig.3 Adjustable Output Voltage Application Circuit for MLCC

■ TYPICAL CHARACTERISTICS



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